Southern Nuclear Operating Company

AR-06-1720

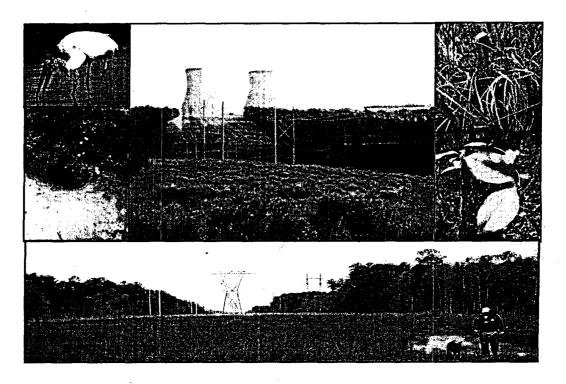
Enclosure 2

Vogtle ESP Application Environmental Reference Information

Threatened and Endangered Species Survey Final Report

Threatened and Endangered Species Survey Final Report

Vogtle Electric Generating Plant and Associated Transmission Corridors



for

Tetra Tech NUS, Inc. 900 Trail Ridge Road Aiken, South Carolina 29803

January 16, 2006



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Environmental Analysis & Restoration

Threatened and Endangered Species Survey Final Report

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for

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January 16, 2006

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APPENDICES

APPENDIX A - Project Species Spreadsheet
APPENDIX B - Project Field Reference Guide
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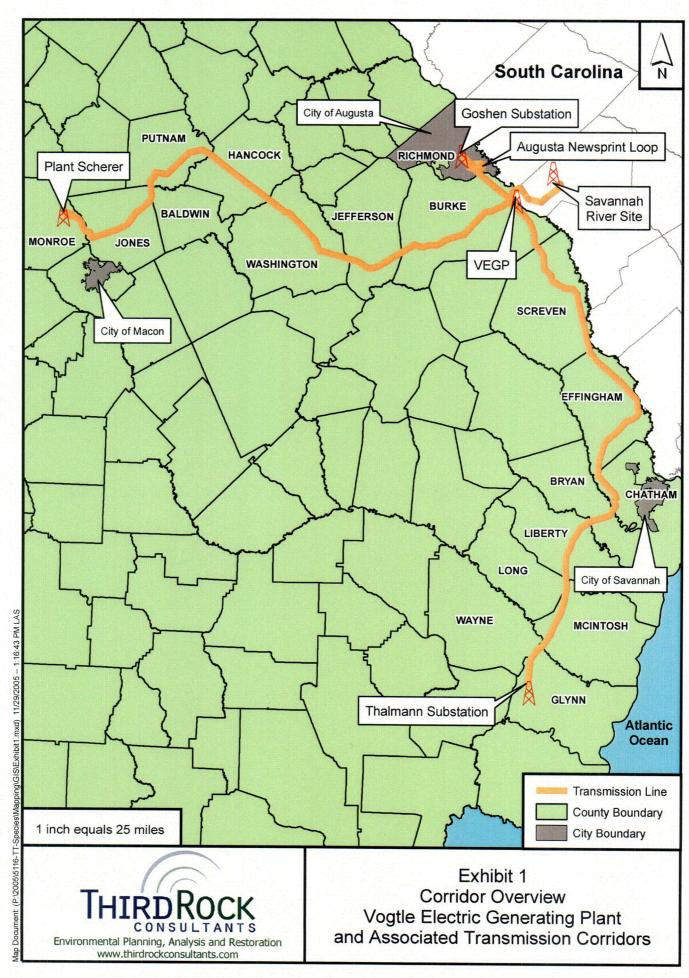
I. INTRODUCTION

Third Rock Consultants, LLC (Third Rock) was retained by Tetra Tech NUS, Inc. (TtNUS) to conduct a survey to identify species of interest on the Vogtle Electric Generating Plant (VEGP) site and on five transmission line corridors associated with the VEGP. The survey was conducted to provide information for the re-licensing of the plant.

Third Rock is a subcontractor to TtNUS, which is under contract to Southern Nuclear Operating Company, the VEGP operator. The location of the VEGP and associated transmission corridors are shown on Exhibit 1. Target species are defined in this report as:

- Species that the U.S. Fish and Wildlife Service (USFWS) has listed, proposed for listing, or candidate species that may be proposed as threatened or endangered in accordance with the Endangered Species Act.
- Species classified by the Georgia Department of Natural Resources (GDNR) as endangered, threatened, rare, or unusual in accordance with the Georgia Endangered Wildlife Act and Wildflower Preservation Act.
- Species classified by the South Carolina Department of Natural Resources (SCDNR)
 Heritage Trust Program as threatened or endangered.

The USFWS defines endangered as a species of plant or animal that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future. Proposed species are those that have been nominated by the USFWS for federal listing as endangered or threatened. Candidate species are those for which the USFWS has enough information to warrant proposing them for listing as endangered or threatened, but have not yet been proposed for listing.



II. PROJECT AREA

This survey was conducted along five transmission corridors in 17 counties in Georgia, on the Savannah River Site (SRS) in Aiken County, South Carolina, and on the VEGP located in Burke County, Georgia; the transmission corridors and the plant site are collectively herein after referred to as the "project area." The project area consists of approximately 390 miles of transmission corridors in Monroe, Jones, Baldwin, Putnam, Hancock, Washington, Jefferson, Burke, Richmond, Screven, Effingham, Chatham, Bryan, Liberty, Long, McIntosh, and Glynn Counties in Georgia, approximately 18.3 miles of transmission corridor in Aiken County, South Carolina, and 1669 acres of the 3169 acres of the VEGP situated along the Savannah River, 34 miles south of Augusta, Georgia.

The five transmission lines in this survey connect the VEGP to a larger electric grid. These five transmission lines were assigned names according to the plant at which they originated and the plant or substation at which they terminated. The following is a brief description of the lines and the ecoregions through which they run.

A. Vogtle-Scherer (VS) Corridor

This 500-kilivolt (kV) transmission corridor runs east-west across central Georgia from the VEGP to Plant Scherer just north of Macon. It crosses Burke, Jefferson, Washington, Hancock, Putnam, Baldwin, Jones and Monroe Counties, Georgia. The standard width of this corridor is 150 feet and it is 152 miles long.

The Vogtle-Scherer transmission corridor crosses two Level III Ecoregions: Southeastern Plains and Piedmont (Griffith, et al., 2001). Approximately half of the transmission corridor crosses the Southeastern Plains and half is located in the Piedmont. That portion of the Southeastern Plains Ecoregion involved, can be further subdivided into three Level IV Ecoregions: the Sand Hills, Coastal Plain Red Uplands, and the Atlantic Southern Loam Plains (see Exhibits 2a and 2b). The Sand Hills form a

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

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Exhibit 2A

"Surveyed Areas

Vogtle-Scherer, Vogtle-Goshen, Vogtle-Thalmann & Vagtle-Savannah River Site Vogtle Electric Generating Plant Transmission Corridors (Sheet 1 of 4)"

WITHIN THIS PACKAGE... OR BY SEARCHING USING THE DOCUMENT/REPORT NO. SHEET 1 OF 4

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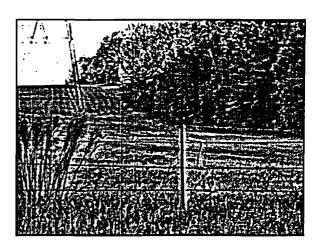
Exhibit 2B

"Surveyed Areas
Western Half of Vogtle-Scherer
Vogtle Electric Generating Plant
Transmission Corridors
(Sheet 2 of 4)"

WITHIN THIS PACKAGE... OR BY SEARCHING USING THE DOCUMENT/REPORT NO. SHEET 2 OF 4 narrow, rolling to hilly belt across Georgia in a northeast-southwest direction. On the drier, sandier soils turkey oak (*Quercus laevis*) and longleaf pine (*Pinus palustris*) are the dominants, while shortleaf (*P. echinata*)- loblolly (*P. taeda*) pine forest and oakpine forest, are common on less droughty soils. The Coastal Plain Red Uplands are well drained but less droughty and the majority of the area is cropland and pasture. The Atlantic Southern Loam Plains is lower and flatter, with a predominance of agriculture, but also contains forested wetlands in poorly drained areas.



Agricultural Area In Project Corridor

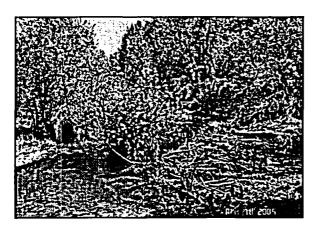


Closely Mowed Agricultural Area

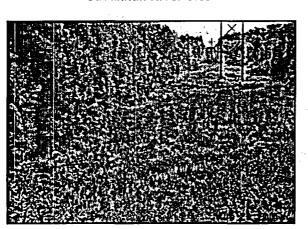
The Piedmont Ecoregion is characterized by hilly topography and a variety of ecosystems, from the exposed rock surfaces and rocky, shallow soils of the granite outcrops to the few relic mature oak-hickory-poplar hardwood forests. More than half of the Piedmont is former farmland in some stage of reforestation, either through natural plant succession or pine plantations. That portion of the line within the Piedmont is wholly within the Southern Outer Piedmont Level IV Ecoregion. This is an area dominated by shortleaf-loblolly pine and smaller areas of oak-pine or oak-hickory forest.

B. Vogtle-Savannah River Site (V-SRS) Corridor

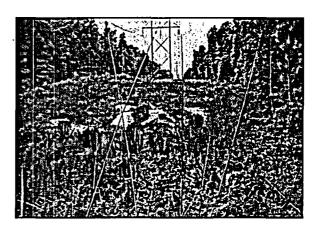
This transmission corridor carries one 230-kV line from VEGP to the Savannah River Site. It originates at VEGP in Burke County, Georgia, crosses the Savannah River into Barnwell County, South Carolina, and ends on the SRS. There are 2.5 miles of transmission line in Georgia and 18.3 miles in South Carolina. The corridor is oriented approximately in a northeast direction from VEGP. The standard width of this corridor is 125 feet wide. The Vogtle-Savannah River Site transmission corridor lies totally within the Level III Southeastern Plains Ecoregion and crosses two Level IV Ecoregions: the Sand Hills and the Southeastern Floodplains and Low terraces (Exhibit 2A, Sheet 1). The latter is characterized by riverine swamp forests of bald cypress (*Taxodium distichum*), tupelo gum (*Nyssa aquatica*), and oak dominated bottomland hardwood forest.



Savannah River Site



Wetland Located in Savannah River Site



Habitat Along Savannah River Site



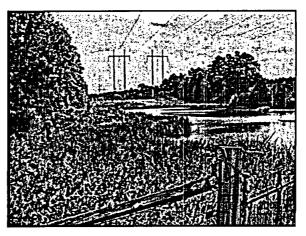
Third Rock Biologist Surveying Wetland

C. Vogtle-Goshen (VG) Corridor

This transmission corridor carries two 230-kV lines from VEGP to the Goshen Substation (Exhibit 2a, Sheet 1). The total length of this corridor is approximately 19 miles. It crosses the northeast portion of Burke County and the southeast portion of Richmond County, Georgia. The corridor is oriented in a northeast direction from VEGP. The standard width of these two 230-kV lines is contained within a single 225-foot wide corridor. This transmission corridor ends at the Goshen Substation. The Vogtle-Goshen Substation transmission corridor lies totally within the Level III Southeastern Plains Ecoregion and the Sand Hills Level IV Ecoregions.

D. Augusta Newsprint Loop Corridor

This short 8-mile long corridor is a loop off of the Vogtle-Goshen line and serves a large paper mill located in southeast Richmond County, Georgia (Exhibit 2A, Sheet 1). It lies almost entirely within the Sandhills Level IV Ecoregion, with only the outer edge of the loop crossing into the Southeastern Floodplains and Low Terraces Level IV Ecoregion. The line shares a common corridor with another transmission line but only the 150 feet occupied the "Newsprint Loop" of the total 300-foot width was surveyed. The area is predominantly former farmland and contained several large man-made ponds.



Pond Located in Augusta Newsprint Loop Corridor

E. Vogtle-Thalmann (VT) Corridor

This transmission corridor carries one 500-kV line from VEGP to the Thalmann Substation northwest of Brunswick, Georgia. The total length of this corridor is approximately 159 miles. The corridor begins at VEGP and crosses Burke, Screven, Effingham, Chatham, Bryan, Liberty, Long, McIntosh, and Glynn Counties, Georgia. The corridor is orientated in a southern direction from the VEGP. This single 500-kV line lies within a 150-foot wide corridor.

The Vogtle-Thalmann Substation transmission corridor lies across two Level III Ecoregions: approximately one-fourth of length of this transmission line crosses the Southeastern Plains Ecoregion and three-fourths of its length is found on the Southern Coastal Plain Ecoregion (Exhibits 2c and 2d). The Southern Coastal Plain Ecoregion extends from South Carolina and Georgia through much of central Florida, and along the Gulf coast lowlands of the Florida panhandle, Alabama and Mississippi. From a national perspective, it appears to be mostly flat plains, but it is a heterogeneous region also containing barrier islands, coastal lagoons, marshes and swampy lowlands

along the Gulf and Atlantic coasts. This ecoregion is generally lower in elevation with less relief and wetter soils. Once covered by a variety of forest communities that included longleaf pine, slash pine, pond pine, beech, sweetgum, southern magnolia, white oak and laurel oak, land cover in the region is now mostly slash and loblolly pine with oak-gum-cypress forest in some low lying areas.



Coastal Plain

III. METHODS

The methods section is divided into three sub-sections: the preparation of a target species list, selection of power-line corridor segments for study, and field methods.

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Exhibit 2C

"Surveyed Areas
North Half of Vogtle-Thalmann
Vogtle Electric Generating Plant
Transmission Corridors
(Sheet 3 of 4)"

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Exhibit 2D

"Surveyed Areas
Southern Half of Vogtle-Thalmann
Vogtle Electric Generating Plant
Transmission Corridors
(Sheet 4 of 4)"

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A. Compiling a Target Species List

The first step was to compile a list of species that potentially could occur within the project area and that fell under the three previously defined state and federally protected species classifications. The list was compiled from the on-line databases of the USFWS and the Georgia and South Carolina Natural Heritage Programs. Species were included that were known from the counties through which the lines passed, or from adjacent or nearby counties if there was a strong likelihood that the species might also occur in the counties of concern.

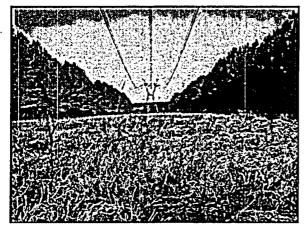
Additional information was gathered on the life history of each species, particularly their distribution, habitat requirements and the time of year when the species was most readily observable and/or identifiable. The habitat and seasonal information was distilled into a species spreadsheet table so that the data could be sorted by habitat and season. This allowed the generation of species lists by season and limited the searches to those habitats that would be most productive for each season. The information was also used to compile a field reference guide. The guide contained identification keys, photographs and/or line drawings, habitat, and life history information. Copies of this large field reference were supplied to each member of the field survey team. The project species spreadsheet is included as Appendix A. The project field reference guide is included on CD ROM as Appendix B.

B. Study Segment Selection

Based on current land use, only portions of the power-line rights-of-way (ROWS) were likely to be potential habitat for target species. Therefore, a primary objective of the planning portion of the study was to identify those segments with a high potential for occurrences of one or more target species. To this end, a variety of data sources were used to identify those sections of ROW on which to focus the field survey.

Aerial photos from 1982-83, obtained from Georgia Power, contained information on land use prior to power-line construction. Based on these pre-construction aerials, it

was determined that the majority of the ROW was previously in agriculture or was being converted from agriculture to pine plantations. For most plant species this meant that much of the ROW, and the adjacent land, had no surviving seed-bank that could give rise to rare species even if the areas were allowed to revert to natural vegetation. The 1982-83 aerial photos also indicated that most of the natural areas that were relatively undisturbed at that time were wetlands.



Pine Plantations Along Transmission Corridor

Additional sources of information used in identifying segments to survey were: 2003 Georgia GAP data, National Wetland Inventory (NWI) maps, occurrence records of listed species obtained from the Georgia Natural Heritage Program, and recent videos of the power-line corridors taken from a helicopter. The GAP data is part of the much larger nationwide Gap Analysis Program that uses satellite imagery, aerial

photography, and field data to develop digital databases on the distribution of vertebrate species, their habitats, current land use, and plant communities. The 2003 Georgia GAP land cover mapping was used to provide more current information on the land use/plant communities adjacent to the power line corridors. The NWI maps were used to provide information on the presence of existing wetlands. The Georgia Heritage Program data indicated areas of known listed species occurrence.

The recent helicopter videos of the lines were reviewed in their entirety and were used to determine adjacent land use as well as land use within the corridors. In many cases an adjacent agricultural land use extended beneath the lines allowing the elimination of a substantial acreage from consideration. Wetlands indicated on the NWI maps and pre-construction aerials could also be verified as still existing from the videos. Road crossings and dirt roads on the corridors themselves were noted as ways to access segments of interest.

Data from the Georgia Natural Heritage Program on the known occurrences of listed species was also used in selecting segments. Occurrence data was plotted on 7.5-minute topographic maps along with the transmission corridors. Where known occurrences were close to a line and similar habitat was present on the ROW, a segment was selected.

Based on all these sources of information, 85 segments totaling 87.7 miles of line were identified to be field surveyed during the study. The distribution of segments by line was: VEGP to Scherer - 38 segments and 36.4 miles, VEGP to Goshen - 5 segments and 3.7 miles, and VEGP to Thalmann - 42 segments and 44.6 miles. Because of the short length of the Augusta Newsprint Loop, no segments were identified prior to the field survey.

Approximately 37.7 miles of the above segments were identified as wetlands by the NWI mapping. Most of the balance was a variety of habitat types commonly associated with or in proximity to wetlands. The habitat and wetland types associated with each selected segment are presented in Appendix C. These segments were expected to represent the greatest potential for producing listed species within the project area.

No GIS shape files were available for the 22-mile line from VEGP to the Savannah River Site. As a result, no segments were selected prior to the field survey. The field effort for VEGP - Savannah River Site consisted of an initial reconnaissance based on aerials obtained on site and recommendations from a TtNUS biologist who had spent several years working at SRS.

Areas to be surveyed on the Vogtle site were based on a review of aerial photos of the site, recommendations from TtNUS biologists and an initial reconnaissance during the first site visit. Those areas that were undisturbed by the plants construction and subsequent land management received the most attention.

Base maps for field use were prepared using USGS (1:24,000) quadrangle maps on which the ROWS were delineated. Additional data overlays were produced from the NWI maps and records of listed species occurrences by quarter quad from the Georgia Natural Heritage database.

By the last field survey in October, many of the previously identified segments had been eliminated from further search, and a survey of additional sites was undertaken. These additional sites were selected randomly using a Georgia road atlas to determine access. These random segment searches served as a quality control check on the segment selection process initiated at the beginning of the project. If these random sites contained little or no habitat or yielded few or no listed species, then our initial study segment process was validated.

C. Field Survey Methods

The field survey was conducted seasonally during spring, summer and fall of 2005. Each seasonal effort lasted for 10 days and began on the following dates: April 12, August 22, and October 24.

Three biologists were utilized in the spring field effort, sometimes working as a team, however, usually separated working as two groups. When separated, the biologists were in phone contact or met several times a day to compare observations. A team of two biologists was utilized in both the summer and fall field effort.

Each survey team member carried binoculars and larger, unwadeable wetlands were searched using a spotting scope. Tin, lumber, plywood, old tires, logs, and any other cover for small animals found within the study area were turned over and examined. All surveyed segments were examined for tracks and scats of animals. Dens of burrowing animals were also checked for activity and tracks in order to identify the animals using the burrow.

Plants made up the majority of the target species (51 of 85). Thus, the core of the field effort was directed toward those listed plant species. Where possible, floral species were identified in the field. In some cases an appropriate amount of plant material of the specimen in question was collected using standard collection procedures for later identification. Digital images were taken to aid in the identification of taxonomically difficult species as well. Field notes were taken as species were encountered and the location of occurrence marked with a waypoint using a Garman V handheld GPS.

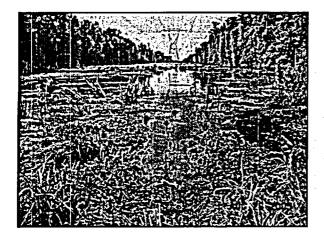
IV. RESULTS

A variety of habitats were found beneath the transmission corridors and on the Vogtle plant site. The major habitats encountered are described in the following along with a brief description of the corridor maintenance program, a primary determinant of plant communities beneath the lines.

According to Jim Candler, a biologist with Georgia Power, the transmission lines from the Vogtle plant were constructed in the mid 1980s. In many areas, the construction of the corridors required the clearing of existing, natural vegetation. Forest, either pine, oak-pine or oak-hickory is the normal climax habitats for the areas crossed by the lines. With forests on one or both sides of the line, or at least nearby; natural plant succession would bring these cleared areas back into forest without continual maintenance. The current vegetation management program calls for mowing in year one, selected back-pack spraying of woody species in year two, skip year three, selected spraying again in year four, and mowing again in year five. This regimen is then repeated through another cycle (Candler, 2005).

The habitat encountered in our field survey depended to some degree on where that particular portion of the line was in the vegetation management cycle. Portions of the line surveyed in April contained woody plants up to eight feet tall but were closely mowed when the site was revisited in August.

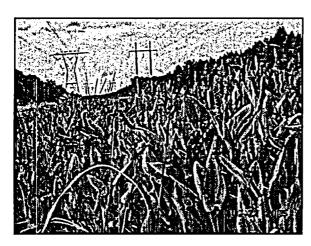
More than half of the Vogtle-Thalmann line is located in the Sea Island Flatwoods Level IV Ecoregion. This is an area of flat, poorly drained sandy to muck soils dominated by pine plantations. Within the corridor itself, the primary habitat differences are related to changes in micro-topography and resulting degrees of wetness. Areas of open water are found in shallow, closed depressions and, what are labeled streams on the topographic maps, are often wide expanses of shallow flowing water. Because of the flatness of the terrain, a stream normally a few yards wide may become tens of yards wide during flooding. These areas are dominated by long beaked rush (Rhynchospora corniculata), pickerelweed (Pontederia cordata var. cordata and var. lancifolia), arrowhead (Saggitaria graminea), redroot (Lacnanthes caroliniana), and buttonbush (Cephalanthus occidentalis). A change in elevation of a foot or less will result in a plant community with different dominants. These slightly higher but still wet soil communities are dominated by bushy bluestem (Andropogon glomeratus), blue sedge (Carex glaucescens), several species of meadow beauty (Rhexia), boneset (Eupatorium perfoliatum), several species of gayfeather (Liatris), plumegrass (Saccharum strictus), and scattered saw palmetto (Serenoa repens).



Shallow Closed Depression



Slightly Higher Area But Still Wet Site



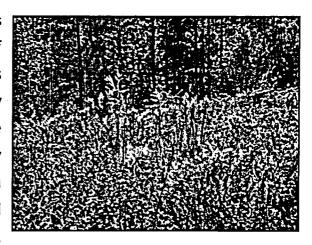
Pickerel Weed at VT 35



Close-up View of Pickerel Weed

A third slightly higher but much drier community is dominated by: broomsedge (Andropogon virginicus), bracken fern (Pteridium aquilinum), blackberry and dewberry (Rubus sp.), peppervine (Ampelopsis arborea), and several species of goldenrods (Solidago sp.).

The Level IV Atlantic Southern Loam Plains makes up the majority of the remainder of the Vogtle-Thalmann line. This area is gently rolling and drier than the previously described habitats but has many of the same dominants: broomsedge, blackberry and dewberry, goldenrods, and bracken fern. Additional dominants are beaked panicgrass (*Panicum anceps*), dog fennel (*Eupatorium capillifolium*), and winged sumac (*Rhus copallinum*).



Dog Fennel in Old-Field VEGP

The initial segments of the Vogtle-Thalman line and the Vogtle-Scherer line, all of the Vogtle-Goshen line, and almost all of the Augusta Newsprint Loop, as well as most of the Vogtle site are located in the Sandhills Level IV Ecoregion. The dominant plant community beneath the lines in this ecoregion are very similar to the drier communities already described with only a few changes: splitbeard bluestem (Andropogon ternarius) becomes a co-dominant with or replaces broomsedge, several species of greenbriar (Smilax sp.) are common, and prickly pear (Opuntia humifusia) is commonly scattered along the line.

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Almost all of the Vogtle-Scherer line passes through the Southern Outer Piedmont, an area of rolling hills. The plant communities along this line are similar in that most are in an early stage of old field succession. Broomsedge, blackberry, dog fennel, and winged sumac were the dominant species. Wetlands were fewer and smaller and a significant percentage of the line crosses land in agricultural uses.

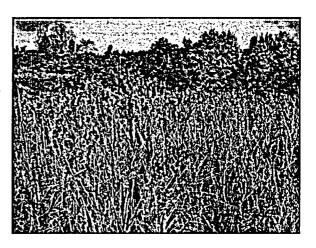
While the Vogtle plant is located on a relatively small area, it is located in two Level IV Ecoregions: the Sandhills and the southeastern Floodplains and Low Terraces. A majority of the areas surveyed on the plant site were areas that had not been disturbed by the plant's construction or cleared for transmission lines. There were five major habitats present on the plant site: man-made or beaver created wetlands, pine plantations, oak-pine uplands, river bluff, and the bottomland hardwoods adjacent to the Savannah River.

The man-made wetlands were dominated by open water or mudflats with heavily vegetated fringes. The common species surrounding the open water are broadleaf cattail (*Typha lattifolia*), sugarcane plumegrass (*Saccharum giganteum*), woolgrass (*Scirpus cyperinus*), bushy bluestem, and black willow (*Salix nigra*). The natural or beaver enhanced wetlands had open to closed canopies depending on water depth. In those areas with a tree canopy, the dominants were water oak (*Quercus nigra*), red maple (*Acer rubrum*), and black gum (*Nyssa sylvatica*). There was also a relatively dense understory of vines and shrubs composed of cane (*Arundinaria gigantea*),

trumpet creeper (*Campsis radicans*), muscadine (*Vitis rotundifolia*), and American holly (*Ilex opaca*). The herbaceous ground cover was less dense and dominated by cinnamon fern (*Osmunda cinamomea*) and royal fern (*O. regalis*).



Retention Pond



Emergent Wetland Around Retention Pond

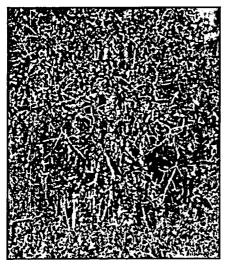
The pine plantations are in various ages and stocking rates, and vary from a nearly closed canopy with very little understory, to areas that resemble old fields with only scattered pine. The dominant pines were loblolly and longleaf and the sparse herbaceous ground cover was bracken fern, while in the more open areas dog fennel, broomsedge, and blackberry were common.



Pine Plantation

The undisturbed uplands are a mix of a xeric longleaf pine-scrub oak community and a slightly more mesic oak-hickory community: the ridgetops and south and west slopes are more xeric while the north and east slopes support the more mesic oak-hickory. Longleaf pine, turkey oak (*Quercus laevis*), and bluejack oak (*Q. incana*) form the

canopy along with lesser amounts of blackjack oak (*Q. marilandica*), and scattered flowering dogwood (*Cornus florida*) and hawthorns (*Craetegus* sp.). The shrub layer is composed of sparkleberry (*Vaccinium arboreum*), dwarf huckleberry (*Gaylussacia dumosa*), and yellow jessamine (*Gelsemium sempervirens*). The density and diversity of the herbaceous ground cover varies with the degree of canopy closure. Under dense shade, only clumps of slender wood oats (*Chasmanthium laxum*) were found. In more open areas, gopher weed (*Baptisia perfoliata*), jointweed (*Polygonella Americana*), tread-softly (*Cnidoscolus stimulosus*), and reindeer lichen (*Cladina rangifera*) were common.



Turkey Oak

† :



Turkey Oak- Hickory Community Above Bluff

The oak-hickory community canopy is composed of white oak (*Q. alba*), white ash (*Fraxinus americana*), mockernut hickory (*Carya tomentosa*), and flowering dogwood, but still retains a few turkey oaks and a scattering of shortleaf pine (*Pinus echinata*).

A steep, east-facing bluff lies between the dry upland forest and the often flooded bottomland along the river. The bluff is completely wooded and in places still supports some very large trees, several in excess of 3 feet in diameter. White oak, southern red oak (Q. falcata), mockernut hickory, tulip poplar (Liriodendron

tulipifera), sweet gum (Liquidambar stryaciflua), American elm (Ulmus americana), basswood (Tilia americana), and sugar maple (Acer barbatum) are common canopy species. There is also well developed understory of smaller trees, shrubs and vines. The more common understory species are: pawpaw (Asimina triloba), hop hornbeam (Ostrya virginiana), muscadine, American beautyberry (Callicarpa americana), crossvine (Bignonia capreolata), and poison ivy (Toxicodendron radicans). The herbaceous ground cover varies with soil moisture, varying from dry areas near the

top of the slope to wet seeps at the foot of the slope. On the upper slope, Christmas fern (*Polystichum acrostichoides*), white snakeroot (*Agertina altisima*), and several species of aster were most common. On the lower slopes and around seeps the mottled trillium (*Trillium macualtum*), wild ginger (*Asarum canadense*), false nettle (*Boehmeria cylindrical*), and jewelweed (*Impatiens capensis*) were the dominants.



Plant Site at Bottom of Bluff



Bluff Showing Steep Slope

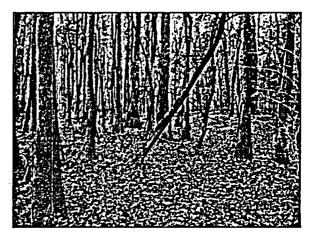


Mature Poplar Tree

The bottomland hardwoods along the river are a mix of hardwoods and cypress-tupelo gum. Bald cypress (*Taxodium distichum*) and tupelo gum (*Nyssa aquatica*) are found in the canopy of the lower, wetter sites; while sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), sugarberry (*Celtis laevigata*), and swamp chestnut oak (*Quercus michauxii*) occupy the slightly higher ground. Long periods of inundation have limited the understory and herbaceous layers but some species persist. American holly, ironwood (*Carpinus caroliniana*), water locust (*Gleditsia aquatica*), cane, and buttonbush form the understory. Ground cover is sparse and limited to those species that can survive both inundation and dense shade: richweed (*Pilea pumila*), lizard tail (*Saururus cernus*), sensitive fern (*Onoclea sensibilis*), and Virginia dayflower (*Commelina virginica*) were the dominant species.



Floodplain Near the Base of the Bluff



Floodplain Showing Water Level Line on Trees

Habitats encountered on the Savannah River Site in South Carolina were similar to those already described. A large hillside seep wetland was the only new habitat encountered. This wetland had deep muck soils and was dominated by a dense growth of water primrose (*Ludwugia leptocarpa*) and soft rush (*Juncus effusus*).

V. OBSERVATIONS OF TARGET SPECIES

In addition to the 85 segments identified prior to the beginning of the fieldwork, there were 9 segments on the SRS line, 5 segments that included over half of the Augusta Newsprint loop, and an additional 26 randomly selected segments that were surveyed, bringing the total number of segments surveyed to 125. Out of this large number of segments surveyed, target species were found on only 10 prior selected ROW segments, on one randomly selected segment, and at three locations on the VEGP site (Table 1). Occurrence data sheets for each observation of a listed species can be found in Appendix D.

TABLE 1 - SUMMARY OF OCCURRENCES

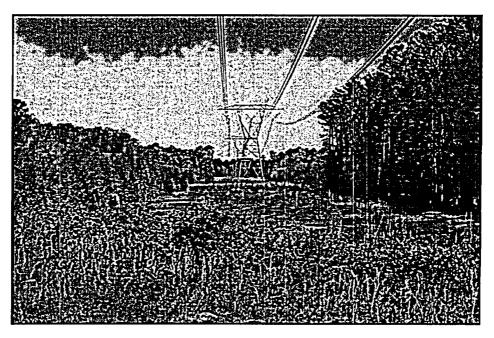
| SPECIES NAME | OCCURRENCE ID* | LOCATION | SEGMENT** | X COORDINATES | Y COORDINATES |
|-------------------------|-------------------|-------------------------------------|-------------------|------------------|------------------|
| Bay Star-Vine | 2 | Vogtle Electric Generating Plant | VEGP | -81.7599 | 33.1536 |
| Bay Star-Vine | 3 | Vogtle Electric Generating Plant | VEGP | -81.7318 | 33.3303 |
| Bay Star-Vine | 16 | Vogtle Electric Generating Plant | VEGP | -81.7530 | 33.1298 |
| Wood Stork | 4 | Vogtle-Scherer | VS-28 | -82.0807 | 32.9964 |
| Wood Stork | 5 | Vogtle-Scherer | VS-37 | -81.9145 | 33.0927 |
| Wood Stork | 7 | Vogtle-Thalmann | VT-17 | -81.3866 | 32.5516 |
| Wood Stork | 7a | Vogtle-Thalmann | VT-17 | -81.3866 | 32.5516 |
| Pond Spice | 13 | Vogtle-Thalmann | VT-41 | -81.5943 | 31.4689 |
| Spotted Turtle | 6 | Vogtle-Thalmann | VT-9 | -81.4771 | 32.8059 |
| Gopher Tortoise | 12 | Vogtle-Thalmann | VT-16 | -81.4102 | 32.5791 |
| Gopher Tortoise | 8a | Vogtle-Thalmann | VT-42 | -81.5954 | 31.4681 |
| Gopher Tortoise | 8 | Vogtle-Thalmann | VT-41 | -81.5908 | 31.4737 |
| Hooded Pitcher Plant | 9 | Vogtle-Thalmann | VT-27 | -81.3079 | 32.0442 |
| Hooded Pitcher Plant | 10 | Vogtle-Thalmann | VT-38 | -81.5073 | 31.6672 |
| Hooded Pitcher Plant | 11 | Vogtle-Thalmann | VT-40 | -81.5295 | 31.5807 |
| Hooded Pitcher Plant | 14 | Vogtle-Thalmann | VT-40 | -81.5285 | 31.5849 |
| Hooded Pitcher Plant | 17 | Vogtle-Thalmann | Random Segment | -81.4597 | 31.8815 |

^{*}See Species Occurrence Data sheets in Appendix A

^{**}See Exhibits and Text for segment locations; see Appendix D for nearest ROW tower number

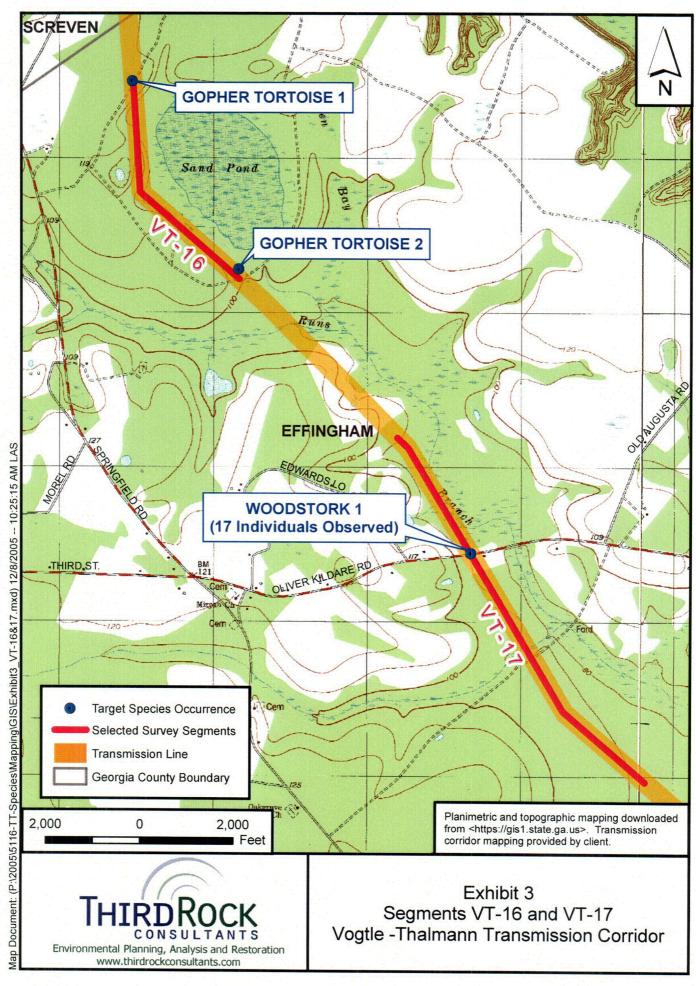
A. Wood Stork

Only one federally listed species, the wood stork (*Mycteria americana*), was observed within the entire project area. It was observed at three locations during the spring survey: a single bird at two sites, VS 28 and VS 37 on the Vogtle-Scherer line, and two birds observed at VT 17 along the Vogtle-Thalmann line (Exhibit 3). The latter site was the only one with storks present in August, when 17 storks were observed. No wood storks were observed at any of the sites in October. A portion of Segment VT 17 is an open water swamp bordered by a tall stand of cypress-tupelo gum on the east and shorter second growth to the west. The site was also heavily used by other wading birds in both April and August: in excess of 50 great egrets (*Ardea alba*) and little blue herons (*Egretta caerulea*) were observed.



Wood Stork Wetland Site (Segment VT-17)

It was difficult to get an accurate count of mature and immature storks in August, but it appeared that a little less than half of the 17 birds observed were immature. The birds were either loafing or actively feeding, often in heavy cover. No signs of nests were observed in any of the trees adjacent to the corridor at VT 17.



A large nesting colony of wood storks exists at Birdsville in Jenkins County, approximately 45 miles west-northwest of VT 17 and the birds observed at all three transmission sites are likely from that colony (Exhibit 4). The sighting at VS 28 is only 10 miles from the breeding colony and VS 37 is approximately 20 miles away. It is not uncommon for wood storks to forage as far as 50 miles from the nesting colony (USFWS, 1996). Immature wood storks banded at the Harris Neck breeding colony just south of Savannah, and wood storks from the Birdsville colony have been observed feeding at ponds on the SRS, which is 40 miles north of VT17 (Wood Stork research at SRS, 2005; USFWS, 1996).

B. Gopher Tortoise

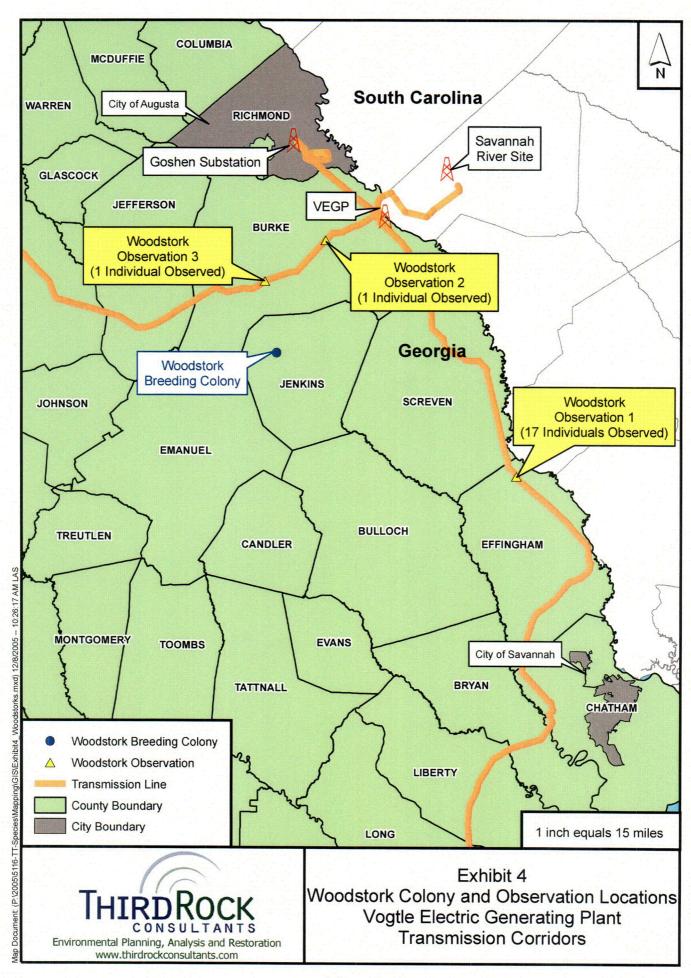
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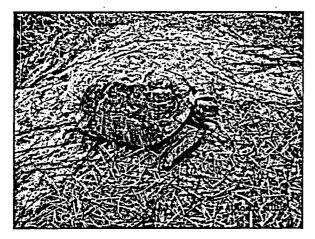
The gopher tortoise (*Gopherus polyphemus*) is listed as state threatened in Georgia but is not federally listed in Georgia. It is federally listed in the western portion of its range, however, in portions of Alabama, Mississippi, and Louisiana. It was observed at three locations: on Segments 41 and 42 just north of the Altamaha River in McIntosh County and on Segment 16 at the edge of Sand Pond in Effingham County all three segments are on the Vogtle-Thalmann line. Both locations are in the Sea Islands Flatwoods Level IV Ecoregion but separated by over 100 miles.

The two locations just north of the Altamaha River (Exhibit 5) are located on narrow sand ridges crossed by the Vogtle-Thalmann line. A live tortoise and the largest concentration of burrows were observed on the first sand ridge north of the river (VT 42). This sand ridge is approximately 200 yards wide and extends in a northwest-southeast direction along the edge of the floodplain. There were three active burrows (one containing a live tortoise), four older burrows, and the remains of three nest sites at this location. The nests sites contained eggshell fragments that were confined to an area not much larger than a square foot and may or may not have been successful.

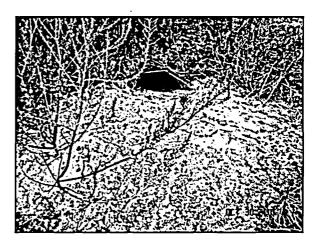


■ Feet

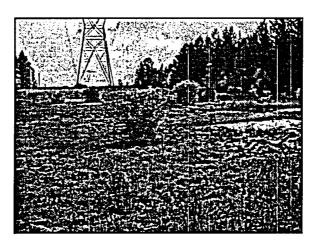
29



Gopher Tortoise



Gopher Tortoise Burrow at Sandpond



Gopher Tortoise Habitat at VT-42

The area under the line was thinly vegetated, a mix of grasses and forbs. Splitbeard bluestem (Andropogon ternarius) and wiregrass (Aristida beyrichiana) were the dominant grasses, while bitterweed (Helenium amurum), poorjoe (Diodia teres), prickly pear, and hairy lespedeza (Lespedeza hirta) were the common forbs. Most of these species are listed as food items commonly eaten by gopher tortoises (Landers, 1981).

The adjacent habitat was mixed hardwood-pine with a relatively dense understory. A brief search on either side of the corridor indicated that gopher tortoise activity was confined to the open area under the line. Optimum gopher tortoise habitat has no more than 10 percent closed canopy (Spillers and Speake, 1986) and nests are generally laid in full sun (Ernst and Barbour, 1972).

The second sand ridge (VT 41) is located approximately 1,500 feet north of the first ridge and is much smaller. A single active burrow and several abandoned burrows were found under the line. The vegetation in the corridor was similar in density and species composition to that described above. Pine plantations occupied both sides of the corridor and were being harvested during the October visit.

The third site found supporting gopher tortoises is on Segment VT 16 along the Vogtle-Thalmann line, in the northeastern corner of Effingham County (Exhibit 3, page 26). The corridor at this location skirts the edge of a large Carolina Bay called Sand Pond. The soils are very sandy, particularly along the south edge of the pond, where the bulk of the tortoise activity was observed. Most of the burrows found were off of the line, but two burrows were found within the edge of the corridor. A large portion of the corridor at this location is being tilled in wildlife food plots, which probably discourages tortoises from burrowing in the corridor proper.

One of the major factors in the decline of the gopher tortoise range-wide has been the conversion of longleaf pine stands to loblolly/slash pine and subsequent fire suppression. Pine plantations have a closed canopy after a few years and fire suppression may allow the development of relatively dense woody understory, both conditions leading to a reduction in forbs and grasses, the primary food of gopher tortoises. Maintaining the open transmission corridors on these sandy soils creates small islands of optimum conditions for both tortoise foods and nesting sites, in what may otherwise be sub-optimum habitat.

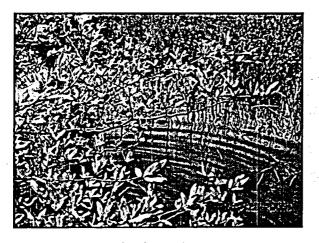
31 January 16, 2006

C. Spotted Turtle

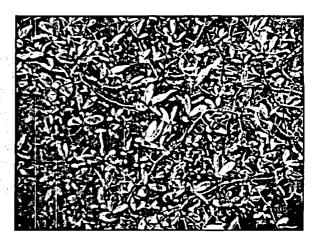
A single observation of a spotted turtle (*Clemmys guttata*), listed as unusual in Georgia, was made at VT 9 on the Vogtle-Thalmann line in April (Exhibit 6). The site was revisited in August and October, however no further sightings were made. The habitat was a small, shallow, open-water marsh that contained numerous fallen logs. The area is part of the much larger Brier Creek wooded swamp and is on the Tuckahoe State Wildlife Management Area.

D. Pond Spice

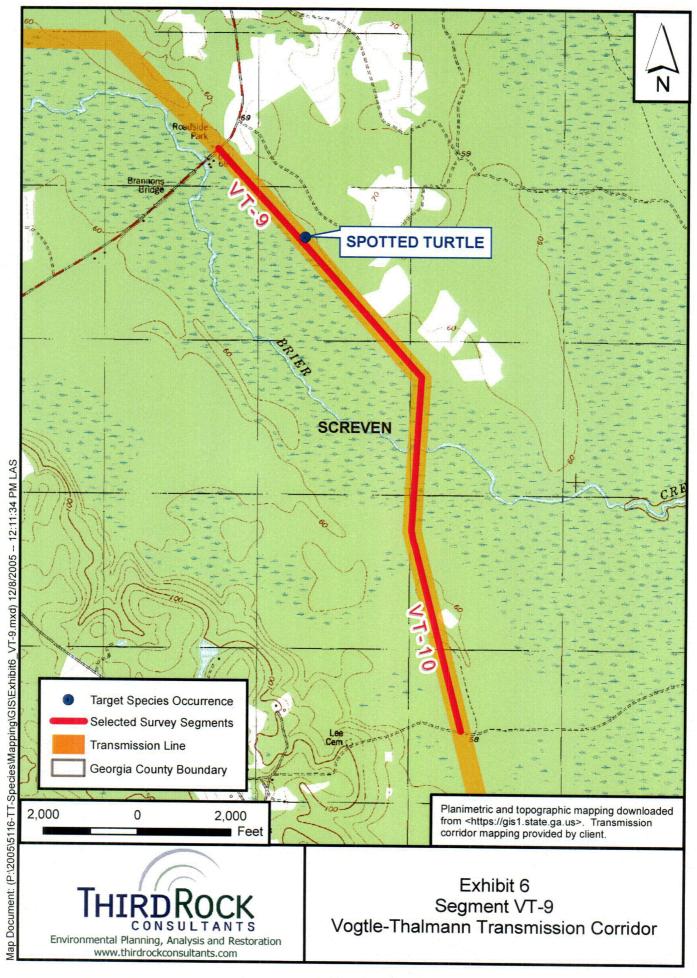
Two state listed plant species were found on the Vogtle-Thalmann line. Pond spice (*Litsea aestivalis*) is a state threatened species that occurs in scattered locations across southeast Georgia. The occurrence of pond spice at VT 41 was already known to the Georgia Natural Heritage Commission and was verified by our observations. It occurs along the edges and is scattered under the line in a permanently inundated area just north of Barrington Road (Exhibit 5, page 29). This small wetland lies between the two sand ridges earlier described as gopher tortoise habitat.



Pond Spice at VT 41



Additional View of Pond Spice at VT 41

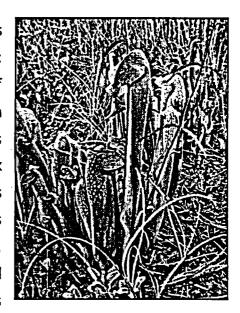




Pond Spice Location at VT-41

E. Hooded Pitcher Plant

The hooded pitcher plant (Sarracenia minor) was found on four segments of the Vogtle-Thalmann line: VT 40, VT 38, VT 27 and a random site north of Segment 33 (Exhibit 7). All four locations fall within the Sea Island Flatwoods Level IV Ecoregion. This species of pitcher plant is the most common of the six pitcher plants found in Georgia and is listed as unusual. It has been recorded in 50 of the states southern counties. This plant occurred in small, scattered colonies beneath the line in low spots and was commonly associated with foxtail clubmoss (Lycopodium alopecuroides).



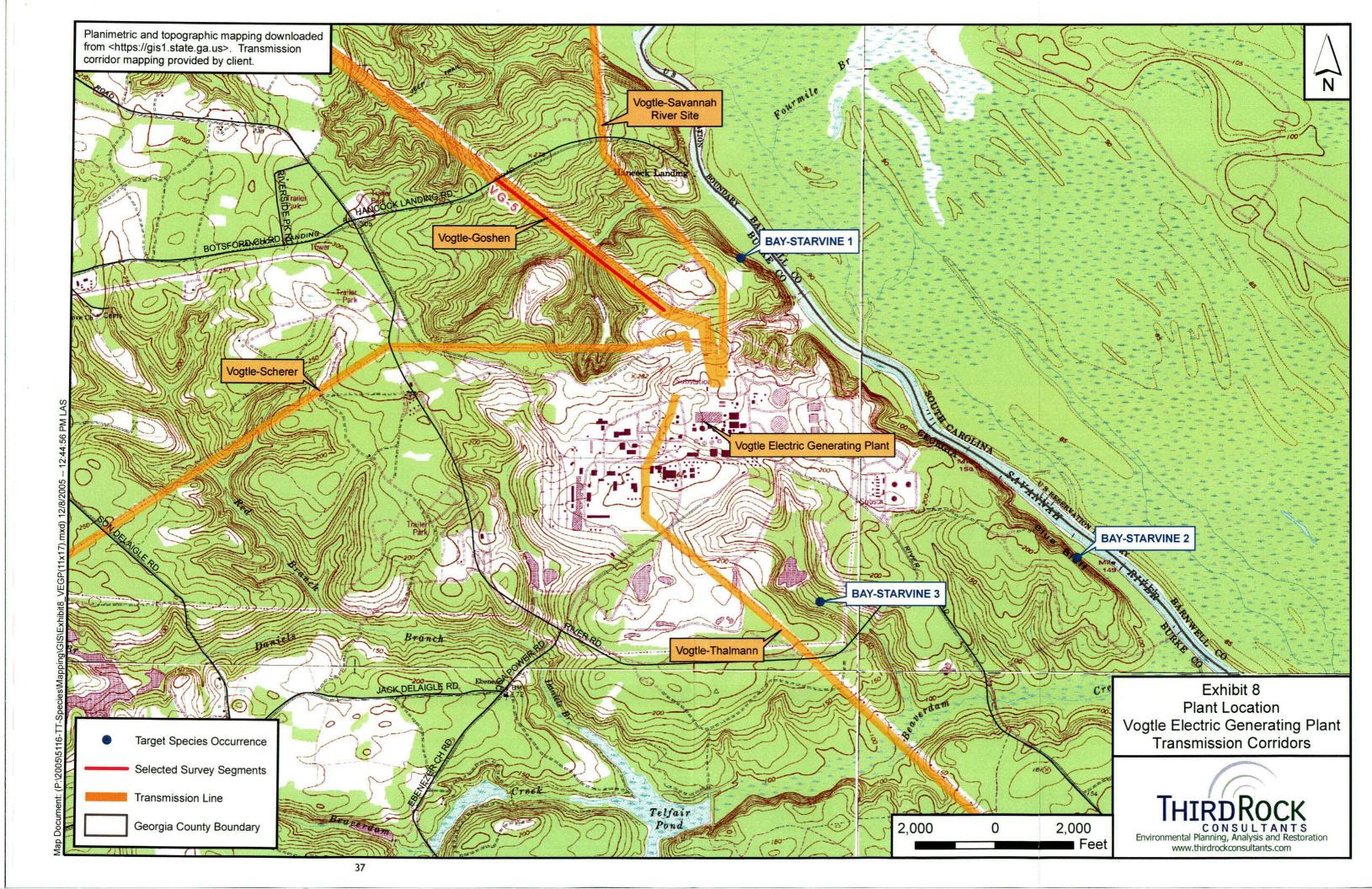
Hooded Pitcher Plant

F. Bay Star-Vine

Bay star-vine (*Schisandra glabra*), listed as state threatened in Georgia, and is the only listed species observed on the Vogtle plant site (Exhibit 8). This woody vine occurred at several locations along the wooded bluff bordering the Savannah River and in a wooded wetland immediately south of the plant.



Bay Star-Vine from Bluff



REFERENCES CITED IN REPORT

- Candler, Jim. 2005. Personal communication (biologist with Georgia Power).
- Ernst, C.H. and R.W. Barbour. 1972. *Turtles of the United States*. The University Press of Kentucky, Lexington. 347 pp.
- Griffith, G.E., Omernik, J.M., Comstock, V.A, Lawrence, and Foster, T. 2001. *Ecoregions of Georgia*: Corvalis, Oregon. U.S. Environmental Protection Agency.
- Landers, J.L, et al. 1981. The Gopher Tortoise: Distribution, Ecology, and Effects of Forest Management. Georgia Department of Natural Resources. 421 pp.
- Spillers, D.M. amd D.W. Speaks. 1986. Status and Distributions of the Gopher Tortoise (Gopherus polyphemus) in Southern Alabama. U.S Fish and Wildlife Service. 24 pp.
- U.S Fish and Wildlife Service. 1996. Revised Recovery Plan for the U.S. Breeding Population of the Wood Stork. Atlanta, Georgia. 41 pp.
- Wood Stork Research at SRS. www.uga.edu/srel/Fact_Sheets/wood_stork.htm

REFERENCES USED TO COMPILE SPECIES LIST AND FIELD NOTE BOOK

- Allen, J. R. and W. J. Candler. Vogtle Electric Generating Plant Bird Study, Burke County, Georgia From December, 1977, Through September 1981 for the operating license Stage Environmental Report Technical Document. Georgia Power Company, Environmental Affairs Center.
- Antonio, Thomas M. and Susanne Masi. 2001. The Sunflower Family in the Upper Midwest: A Photographic Guide to the Asteraceae in Illinois, Indiana, Iowa, Michigan, Minnesota and Wisconsin. The Indiana Academy of Science. Indianapolis.
- Barry, John M. 1980. *Natural Vegetation of South Carolina*. University of South Carolina Press.
- Baskin, J. M., K. M. Snyder, and C. C. Baskin. 1993. Nomenculatural history and taxonomic status of <u>Echinacea angustifolia</u>, <u>E. pallida</u>, and <u>E. tennesseensis</u> (Asteraceae). Sida 15: 597-604.
- Beadle, C. P., and F. E. Boynton. 1901. *Revision of species of <u>Marshallia</u>*. Biltom Bot. Studies 1: 3-10.
- Beadle, David and James Rising. 2002. Sparrows of the United States and Canada. The Photographic Guide. AP Natural World. San Diego, San Francisco, New York, Boston, London, Sydney, Tokyo. Bell, C. R. 1949. A cytotaxonomic study of the Sarraceniaceae of North America. J. Elisha Mitchell Sci. Soc. 65: 137-166.
- _____. 1952. Natural hybrids in the genus <u>Sarracenia</u>. I. History, distribution, and taxonomy. J. Elisha Mitchell Sci. Sco. 68: 55-88.
- ______, and F. W. Case. 1956. *Natural hybrids in the genus <u>Sarracenia</u>*. II. Current notes on distribution. J. Elisha Mitchell Soc. 72: 142-152.
- Binns. S, E., B. R. Baum, and J. T. Amason. 2002. *A taxonomic revision of <u>Echinacea</u>* (Asteraceae: Heliantheae). Syst. Bot. 27: 610-632.
- ----. 1957. A revision of <u>Hexastylis</u> of North American. Brittonia 8: 255-281.
- Boufford, D. E. and E. W. Wood. 1977. An unusual plant community in South Carolina. Castanea 42: 116-119.

- Bridges, E. L., and S.L. Orzell. 1989. <u>Evolvulus sericeus</u> (Convolvulaceae) in Georgia, with floristic and ecological notes. Sida 13: 509-512.
- Brockman, Frank. 1986. Trees of North America. Golden Press. N. Y.
- Brown, Claud L. and Kirkman, L. K. 2000. Trees of Georgia and Adjacent States. Timber Press, Portland Oregon.
- Bryson, C. T., J. R. MacDonald, R. Carter, and S.D. Jones. 1996. Noteworthy <u>Carex</u>, <u>Cyperus</u>, <u>Eleocharis</u>, <u>Kyllinga</u>, and <u>Oxycaryum</u> (Cyperaceae) from Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, Tennessee, and Texas. Sida 17: 501-518.
- Burt, W. H. and R.P. Grossenheider. 1952. *A Field Guide to the Mammals*. Boston: Houghton Mifflin.
- Candler, W. J. 1983. Vogtle Electric Generating Plant Vegetation Map and Description of the Site in Burke County, Georgia, for the Operating License State Environmental Report. Georgia Power Company Environmental Affairs Center.
- Chapman, G.P. and Peat, W. E. 1992. An Introduction of Grasses. C.A.B. International, Oxon, U. K.
- Cheek, M. 1994. The correct names for the subspecies of <u>Sarracenia purpurea</u> L. Carnivorous Plant Newsletter 23: 69-73.
- _____. 2001. Good news: <u>Drosera longifolia</u> L. rejected, <u>Sarracenia purpurea</u> L. conserved with a new type. Carnivorous Plant Newsletter 30: 29-30.
- Clausen, R. T. 1975. <u>Sedum</u> of North American north of the Mexican plateau. Cornell Univ. Press. Ithaca, NY.
- Cobb, Broughton. 1956. A Field Guide to the Ferns. Boston: Houghton Mifflin.
- Coker, William Chambers and Totton, H. R. 1973. *Trees of the Southeastern States*. The University of North Carolina Press, Chapel Hill.
- Conquist, A. 1947. Notes on the Compositae of the Northeaster United States V. Asteraceae. Bull. Torrey Bot. Club 74: 142-150.

- Conquist, A. 1980. Asteraceae, Volume I, Vascular Flora of the Southeastern United States. University of North Carolina Press, Chapel Hill, N.C.
- Curson, Jon, David Quinn and David Beadle. 1994. Warblers of the Americas. An Identification Guide. Houghton Mifflin Company. Boston and Massachusetts.
- Dennis, W. M. 1980. <u>Sarracenia oreophilia (Kearney) Wherry in the Blue Ridge</u> *Province of northeastern Georgia*. Castanea 45: 101-103.
- Drapalik, D.J. 1969. A biosystematic study of the genus <u>Matelea</u> in the southeastern United States. Ph.D. dissertation, University of North Carolina, Chapel Hill. 225 pp.
- Duncan, Wilbur H. and Duncan, M. B. 1988. *Trees of the Southeastern United States*. The University of Georgia Press, Athens and London.
- and Duncan, M. B. 1999. Wildflowers of the Eastern United States. The University of Georgia Press, Athens and London.
- Dunn, Jon and Kimball Garrett. 1997. Warblers. Peterson Field Guides. Houghton Mifflin Company. Boston and New York.
- Easterly, N. W. 1957. A morphological study of <u>Ptilimnium</u>. Brittonia 9: 136-145.
- Epling, C. 1942. The American species of <u>Scutellaria</u>. Univ. Calif. Publ. In Botany 20: 1-146.
- Fenneman, N. M. 1938. *Physiography of the Eastern United States*. New York: McGraw-Hill.
- Ferguson-Lees, James and David A. Christie. 2001. *Raptors of the World*. Houghton Mifflin Company. Boston and New York.
- Flora of North America Editorial Committee. 1993. Flora of North America North of Mexico. Oxford University Press. New York. Oxford.
- Flora of Georgia Coast Plain of Georgia, USA. 2/24/05. http://www.valdosta.edu/~rcarter/FLORA/floraGA
- Gaddy, L. L. 1987. A review of the taxonomy and biogeography of <u>Hexastylis</u> (Aristolochiaceae). Castanea 52: 186-196.

- Gibson, T. C. 1991. Differential escape of insects from carnivorous plant traps. Am. Midl. Nat. 125: 55-62.
- Gleason, Henry A. 1952. The New Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada. 3 volumes. The New York Botanical Garden. New York, New York.
- Georgia Comprehensive Wildlife Conservation Strategy. 3/16/05 http://www.gadnr.org/cwcs/Assets/Documents/ecoregion.html
- Georgia Division of Wildlife Resources. 2/22/05. http://georgiawildlife.dnr.state.ga.us/content/displaycontent.asp?txtDocument=80&txtPage=3
- Georgia Division of Wildlife Resources. 2/22/05. http://georgiawildlife.dnr.state.ga.us/content/displaycontent.asp?txtDocument=80&txtPage=4
- Georgia Division of Wildlife Resources. 2/25/05.

 http://georgiawildlife.dnr.state.ga.us/content/displaycontent.asp?txtDocumen
 t=89&txtPage=2
- Georgia Division of Wildlife Resources. 2/28/05. Protected Plants of Georgia.

 http://www.georgiawildlife.com/content/displaycontent.asp?txtDocument=89
 http://www.georgiawildlife.com/content/displaycontent.asp?txtDocument=89
 http://www.georgiawildlife.com/content/displaycontent.asp?txtDocument=89
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 https://www.georgiawildlife.com/content/displaycontent.asp?txtDocument=89
 <a href="https://www.georgiawildlife.com/content/displaycontent
- Gleason, H. A. 1952. The New Britton and Brown Illustrated Flora of the Northeastern United States and Adjacent Canada. New York Botanical Garden and Hafner Press, New York, NY.
- Godfrey, R. K. 1988. Trees, Shrubs, and Woody Vines of Northern Florida and Adjacent Georgia and Alabama. University of Georgia Press, Athens.
- Godfrey, R. K. and J. W. Wooten. 1979. Aquatic and Wetland Plants of Southeastern United States, Monocotyledons. University of Georgia Press, Georgia.
- _____, and J. W. Wooten. 1981. Aquatic and Wetland plants of southeastern United States, Dicotyledons. University of Georgia Press, Athens, Georgia.
- Godfrey, Michael A. 1977. Winter Birds of the Carolinas and Nearby States. Winston-Salem, NC.: John Blair, Publisher.
- _____. 1997. Field Guide to the Piedmont. The University of North Carolina Press. Chapel Hill and London. 1997.

- Holmgren, Noel H. 1998. Illustrated Companion to Gleason and Cronquest's Manual: Illustrations of the Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden. Bronx, New York.
- MacKenzie, Kenneth Kent. 1940.North American Cariceae. 2 volumes. The New York Botanical Garden. Bronx, New York.
- McCartney, R.B., K. Wurdack, and J.H. Moore. 1989 The genus <u>Lindera</u> in Florida. The Palmetto, Summer 1989: 3-8.
- McDaniel, S. 1971. The genus Sarracenia (Sarraceniaceae). Tall Timbers Research Station Bull. 9: 1-36.
- Mellinger, Marie B. 1984. Atlas of the Vascular Flora of Georgia. Studio Designs Printing. Milledgeville, Ga.
- Midwestern Wetland Flora-Field Office Guide of Plant Species. 1998. USDA-Soil Conservation Service. Midwest National Technical Center. Lincoln, Nebraska.
- Miller, James. 2003. Nonnative Invasive Plants of Southern Forest: A field guide for identification and control. USDA. Forest Service, Southern Research Station, General Technical Report SRS-62.
- Murdy, Willaim H. and Carter, M. E. B. 2000. Guide to the Plants of Granite Outcrops. University of Georgia Press.
- Musselman, L. J, and D.A. Knepper. 1994. Quillworts of Virginia. Amer. Fern J. 84: 48-68.
- Pennell, Francis W. 1935. The Scrophulariaceae of Eastern Temperate North American. The Academy of Natural Sciences of Philadelphia. Philadelphia.
- Peet, Robert K. 1979. A Bibliography of the Vegetation of the Carolinas. Chapel Hill: University of North Carolina, Department of Botany.
- Radford, Albert E., Ahles, H. E., and Bell, C. R. 1968. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press. Chapel Hill. 1968.
- Ruffner, James A. 1978. Climates of the United States. Detroit, Mich.: Gale Research Co.
- Schnell, Donald E. 1976. Carnivorous Plants of the United States and Canada. John F. Blair, Winston-Salem, North Carolina.
- _____. 1977. Infraspecific variation in <u>Sarracenia rubra</u> Walt.: some observation. Castanea 42: 142-170.

| Threatened and Endangered Species Survey Final Report Vogtle Electric Generating Plant and Associated Transmission Corridors |
|---|
| 1979. A critical review of published variants of <u>Sarracenia purpurea</u> L. Castanea 44: 47-59. |
| 1980. Notes on the biology of <u>Sarracenia oreophlia</u> (Kearney) Wherry. Castanea 45: 166-170. |
| 1981. <u>Sarracenia purpurea</u> L. ssp. <u>venosa</u> (Raf.) Wherry: variations in the Carolinas Coastal Plain. Castanea 46: 225-234. |
| 1998. A pitcher key to the genus <u>Sarracenia</u> L. (Sarraceniaceae). Castanea 63: 489-492. |
| 2002. Carnivorous plants of the United States and Canada. 2 nd edition. Timber Press, Portland, OR. 468 pp. |
| Sheiviak, C. J. 1991. Cypripedium parviflorum Salisb. The small-flowered varieties. Amer. Orchid Soc. Bull. 63: 664-669. |
| Sibley, David Allen. 2001. <i>The Sibley Guide to Birds</i> . National Audubon Society. Alfred A. Knopf, New York. |
| 2001. The Sibley Guide to Bird Life and Behavior. National Audubon Society. Alfred A. Knopf, New York. 2001. |
| Small, John Kunkel. 1933. <i>Manual of Southeastern Flora</i> . Published by the Author. New York. |
| 1938. Ferns of the Southeastern States. The Science Press, Lancaster, Pa. |
| Smith, G. L., and W.S. Flory. 2003. <i>Nomenclature of <u>Hymenocallis</u> taxa</i> (Amaryllidaceae) in the southeastern United States. J. Arnold Arb. 56: 375-397. |
| Snyder, L.H., Jr., and J.g. Bruce. 1986. Field guide to the ferns and other pteridophytes of Georgia. Univ. of Georgia Press, Athens, GA. 270 pp. |
| South Carolina Heritage Trust. 1993. Rare, threatened, and endangered species of South Carolina. S.C. Heritage Trust, Columbia, SC. |

Spongberg. S.A. 1974. A review of deciduous-leaved species of <u>Stewartia</u>

(Theaceae). J. Arnold Arb. 55: 182-214.

- Stefanovic, S., L. Krueger, and R. G. Olmstead. 2003. *Classification of Convolvulaceae: a phylogenetic approach*. Systematic Botany 28: 791-806.
- Stein, J., D. Binion, and R. Acciavatti. 2003. Field guide to the native oak species of eastern North American. Forest Health Technology Enterprise Team Publ. 2003-01.
- Steyermark, J. A. 1949. *Lindera melissaefolia*. Rhodora 53: 133-135.
- Stuckey, Irene H. and Gould, L. L. 2000. Coastal Plants from Cape Cod to Cape Canaveral. The University of North Carolina Press. Chapel Hill and London.
- Tucker, G.C. 1984. The genera of Cyperaceae in the southeastern United States. J. Arnold Arb. 68: 361-445.
- USDA. 2/22/05. http://plants.usda.gov/cgi_bin/topics.cgi

ليبا

- Watson, L.E., and J.R. Estes. 1990. *Biosystematic and phentic analysis of Marshallia* (Asteraceae). Systematic Bot. 15: 403-414.
- _____. R., K. Jansen, and J.R. Estes. 1991. Tribal placement of <u>Marshallia</u> (Asteraceae) using chloroplast DNA restriction site mapping. Am. J. Bot. 78: 1028-1035.
- Weakly, Alan S. Flora of the Carolinas, Virginia, and Georgia. University of North Carolina, Chapel Hill. Working draft of March 17, 2004.
- _____., and G. L. Nesom. 2004. A new species of <u>Ptillimnium</u> (Apiaceae from the Atlantic Coast. Sida 21. 743-752.
- Wherry, E. T. 1929. *Acidity relations of the Sarracenias*. J. Washington Acad. Sci. 19: 379-390.
- _____. 1972 Notes on the <u>Sarracenia</u> subspecies. Castanea 37: 146-147.
- Wiltz, J. Wayne. 1982. Vogtle Electric Generating Plant Amphibian and Reptile Survey, Burke County, Georgia, For October, 1980 through August, 1981 Operating License Stage Environmental Report Technical Document. Georgia Power Company, Environmental Affairs Center.
- Wood, C.E., Jr. 1960. The genera of Sarraceniaceae and Droseracae in the southeastern United States. J. Arnold Arb. 41: 152-163.

Wyatt, R. 1983. Reproductive biology of the granite outcrop endemic <u>Sedum</u> pusillum (Crassulaceae). Systematic Bot. 8: 24-28.

APPENDIX A - PROJECT SPECIES SPREADSHEET

Amphibian Species

| Species Name | Common Name | Gap Habitat | Spring | Summer | Fatt | Animal Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Qurangle | Co. Name |
|---------------------------|-----------------------|------------------------------|--------|---|--|--|-------------------------|--------------------------------|---------------------|---------------------------|-----------|
| | | Open Lobiolly-Shortleaf Pine | | | | | | | | Meldrim, GA_NE | Effingham |
| | | Loblolly-Slash Pine | | | | | | | | Meldrim, GA_SW | Chatham |
| | | Longleaf Pine | | | | | | | | Richmond Hill, GA_NE | Chatham |
| | | Cypress-Gum Swamp | | | | | | | : | Richmond Hill, GA_NW | Chatham |
| Ambystoma cingulatum | Flatwoods Salamander | Mixed Pine-Hardwood | Yes | No | No. | Pine woodlands and currees overnee | | | _ | Rincon, GA-SC_SW | Effingham |
| ranbyscome cingulation | racivoses saturiarido | Evergreen Forested Wetland | '- | Yes No No Pine woodlands and cypress swamps | | rine woodants and cypress swamps | ' | | ' | Cox, GA_NW | McIntosh |
| | | | | | | | | | | Limerick NW GA_SW | Liberty |
| | | | | | | | | | | Meldrim SE, GA_SE | Chatham |
| | | | | | | | | | | Springfield South, GA_SE | Effingham |
| | | | | | | | | | | Townsend, GA_SW | McIntosh |
| | | Hardwood Forest | | | | | | | | Jacksonboro Bridge, GA_NW | Screven |
| | | Open loblolly-Shortleaf Pine |] | | | | | | | | |
| | | Lobiolly-Shortleaf Pine | | | | | | | | | |
| Notophthalmus perstriatus | Striped Newt | Open Water | Yes | Yes | Yes | Small ponds, drainage ditches, and other standing or sluggish bodies of water during breeding season. Live in surrounding forests at other times | | | | | |
| | | Cypress-Gum Swamp |] ''' | " | | of the year. | • | | | | |
| | | Freshwater Marsh | | | l | | | | | | |
| | | Shrub Wetland | | | | | | | | | |
| | | Evergreen Forested Wetland | | | | | | | | | |
| | | Longleaf Pine | | | | | | | | Cox, GA_NW | McIntosh |
| | | Sandhill | | | | The principal habitat of the gopher frog is longleaf pine-turkey oak | | | | Meldrim SE, GA_SE | Chatham |
| Rana capito | Gopher Frog | Mixed Pine-Hardwood | Yes | Yes | No | sandhill, but it also inhabits xeric to mesic longleaf pine flatwoods, sand | | | | | |
| , mana capito | oopina riug | Xeric Hardwood |] 'es | , es | '*0 | No pine scrub, and xeric oak hammock. Gopher frogs typically breed in circular or near circular, ephemeral to semipermanent graminoid- | | _ | | | |
| | | Freshwater Marsh | | | dominated wetlands found within these communities. | | | | | | |
| | | Open Water | | | | | | | | | |

Reptile Species

B-BETTERTEREES B-B

| Species Name | Common Name | Gap Habitat | Spring | Summer | Fall | Animal Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Qurangle | Co. Name |
|--------------------------|-------------------------|--------------------------------|----------|----------|----------|---|-------------------------|--------------------------------|---------------------|--------------------------|---------------|
| Macroclemys | Alligator Snapping | Open Water | Yes | Yes | Yes | Lives in large muddy rivers | т | | | | |
| temminckii | Turtle | Cypress-Gum Swamp | , 63 | 163 | 1.63 | Lives in targe indudy rivers | • | | | | |
| | | Freshwater Marsh | | | | | | | | | |
| | | Open Water | | l | | | | | | Brighton, SC-GA SW | Effingham |
| | | Cyperss-Gum Swamp | | | | Shallow wetlands including sedge meadows | | | | Springfield North, GA NE | Effingham |
| Clemmys guttata | Spotted Turtle | Freshwater Marsh | Yes | Yes | Yes | adjoining cattail marshes, marshy pastures, | U | τ | | Springfield North, GA NW | Effingham |
| Cicinany's garrata | Spotted raide | Shrub Wetland | , , , | 163 | '=3 | bogs, small woodland streams. Soft substrate | ١ | ' | | Waynesboro, GA SE | Burke |
| | | Evergreen Forested Wetland | ŀ | | | and some aquatic vegetation. | | • | | Idlewood, GA SW | Burke |
| | | | | | | | | | | Meldrim, GA NW | Chatham |
| | | Utility Swaths | | | | | | | | Cox, GA NW | McIntosh |
| | | Sandhill | l | | | | | | | Townsend, GA SW | McIntosh |
| İ | | | | İ | | Well drained, sandy soils in transitional areas | | | | Cox, Ga SW | McIntosh |
| Gopherus polyphemus | Goper Tortoise | | Yes | Yes | Yes | (ecotones) when two different ecological | T | E | т | Meldrim SE, GA SE | Chatham |
| | | | 1 | 1 | | communities, such as forest and grassland, come together. | | | | Meldrim SE, GA SW | Bryan |
| | | | 1 | i | | come together. | i | • | | Richmond Hill, GA NW | Bryan |
| | | | 1 | l | | | i | | į | Everett, GA SE | Wayne |
| Clemmys muhlenbergii | Bog Turtle | Open Water | Yes | y | , | Sphagnum bogs, swamps, and marshy | | | | Everetty da st | Wayne |
| Clemmys mankembergii | DOG TUTUE | Cypress-Gum Swamp | l res | Yes | Yes | meadows have clear, slow-moving streams with soft bottoms are the preferred habitat. | U | | | | |
| | | Freshwater Marsh | | l | • | wal soft bottoms are the preferred habitat. | | | | | |
| Graptemys barbouri | Barbour's Map Turtle | Open Water | Yes | Yes | Yes | Clear, limestone-bottomed stream with an abundance of snags and fallen trees. | т | | | | |
| Graptemys pulchra | Alabama Map Turtle | Open Water | Yes | Yes | Yes | Deep water with a slow current and a sand or gravel bottom is preferred, and basking sites such as logs or debris are necessary. | R | | | | |
| Graptemys geographica | Common Map Turtle | Open Water Cypress-Gum Swamps | Yes | Yes | Yes | Large bodies of water, such as rivers or lakes. Mill ponds, oxbows, and the overflow ponds of rivers often contain many individuals. Abundant basking sites, much aquatic vegetation, and a soft bottom are required. | R | | | | |
| | | Freshwater Marsh | | | | | | | | | |
| | 1 1 101 100 | Sandhill | | | | | | | | Cox, GA_NW | McIntosh |
| | | Open Water | | ŀ | | | | 1 | 1 | | |
| | | Cypress-Gum Swamp | | l | | Scrub oak woods, pine flatwoods, and | | | | | |
| | | Freshwater Marsh | | l | | forested sandhills and ridges in the northern | | 1 | [| | 1 |
| Drymarchon corais | Eastern Indigo | Shrub Wetland | 1 | . | J., | part of its range. In the southern portions of | l _ | | l _ | | |
| couperi | Snake | Evergreen Forested Wetland | Yes | Yes | Yes | its range, it can be found around wetland | T | 1 | T | | |
| | | Longleaf Pine | 1 | l | | areas such as swamps, streams, and canals. The distribution and habitat preference | | l | 1 | | 1 |
| | | Sandhill | 1 | l | l | closely overlap that of the Gopher Tortoise. | l | l | | | <u> </u> |
| | | Open Loblolly-Shortleaf Pine | 1 | | | , compared to the compared to the contract of | | l | | <u> </u> | |
| | | Loblolly-Shortleaf Pine | 1 | | l | | 1 | 1 | | | |
| 1 | | Loblolly-Slash Pine | 1 | l | | | | 1 | | | |
| | | LODIORY RASH FIRE | <u> </u> | L | <u> </u> | | <u> </u> | I | <u> </u> | L | |

Mammal Species

| Species Name | Common Name | Gap Habitat | Spring | Summer | Fall | General Habitat | Georgia Listed | South Carolina Listed | Federally Listed | Quarter Quadrangle | Co. Name |
|--------------------------|----------------------------|---------------------------------------|--------|--------|------|---|-------------------|--------------------------|--|---------------------|--|
| | | Open Water | | | Г | | | | | Dorchester, GA NW | Liberty |
| | | Utility Swaths | | | | | | | | Dorchester, GA SW | Liberty |
| | | Forested Urban-Deciduous | | | ĺ | | | | | | |
| | | Forested Urban Mixed | | | | | | | | | |
| | | Hardwood Forest | | | | Summer frequently encountered in building where females from nursery colonies. | | | | | |
| Corynorhinus rafinesquii | Rafinesque's Big-eared Bat | Live Oak | Yes | Yes | Yes | Males are generally solitary during the nursing season and can be found in buildings | Rare | E | None | | |
| | | Bottomiand Hardwood | } | | | crevices behind loose bard, and in hollow trees. | | | | | |
| | | Mixed Pine-Hard | 1 | | 1 | | | | | | |
| | | Xeric Hardwood | 1 | | l | | | | | | |
| | | Cypress-Gum | İ | | l | | | | 1 | | |
| | | Evergreen Forested Wetland | 1 | | l | | | | | | |
| | | Hardwood Forest | | | | | | | | | |
| | | Xeric Hardwood | | | | Florida panthers reside in upper dry lands such as hardwood hammock, pine flatwoods, saw | | | | | |
| | | Mixed Pine-Hardwood |] | | l | palmetto and cabbage palm thickets, and in wetland areas including cypress forests, mangrove forests, and freshwater marshes. They often den and sleep in the drier scrub and saw palmetto | | | | | |
| | | Lobiolly-Shortleaf | | | | environments. In search of food and safer resting locations, panthers are known to wade and swim through canals and swamps. Preferring secluded habitats away from human activity, | | | | | |
| | | Loblolly-Slash Pine | | | | panthers rarely visit agricultural lands. They require large remote tracts of land with plenty of prey and cover along with low levels of human disturbance. | | | | | |
| Felis concolor coryi | Florida Panther | Longleaf Pine | Yes | Yes | Yes | Home ranges of panthers in southwest Florida average 200 square miles for resident males and 75 square miles for resident females. These territories are maintained by each enimal as | E | | Ε | | |
| | | Cypress-Gum Swamp | 1 | | | hunting grounds. Males will not tolerate other males, and will fight, sometimes inflicting deadly wounds on the other. However, these territories tend to overlap with potential mates. They | | | | | |
| | | Bottomland Hardwood | İ | | | mark territories by leaving scat and urine on piles of dirt and leaves. Social structure consists of mature resident animals who have territorial ranges, along with the transient and subdominant | | | | | T |
| | | Freshwater Marsh | | | | individuals who live on the peripheries. These partitiers have suboptimal hunting grounds and an increased chance of human encounters. | | 1 | | | |
| | | Evergreen Forested Wetland | | | | • | | | | | <u> </u> |
| | | Hardwood Forest | | - | ├ | | | | | | ₩ |
| | | Xeric Hardwood | 1 | i | | | | | | | |
| | | Mixed Pine-Handwood | 1 | | ı | Diversity of habitats used by panthers is greater in northern parts of the study area | ĺ | | | | |
| | | Lobiolly-Shortleaf | 1 | | | and dominated by uplands (hardwood hammocks, low pinelands, and palm forests). | | | | | |
| | | Loblolly-Slash Pine | 1 | | | Lower diversity and predominately wetland habitat use are characteristic of | | | | | ₩ |
| Felis concolor couguar | Eastern Cougar | Longleaf Pine | Yes | Yes | Yes | southern areas (mixed swamp and cypress swamp). Appropriate cover is an | E | | E | | |
| | | Cypress-Gum Swamp | 1 | | | important component of habitats used, especially during hunting, denning, and day- | | l | | | ┼ |
| | | Bottomland Hardwood | 1 | | l | bedding. Saw palmetto was the dominant cover in 72 percent of observed day bedding sites. | | l | | | |
| | | Freshwater Marsh | ł | | 1 | become steel | | l . | | | 1 |
| | | Evergreen Forested Wetland | ł | | ł | | | l | | | |
| | | Open Water | _ | | ┼─ | | - | | | | + |
| | | Utility Swaths | 1 | l | 1 | | | I | | | |
| | | Forested Urban-Deciduous | ł | l | 1 | Gray bat colonies are restricted entirely to caves or cave-like habitats. During | | 1 | 1 | | + |
| | | Forested Urban-Mixed | t | l | 1 | summer the bats are highly selective for caves providing specific temperature and | | l | | | + |
| Myotis grisescens | Gray Myotis | Hardwood Forest | Yes | Yes | ١, | roost conditions. Usually these caves are all located within a kilometer of a river or reservoir. In winter they utilize only deep, vertical caves having a temperature of 6- | E | 1 | E | | |
| myotis griatatis | Gray myotis | Live Oak | 1 '** | '63 | 1 | 11 degrees Centigrade. Consequently, only a small proportion of the caves in any | • | | • | | |
| | ł | Bottomland Hardwood | 1 | l | l | area are or can be used regularly. There are nine known caves that are believed to | | 1 | | | |
| | | Mixed Pine-Hard | ł | l | ł | house roughly 95 percent of the hibernating population. | | 1 | | | + |
| | | Xeric Hardwood | 1 | l | 1 | | | ! | | | |
| Marathan allow | | Open Water | | | | Shallow water marshes that have sandy bottoms and dense aquatic vegetation. The | | | | | |
| Neofiber alleni | Round-tailed Muskrat | | Yes | Yes | Yes | lodge is frequently buildt at the base of a cypress tree or clumps of brush. | E | 1 | None | | |
| | | Cypress-Gum Swamp Freshwater Marsh | 1 | | | , | | | | | - |
| Trichechus manatus | Manatee | Open Water | Yes | No | Yes | Rivers and near mouth of large streams (can been seen near warm water outlets of power plants) | E | | E | Richmond Hill, GaNE | Chatham |

Bird Species

MEET FEEEEEEEEEEEEEEEEEE

| Species Name | Common Name | Gap Habitat | Spring | Summer | Fall | Animal Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quandragie | Co. Name |
|--|-------------------------|------------------------------|--|----------|------|--|-------------------------|--------------------------------|---------------------|--------------------------|--------------|
| | | Open Water | | | | | _ | | _ | | |
| Mycteria americana | Wood Stork | Cypress-Gum Swamp | Yes | Yes | Yes | Mangroves, swamps, marshes, and streams | E | | E | | |
| | | Freshwater Marsh | | | | | | | | | |
| | | Open Water | | | | | | | | Hardeeville NW, SC-GA_SW | Effingham |
| | | Cypress-Gum Swamp | | | | | | | | Rincon, GA-SC_NW | Effingham |
| | | Freshwater Marsh | | ! | | | | | | Cox, GA_SW | Gylnn |
| | | Bottomland Hardwood | | | | | | | | Cox, GA_SW | McIntosh |
| ł | | Evergreen Forested Wetland | | | | | | | | Cox, GA_SW | Wayne |
| | | | | | | | | | | Everett, GA_SE | Gylnn |
| Elanoides forficatus | Swallow-tailed Kite | | Yes | Yes | No | Swamps and forested wetlands | R | Ε | | Everett, GA_SE | McIntosh |
| , | | | | , | " | Transpound to cold the state as | | _ | | Everett, GA_SE | Wayne |
| | | | | | | | | | | Townsend, GA_SW | Long |
| | | | | | | | | | ì | Townsend, GA_SW | McIntosh |
| | | | | | | | | | | Townsend, GA_SW | Wayne |
| | | | | | | | | | | Cox, GA_NW | Gylnn |
| | | | | | | | | | | Cox, GA_NW | McIntosh |
| | | | | | | | | | | Cox, GA_NW | Wayne |
| | | Open Loblolly-Shortleaf Pine | | | | | | | | Limerick NW, GA_SW | Liberty |
| | | Loblolly-Shortleaf Pine | | | | | | | | Meldrim SE, GA_SW | Bryan |
| Aimophila aestivalis | Bachman's Sparrow | Loblolly-Slash Pine | Yes | Yes | No | Diameter de de la lactica de la compansión de la compansi | R | | | Townsend, GA_SW | McIntosh |
| Alliopinia destivatis | bacillian's spanow | Longleaf Pine | ies | l res | NO | Pine woodlands, dry wooded areas | K | | | Cox, GA_NW | McIntosh |
| | | Mixed Pine-Hardwood | | | | | | | | | |
| 1 | | Xeric Hardwood | | | | | | | | | |
| | | Open Water | | | | | | | | Richmond Hill, GA_NE | Chatham |
| Haliaeetus leucocephalus | Bald Eagle | Bottomland Hardwood | Yes | Yes | No | Larger bodies of open water | E | т | Т | Rockville, GA_NE | Hancock |
| | | | | | | | | | | East Juliette, GA_SE | Monroe |
| | | Open Water | | | | | | | | <u> </u> | |
| | | Pasture, Hay | | | | | | | | | |
| Falco peregrinus | Peregrine Falcon | Cypress-Gum Swamp | No | No | Yes | Open areas like marshes, fields, swamps, and tidal areas | Ε | | E | | |
| | | Freshwater Marsh | 1 | | | | | | | | |
| | | Shrub Wetland | | | | | | | | 1 1 1 1 1 | |
| Charadrius melodus | Piping Plover | Open Water | Yes | Yes | Yes | Coastal beaches with sand, gravel, or pebbles | T | | Т | | |
| Haematopus palliatus | American Oystercatcher | Open Water | Yes | Yes | Yes | Coastal beaches, among the rocks or dune, and occansionally in salt marshes | R | | | | |
| Sterna antillarum | Least Tem | Open Water | Yes | Yes | Yes | Sandy or gravel beaches along the coast, rivers, or lakes | R | | E | | |
| | | Open Loblolly-Shortleaf Pine | | | | Old pine forests with open understory maintained by frequent, | Ì | i | | Limerick NW, GA_SW | Liberty |
| No. of the last of | | Loblolly-Shortleaf Pine | l | l | l | natural lightening fires. Home range of each family group | _ | _ | | Meldrim SE, GA-SC_SW | Byran |
| Picoides borealis | Red-cockaded Woodpecker | Loblolly-Slash Pine | Yes | Yes | Yes | includes a cluster of cavity trees. Cavity trees of this species | E | E | E | Rincon, GA-SC_NW | Effingham |
| | | Longleaf Pine | 1 | İ | l | always have a cavity entrance in which the edges of the hole are thickly coated with pine sap or resin, | 1 | | | Downs, GA_SE | Washington |
| | | Cypress-Gum Swamp | | | l | and y course man print sup of results | | | 1 | | |
| | | Bottomland Hardwood | l | | | | | | | | |
| Campephilus principalis | Ivory-billed Woodpecker | Evergreen Forested Wetland | Yes | Yes | Yes | Mature old-growth forest and cypress swamps | Ε | | E | | - |
| | , | Mixed Pine-Harwood | | 1 | | | · - | | 1 | | - |
| | | Hardwood Forest | l | | | | | | | | |
| | | 1 | Ь— | <u> </u> | | | | | L | <u> </u> | |

Bird Species

| Species Name | Common Name | Gap Habitat | Sprtng | Summer | Fall | Animal Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quandragle | Co. Name |
|----------------------|-------------------|----------------------------|----------|--------|------|---|-------------------------|--------------------------------|-------------------------|--------------------|----------|
| | | Hardwood Forest | | | | | | | | | |
| | | Loblolly-Shortleaf Pine | | | | | | | | | |
| | | Loblolly-Slash Pine | | | | | | | | | |
| | | Longleaf Pine | | | | Daniel Laborator Barrella Laborator Laborator | | | | | |
| Thryomanes bewickli | Bewick's Wren | Bottomland Hardwood | Yes | Yes | No | Dense, brushy habitats Breeding habitat includes many wooded areas. | R | | | | |
| | | Shrub Wetland | | | | Wooded areas. | | | | | |
| | | Evergreen Forested Wetland | | | | | | | | | |
| | | Mixed Pine-Hardwood | | | | | | | | | |
| | | Xeric Hardwood | | | | | | | | | |
| Vermivora backmanii | Bachman's Warbler | Bottomland Hardwood | Yes | Yes | No | Bottomland forest, usually those assoicated with water. Birds use canebrakes and other areas with dense understorieswet forested | | | E - Possibly Extinct | | |
| | | Evergreen Forested Wetland | 1 | | | areas. | | l | | | |
| | | Bottomland Hardwood | | | | B. d. C. L. | | | | | |
| Dendroica kirtlandii | Kirtland's Wabler | Hardwood Fores | No | No | Yes | Breeds is areas of young Jack Pine. Winters in areas with dense understories and scrub thickets. | Ε | | E | | |
| | | Mixed Pine-Hardwood | 1 | | | underscories and serial unickets. | | | | | |
| | | Hardwood Forest | | | | Variety of habitats in upper elevations such as woodlands, fields, | | | | | |
| Corvus corax | Common Raven | Pasture, Hay | Yes | Yes | Yes | and field edges. Breeding habitatis wooded mountainous regions | R | | | | |
| | | Utility Swaths | <u>L</u> | | | with rocky cliffs and ledges. | | | | | |
| Sterna nilotica | Gull-billed Tern | Open Water | Yes | Yes | No | Sand, gravel, or shell beaches, or some grassy areas of coastal islands. | т | | | | |
| Charadrius wilsonia | Wilson's Plower | Open Water | Yes | Yes | No | A variety of coastal areas such as sandy beaches, tial flats, and small water sources. | R | | | | |

| Species name | Common Name | Gap Habitat | Spring | Summer | Falt | Plant Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quadrangle | Co. Name | | | | | | | |
|---|-----------------------|------------------------------|--------------|--------------|--|---|--|--------------------------------|----------------------|--|--|------|------|------|------|------|--|--|
| Amphianthus pusillus | | Quarries, Strip Mines | | | _ | Restricted to shallow, flat-bottomed depressions on granitic | | | | Rockville, GA_NE | Putnam | | | | | | | |
| , | Pool Sprite | | Yes | No | No | outcroping, where water collects after a rain | Т | | ιτ | Warthen, NW, NW_NW | Hancock | | | | | | | |
| | | Quarries, strip mines | | | | | | | | | | | | | | | | |
| A | Manual Continuous and | Forested Urban-Deciduous | | V | \ _V | Outcroppings of mart, damp limestone, and on masonry | т | | C | | | | | | | | | |
| Asplenium heteroresiliens | Marl Spleenwort | Forested Urban-Evergreen | Yes | Yes | Yes | composed of tabby | ' | None | Candidate | | | | | | | | | |
| | | Forested Urban-Mixed | 1 | | | | | | | | | | | | | | | |
| | | Longleaf Pine | | | | | | | | | | | | | | | | |
| | | Cypress-Gum Swamp | 1 | | | | | | | | | | | | | | | |
| | | Bottomland Hardwood | | İ | | | | | | | | | | | | | | |
| Baldunina atropurpurea | Purple Honeycomb | Shrub Wetland | No | Yes | Yes | Found in wetter areas of peaty pitcherplant bogs and pine savannas | Rare | None | Candidate | | | | | | | | | |
| | | Open Lobiolly Shortleaf Pine | | | | <u>-</u> | | | | | | | | | | | | |
| | | Loblolly-Shortleaf Pine | | | | | | | | | | | | | | | | |
| | | Lobiolly-Slash Pine | | | ļ | | | | | | | | | | | | | |
| | | Open Lobiolly-Shortleaf Pine | | | | | | | | | | | | | | | | |
| | | Loblolly-Shortleaf Pine | | | | | | | | | | | | | | | | |
| Baptisia arachnifera | Hairy Rattleweed | Lobiolly-Slash Pine | No | Yes | Yes | Sandy soils in open, pine flatwoods, persisting on intensively manage slash pine plantations, and along road and powerline | E | None | E | | | | | | | | | |
| baptisia aracimijara | nany ractieweed | Longleaf Pine |] " | '63 | 163 | rights-of ways where competitors are kept under control | _ | l work | ' | | | | | | | | | |
| | | Transportation | | | | | | | | | | | | | | | | |
| | | Utility Swaths | | | | | | | | | | | | | | | | |
| | | Live Oak | | | | | | | | | | | | | | | | |
| Bumelia thornei | Swamp Buckthorn | Cypress-Gum Swamp | No | Yes | Yes | Oak flatwoods where the soil is normally saturated for long periods folloing flods and periods of heavy rains | E | None | Candidate | | | | | | | | | |
| | | Bottomland Hardwood | | | | | | | | | | | | | | | | |
| | | Xeric Hardwoods | | | 1 | Sound to send describe the Observe Discrete tendent of the | | | | | | | | | | | | |
| Calaminthat ashei | Ashe's Savory | Sandhill | Yes | Yes | Yes | Found in sand dunes along the Ohoopee River in tongleaf pine shrub oak forests | т | None | | | | | | | | | | |
| | | Longleaf Pine | <u> </u> | | | | | | | | | | | | | | | |
| · | | Longleaf Pine |] | | İ | | | | | - Control of the Cont | | | | | | | | |
| Carex dasycarpa | Velvet Sedge | Cypress-Gum Swamp | Yes | Yes | No | Sandy, acit woods of floodplain hummocks and streambanks, | earnbanks, Rare None | reambanks, Rare None | earnbanks, Rare None | None | None No | None | None | None | None | None | | |
| | | Bottomland woodland |] ' | i | " | in mature longleaf pine forests | | None | None | | | | | | | | | |
| | | Freswater Marsh | ļ | | L | | | | | | | | | | | | | |
| Ceratiola ericoides | Rosemary | Xeric Hardwoods | Yes | Yes | Yes | Driest, openly vegetated, scrub oak sandhills and river dunes | Т Т | None | None | | 1 | | | | | | | |
| ericiola ericolaer | Nosemaly | Sandhill | 1 | ' | " | with deep white sands of Kershaw soil series | ' | 1.0.1.2 | 1 | | | | | | | | | |
| | | Cypress-Gum Swamp | | | | | | | | | | | | | | | | |
| Chamaecyparis thyoides | Atlantic white-cedar | Bottomland Hardwoods | Yes | Yes | Yes | Wet, sandy terraces along clear streams and in acidic bogs; | Rare | None | None | | | | | | | | | |
| Chanaecyparis alyoides | Attantic white-cedar | Shrub Wetland |] '6 | 16 | '5 | often with seet pitcherplant | Kare | None | None | | | | | | | | | |
| | | Evergreen Forested Wetland | | | l | | | | | | | | | | | | | |
| Cuscuta har peri | Haman Badder | Quarries, Strip Mines | No | Yes | Yes | Granitic and sandstone (Altamaha Grit) outcrops; common host include rayless goldendrod (Bigelowia nuttalili, once know as Chondrophora virgata), blazing star (Litaris | т | None | Candidate | | | | | | | | | |
| Cuscula ini peri | Harper Dodder | Xeric Hardwood | - " | ''' | "" | microcephala, and pineweed or orange-grass (Hypericum | ' | """ | Carolicate | | | | | | | | | |
| | | Sandhill | 1 | | | gentianoides). | | 1 | | | + | | | | | | | |
| | | Hardwood Forest | | | | | | | | | + | | | | | | | |
| | | Xeric Hardwoods | 1 | | | | | 1 | | | + | | | | | | | |
| | | Live Oak | 1 | 1 | | | 1 | | | | | | | | | | | |
| | 1 | Open Lobiolly-Shortleaf Pine | 1 | 1 | 1 | | 1 | 1 | Ì | <u> </u> | + | | | | | | | |
| Cypripedium acaule | Moccasin Flower | Loblolly-Shortleaf Pine | Yes | Yes | No | Acid soils of pinelands, upland hardwoods with pine, occasionally on the edges of rhododenron thickets, and in | Unusual | None | None | l | + | | | | | | | |
| | | Loblotty-Stash Pine | 1 | | | mountain bog | | | | | | | | | | | | |
| | | Mixed Pine-Hardwood | 1 | | | | | | | | † | | | | | | | |
| | | Longleaf Pine | 1 | | | | | | | | + | | | | | | | |
| | | Bottomland Hardwood | 1 | | 1 | 1 | 1 | | | | +- | | | | | | | |
| | | BOCCOTTAGE 180 0.1300 | | | | | L | | | L | | | | | | | | |

| Species name | Common Name | Gap Habitat | Spring | Summer | Fall | Plant Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quadrangle | Co. Name |
|---|------------------------|------------------------------|----------------|----------|----------|--|-------------------------|--------------------------------|---------------------|--|--------------------|
| | | Hardwood Forest | | | | | | | | | |
| Cypripedium calceolus | Yellow Ladslipper | Mixed Pine-Hardwoods | Yes | Yes | No | Rich, moist, hardwood coves and forests | Unusual | None | None | | |
| | | Bottomland Hardwood | | | L | | | | | | |
| Draba aprica | Sun-loving Draba | Xeric Hardwoods | Yes | Yes | No | Shallow soils on granitic outcrops, especially beneath widely scattered, old-growth eastern redcedar (Juniperus virginiana). | E | None | None | | |
| | | Utility Swaths | | | | Found in meadow and open woodlands on basic or near | | | | | |
| Echinacea laevigata | Smooth Coneflower | Mixed Pine-Hardwood | Yes | Yes | No | neutral soils; often with redcedar (Junuipers virginiana) and | E | E | E | | ļ |
| 20,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | Clearcut-Sparse Vegetation | | ' | ``` | rattlesnake materster of button snakeroot <i>€ryngium</i> yuccifolium). | - | _ | - | | |
| | | Open Lobiolly-Shortleaf Pine | ļ <u></u> | | | yacajonan j. | | ļ | | | <u> </u> |
| Elllottia racemasa | Georgia Plum | Xeric Hardwood | No | Yes | Yes | Sand ridges, dry oak ridges, evergreeen hammocks, and sandstone outcrops (Altamaha Grit) in a variety of sandy soil | Ť | None | `None | Alexander, GA_NE | Burke |
| | g | Sandhill | ļ ["] | | 1 | conditions ranging from moist to extremely dry (xeric). | | | | idlewood, GA_NE | Burke |
| | | Evergreen Forested Wetland | | | | | | | | | |
| ŀ | | Hardwood Forest | | | | | | | | Cox, GA_NW | McIntosh |
| | | Xeric Hardwood | | | | Moist to seasonally dry woods on shaded limbs of hardwoods, especially southern magnolia and live oak, and the walls of | | | | Cox, GA_SW | Glynn |
| Epidendrum conopseum | Greenfly Orchid | Ltve Oak | Yes | Yes | Yes | deep sandstone crevices kept cool by shade and evaporation | Unusual | None | None | Everett, GA_SW | Glynn |
| | | Mixed Pine-Hardwood | | | | of moisture. | | | | Everett, GA_SE | Wayne |
| | | Bottomland Hardwood | ļ | | _ | | | | ļ | Limerick NW, GA_SW | Liberty |
| Evolvulus sericeus | Silky Morning | | No | Yes | Yes | Sparsely vegetated, partially shaded outcrops of the Altarmaha Formation (Altamaha Brit), a coarse, gritty, resitient, sandstone-like hardened clay. | E | None | None | | |
| | | Cypress-Gurn Swamp | | | Γ | | | Ĺ | | | |
| Forthergillia gardenii | Dwarf Witch-alder | Bottomland Hardwood | Yes | Yes | Yes | Low, flat, swampy areas, especially the shrub-dominated Margins of upland swamps, Carolina bas, pticherplant bogs, | т | None | None | | |
| roi dier gillia garaellii | Dwall Willington | Shrub Wetland |] " | 165 | '= | wet savannas, and Atlantic white-cedar | • | none | Hone | | |
| | | Evergreeen Forested Wetland | 1 | | | | | | | | |
| | | Longleaf Pine |] | | | | | | | | |
| Hartwrightia floridana | Harwrightia | Cypress-Gum Swamp | No. | No | Yes | Peaty muck of pine flatwoods, sedge meadows, and wettest parts of poorly drained ditches and sloughs; often with water- | T | None | Candidate | | |
| The string has propriet | That Wrighten | Shrub Wetland |] ~~ | '~ | " | spider orchid (Habenaria repens). | i i | [" | | | |
| | | Evergreen Forested Wetland | | | <u> </u> | | | | | | |
| | | Cypress-Gum Swamp | | | | Peaty soils at edges of forested bogs on the Piedmont, and on | İ | 1 | | | |
| Hexastylis shuttleworthii var. harperi | Harper Wild Ginger | Bottomiand Hardwood | Yes | Yes | Yes | moist hammocks and bases of bluff forest slopes along and | Unusual | None | None | | 1 |
| _ | | Evergreen Forested Wetland | | 1 | | within floodplain forest of the Coastal Plain | | <u></u> | | | |
| Hymenocallis coronaria | Shoals Spidertily | Open Water | Yes | Yes | No | Major streams and rivers in rocky shoals and in cracks of exposed bedrock. Plants can be completely submerged during flooding, the bulbs anchored among the rocks. | Ε | None | Candidate | | |
| Isoetes melanospora | Black-spored Quillwort | Quarries, Strip Mines | Yes | Yes | No | Restricted to shallow, flat-bottomed depressions on granitic outcrops, where water collects after a rain. | E | None | E | | |
| isoetes tegetiformanus | Mat-forming Quillwort | Quarries, Strip Mines | Yes | Yes | Yes | Restricted to shallow, flat-bottomed depressions on grantic | Ε | None | Ε | Rockville, GA_NE | Putman |
| | | | | ļ | <u> </u> | outcrops, where water collects after a rain. | | | ļ | Warthen, NW, NW_NW | Hancock |
| [| | Sandhill | 4 | | | | | | | Brington, SC-GA_SW | Effingham |
| | | Cypress_Gum Hardwood | 4 | | | | | | | Brington, SC-GA_SW | Screven |
| 1 | | Bottomland Hardwood | 4 | | 1 | | ļ | 1 | | Hardeeville NW, SC-GA_SW | Effingham |
| 0-4 | | Shrub Wetland | ┨ | , | | Shallow depression ponds of sandhills, along margins of | _ | N | _ | Kildare, GA-SC_NE | Effingham |
| Lindera melissifolia | Pondberry | Evergreen Forest Wetland | Yes | Yes | Yes | cypress ponds, and in seasonally wet, low areas among bottomland hardwoods | £ | None | E | Kildare, GA-SC_NE | Screven |
| | | | - | | | | | 1 | | Kildare, GA-SC_SE | Effingham |
| | | | - | | | | | 1 | | Kildare, GA-SC_SE | Screven Chatham |
| | | | 4 | | 1 | | | 1 | | Meldrim SE, GA_SE Richmond Hill, GA_NE | Chatham |
| | L | l | ٠ | <u> </u> | | L. | L | <u> </u> | Ь | KICHMONG HILL, GA_NE | Linatham |

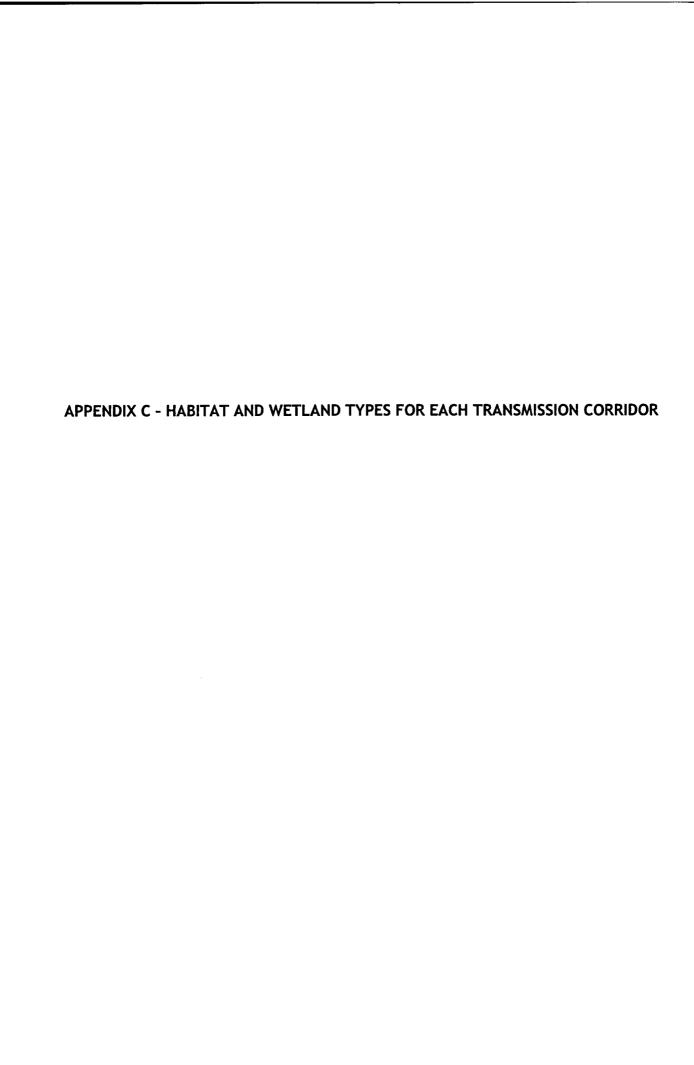
| | | | | | | | | | | I | T |
|---|--|------------------------------|--|--|----------|--|--|--|--|--------------------------|--|
| Species name | Common Name | Gap Habitat | Spring | Summer | Fall | Plant Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quadrangle | Co. Name |
| · · · · · · · · · · · · · · · · · · · | | | ., | | | | | 7444 | 2.5.00 | <u> </u> | |
| | | Bottomland Hardwood | 4 | | | | | | | Brington, SC-GA_SW | Effingham |
| | | Sandhill | 4 | | | | | | | Brington, SC-GA_SW | Screven |
| | | Cypress-Gum Swamp | 1 | | | | | | | Cox, GA_NW | McIntosh |
| | | Shrub Wetland | j | | | | | | | Hardeeville NW, SC-GA_NW | Effingham |
| Litsea aestivalis | Pond Spice | Evergreen Forested Wetland | Yes | Yes | Yes | Margins of swamps, cypress ponds, sandhill depression ponds, | т | None | Candidate | Kildare, GA-SC_NE | Effingham |
| | | | | | '' | and in hardwood swamps | • | None | Carcidate | Kildare, GA-SC_NE | Screven |
| | | |] | | | | | ļ | | Kfldare, GA-SC_SE | Effingham |
| | | | 1 | l | | | | | | Kildare, GA-SC_SE | Screven |
| | | | 1 | | | | | | l | Richmond Hill, GA_NW | Byran |
| | | | i | | | | | | | | 1 |
| | | Hardwood Fores | | | | Open mixed oak-longleaf pine forests in thin soils on and near | | | | | |
| | | Open Loblotly-Shortleaf Pine | 1 | | i | rock outcrops, particularly on the Altamaha Formation found | | | | | 1 |
| Marshallia ramosa | Pineland Barbara Buttons | Mixed Pine-Hardwood | Yes | Yes | Yes | on the Inner Coastal Plainon serpentine-line rock outcrops, | R | None | Candidate | | |
| | | Longleaf Pine | 1 | | | which are rich in magnesium | | | | | |
| | | Hardwood Forest | | | · · | Harry area or days and bloffs and in any or days and | | | | | † |
| Matelea alabamensis | Alabama Spiny-pod | Xeroc Hardwood | Yes | Yes | No | Upper area os slopes and bluffs and in open or dense oak- hickory-mixed hardwood forests in sandy, acidic to near | Т Т | None | Candidate | | + |
| | ''' | Mixed Pine-Hardwood | 1 | | "" | neutral soils | · | | | | + |
| | 1 | Xeric Hardwood | | | | | | | | Cox, GA NW | McIntosh |
| | · | Mixed Pine-Hardwood | 1 | | | A d. | | | l | Townsend, GA_SW | McIntosh |
| Matelea pubiflora | Trailing Milkvine | Sandhill | Yes | Yes | Yes | Open deep while sands of sand ridges in association with turkey oak and longleaf pine | R | None | None | Townseru, GA_3W | MCIIILUSII |
| | 1 | Longleaf Pine | 1 | | | | | ļ | | | |
| | | Xeric Hardwood | | | <u> </u> | | | | | | |
| Nestronia umbeliula | Indian Olive | | Yes | Yes | Yes | Dry, open, upland forest of mixed hardwood and pine | т | None | None | Alexander, GA_NE | Burke |
| *************************************** | | Mixed Pine-Hardwood | <u> </u> | <u> </u> | | | | | | | |
| | | Cypress-Gum Swamp | 1 | | | | | | 1 | | |
| Oxypolis canbyi | Canby Dropwort | Bottonland Hardwood | No | Yes | Yes | Peaty muck of shallow cypress ponds, wet pine savannas, and | E | None | E | | |
| | ' ' | Shrub Wetland | | | | adjacent sloughs and drainage ditches | - | 1 | - | | |
| | | Evergreen Forested Wetland | 1 | | | | | | | | |
| Pensternon dissectus | Cutleaf Beardtongue | Xeric Hardwood | Yes | Yes | No | Dry, open, mixed oak-longleaf pine forests or on thin soils | Rare | None | None | Louisville South, GA_SW | Jefferson |
| 7 413441707 613344183 | Cutical Desiratorigue | Open Lobiolly-Shortleaf Pine | 163 | 163 | " | near rock outcrops of the Altamaha Formation | Rare | None | None | | |
| | | Cypress-Gum Swamp | T | | | Wet muck or peat in shallow water of river swamp openings, | 1 | | | Richmond Hill, GA_NE | Bryan |
| Physostegia leptophylla | Narrowleaf Obedient | Bottomiand Hardwood | Yes | Yes | No | and in the margins of both freshwater and brackish (tidal) | T | None | None | | 1 |
| | | Fresh Water Marsh | 1 | | | marshes | | | ŀ | | |
| Ptilimnium nodosum | Harperella | Longleaf Pine | Yes | Yes | No | Coastal Plain in wet savannas and on peaty fringes of pineland pools and cypress ponds; also on the Piedmont Plateau in | E | E | E | | |
| | | Cypress-Gum Swamp | 1 | | | seeps on a granitic outcrop | | | | | |
| Quercus oglethorpensis | Oglethorpe Oak | Cypress-Gum Swamp | No | Yes | Yes | Mostly in poorty drained, heavy clay soils of seasonal wet Piedmont seepage swamps often with cherrybark oak (Quercus pagoda)sometimes found in surrounding uplands | т | None | None | | |
| | | Shrub Wetland | 1 | | | and on stream terraces, especially with chalk maple (Acer | I | | | | 1 |
| | | Evergreen Forested Wetland | 1 | | | leucoderme). | | 1 | | | |
| | | Xeric Hardwood | t | 1 | 1 | Biodescat Distance in sector construction | | | | | |
| Rhus michauxii | Dwarf Sumac | Open Loblolly Shortleaf Pine | No | Yes | Yes | Piedmont Plateau in rocky open woods, especially in soils high in magnesiumperhaps also on sandhills of the inner | E | None | E | | |
| | | Sandhill | 1 | | | Coastal Plain | - | | · - | | |
| | | Cypress-Gum Swamp | | | - | | . | | | | |
| Sageretia minutiflora | Climbing Buckthorn | Fresh Water Marsh | Yes | Yes | Yes | On calcareous rocky bluffs, forested shell middens on barrier island, and evergreen hammocks along banks of streams and | T | None | None | | + |
| | | Evergreem Forested Wetland | ┧ ~~~ | | " | coastal marshes | Ι ΄ | None | none | | + |
| | | Evergreen Forested metalid | ــــــــــــــــــــــــــــــــــــــ | <u> </u> | Щ | <u> </u> | L | L | L | I | 1 |

| Species name | Common Name | Gap Habitat | Spring | Summer | Fall | Plant Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quadrangle | Co. Name |
|---------------------------------|---------------------|------------------------------------|----------|--------|------|--|-------------------------|--------------------------------|---------------------|--------------------------|--|
| | | Open Lobiolly-Shortleaf Pine | | | _ | | | - | | Hardeeville NW, SC-GA_NW | Effingham |
| | | Loblolly-Shortleaf Pine | 1 | | | | | | | Springfield North, GA NE | Effingham |
| | | Longleaf Pine | 1 | | | | | | 1 | Springrieu Nordi, Ozore | Littingticali |
| Sarracenia flava | Fly-catchers | Cypress-Gum Swamp | Yes | Yes | No | Acidic soils of seepy meadows, bogs, wet savannas, and pine | Unusual | None | None | | + |
| , | , | Shrub Wetland | 1 | " | ''- | flatwoods; sometimes along sloughs and ditches | Onwan | , none | """ | | + |
| | | Bottomland Hardwood | 1 | İ | | | | Ì | | | |
| | İ | Evergreen Forested Wetland | 1 | | | | | | | | + |
| | | Open Lobiolly-Shortleaf Pine | | | - | | | | <u> </u> | Bellevue, GA_NW | Burke |
| | | Loblolly-Shortleaf Pine | | | | | | | | Cox, GA_NW | McIntosh |
| | | Longleaf Pine | | | | | | | | Cox, GA_SW | McIntosh |
| | | Cypress-Gum Swamp | 1 | | | Acidic soils of open bogs, wet savannas, pond margins, low | | | | Everett, GA_SE | |
| Sarracenia minor | Hooded Pitcherplant | Shrub Wetland | Yes | Yes | No | areas in pine flatwoods, sphagnum seeps of red maple- | Unusual | None | None | | Wayne |
| | ' | Bottomiand Hardwood | 1 | | | backgum swamps, and along sloughs and ditches | | 1 | | Meldrim SE, GA_SE | Chatham |
| | | Evergreen Forested Wetland | 4 | | | | | | | Richmond Hill, GA_NE | Chatham |
| | | Evergreen Forested wettand | 4 | 1 | | | | İ | | Waynesboro, GA_SE | Burke |
| | | Ones Lablath: Charter (D) | | | | | | - | | Waynesboro, GA_SW | Burke |
| | | Open Loblolly-Shortleaf Pine | 1 | | | | | | 1 | | 1 |
| | | Loblolly-Shortleaf Pine | ł | | | | ł | | | | |
| · | | Longleaf Pine | ١ | | | Acidic soils of open bogs, wet savannas, and low areas in pine | _ | | | | |
| Sarracenia psittacina | Parrot Pitcherplant | Cypress-Gum Swamp | Yes | Yes | No | flatwoods | т | None | None | | |
| | | Shrub Wetland | | | | | - | | | | |
| | | Bottomland Hardwood | | | | | | | 1 | | ļ |
| | | Evergreen Forested Wetland | <u> </u> | | | | | | | | |
| | | Open Lobiolly-Shortleaf Pine | | | | | | | | | |
| | 1 | Loblolly-Shortleaf Pine | 1 | | | | | None None | | | 1 |
| | | Longleaf Pine | 1 | | İ | Coastal Plain in seepy meadows and bogs dominated by pea | | | e None | | |
| Sarrac enia purpurea | Purple Pitcherplant | Cypress-Gum Swamp | Yes | Yes | No | moss with other pictcherplants S. minor and S. flava | E | | | | 1 |
| | | Shrub Wetland | 1 | | | | | | ļ | | |
| | | Bottomland Hardwood |] | 1 | | | | | | | |
| | | Evergreen Forested Wetland | | | | | | | | | |
| | | Open Loblolly-Shortleaf Pine |] | | | | | | | Girard, GA-SC_NE | Burke |
| | | Lobiolly-Shortleaf Pine | _ | 1 | | | | | | | |
| | | Longleaf Pine |] | | ĺ | Acidic soils of open bogs, sandhill seeps, Atlantic white-cedar | ļ | | | | |
| Sarracenia rubra | Sweet Pitcherplant | Cypress-Gum Swamp | Yes | Yes | No | swamps, wet savannas, low areas in pine flatwoods, and | E | None | None | | |
| | | Shrub Wetland | | | | along sloughs and diches | | | | | 1 |
| | | Bottomland Hardwood |] | | | | | 1 | | | |
| | L | Evergreen Forested Wetland |] | | | | | 1 | | | |
| - | | Open Lobiolly-Shortleaf Pine | | | | | | | | | |
| | | Loblolly-Shortleaf Pine |] | | | | | | | | |
| | | Longleaf Pine | | | | Seepy meadows, poorly drained oak-pine flatwoods, red | | | | | |
| Sarracenia oreophila | Green Pitcherplant | Cypress-Gum Swamp | Yes | Yes | Yes | maple-blackgum swamps, or along sandy banks of streams | E | None | Ε | | |
| | | Shrub Wetland |] | | | flushed periodically by floodwaters | | | | | 1 |
| | | Bottomiand Hardwood |] | | | | | | | | |
| | | Evergreen Forested Wetland | 1 | | | | | | | | |
| Schisandra glabra | Bay Star-vine | Bottomiand Hardwoods | Yes | Yes | No | Twining over understory trees and shrubs in rich, forested bottomlands and adjacent lower slopes. Sometimes older vines occur on truck of overstory trees, or sprawt along ground forming patches rooted in the litter | т | None | N | | |
| Schwalbea americana | Chaffseed | Longleaf Pine Bottomland Hardwoods | Yes | No | No | Coastal Plain in fire-maintained wet savannas with grass pink , colic root, and invading gallberry and huckleberry | E | None | E | | |

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| Species name | Common Name | Gap Habitat | Spring | Summer | Fall | Plant Habitat | Georgia State Listed | South Carolina State Listed | Federally Listed | Quarter Quadrangle | Co. Name |
|-------------------------|-------------------------|----------------------------|----------|-------------|--------------|---|-------------------------|--------------------------------|---------------------|---------------------------|-------------|
| | | Hardwood Forest | | | | | | | | Girard, GA-SC_NW | Burke |
| | ì | Mixed Pine-Hardwood | 1 | | ' | a control back and back and a section of | т | None | Candidate | | |
| Scutellaria ocmulgee | Ocmulgee Skullcap | Bottomland Hardwood | No | Yes | Yes | Forested trerraces, hardwood slopes, and riverbanks | • | None | Califoliace | | |
| | l | | 1 | | | | | | | | |
| Sedum pusillum | Puck's Orpine | Quarries, Strip Mines | Yes | Yes | No | Growing on granitic outcrops among mosses in partial shade, usually in leaf litter and mats of mosses, under old, gnarted eastern redeadar trees | т | None | None | | |
| | ļ | Hardwood Forest | <u> </u> | 1 | | Mature hardwood or hardwood-pine forests on river bluffs, | | | | | |
| Silene polypetala | Fringed Campion | Mixed Pine-Handwood | Yes | No | No | small stream terraces, moist slopes and well-shaped ridge | E | None | E | | |
| | | Bottomiand Hardwood | 1 | | | crests | | | | | |
| | | Hardwood Forest | | | | | | | | Bellevue,GA_NW | Burke |
| | | Mixed Pine-Hardwood | 1 | | | | | ŀ | | Hardeeville NW, SC-GA_NW | Effingham |
| | | Bottomland Hardwood | 1 | l | l | | | | | Hardeeville NW, SC-GA_SW | Effingham |
| | ATT | | Yes | Yes | No. | in understory of rich, wooded bluffs and ravine slopes, also in the open edges of transiton zones (ecotones between | Rar e | None | None | Jacksonboro Bridge, GA_NE | Screven |
| Stewartia malacodendron | Silky Camelia | | 1 163 | l es | , NO | sandhills and creek swamps | | | | Jacksonboro Bridge, GA_NW | Screven |
| | | |] | ļ | ļ | ļ | ļ | | | Kildare, GA-SC_NE | Screven |
| | 1 | |] | | | | | | | Rincon, GA-SC_NW | Effingham |
| | | | 1 | | <u> </u> | | | | | | ┿ |
| Stylisma pickeringli | Pickering Morning-glory | Sandhill | Yes | Yes | No | Coarse, white sands on snadhills near the Fall line, and on a few ancient dunes along the Flint and Ohoopee Rivers. These are scrub habitats with scant litter accumulation, sparse ground cover, and little canopy cover, the latter consisting of mostly of scattered scrubby oaks and prines | Т Т | None | Candidate | | |
| | | Forested Urban-Decidous | | T | | | | | | | |
| | ļ | Forested Urban-Evergreen | | Į. | | | 1 | Į. | į. | | |
| | Ball-moss | Forested Urban-Mixed | Yes | Yes | Yes | On branches of tive oak in Georgia, especially near the coast either in urban or more natural settings such as evergreen | 1 + | None | None | | + |
| Tiliandsia recurvata | Datt-muss | Live Oak |] ' | " | " | hammocks and swamp forests. | | İ | | | |
| | | Cypress-Gum Swamp | | | | | 1 | | | | |
| | <u></u> | Evergreen Forested Wetland | | | | | | | ├ ── | | ┼ |
| Trillium reliquum | Relict Trillium | Hardwood Forest | Yes | Yes | No | Hardwood forest. In the Coastal Plain, these often with boulders or ledges with soft limestone; in Piedmont, in deep boulders or ledges with soft limestone. | | E | E | Macon NW, GA_NW | Jones |
| i i mani i Enquan | React Handle | Mixed Pine-Hardwood | | | | loamy soils, either in rich ravines or adjacent alluvial terrace with numberous other spring-flowering herbs | 1 | | | | + |
| 1 | ì | Bottomland Hardwood | | <u> </u> | <u>L</u> | | <u> </u> | 1 | <u> </u> | <u> </u> | |

APPENDIX B - PROJECT FIELD REFERENCE GUIDE



VOGTLE-SCHERER TRANSMISSION CORRIDOR

| SEGMENT | MILES | HABITAT | SUB-HABITAT | WETLAND TYPE |
|------------|-------|----------------------------|-------------------------------|----------------------------------|
| Segment 1 | 9.6 | Loblolly Shortleaf Pine | Hardwood Forest | R2UBH; PFO1A |
| Segment 2 | 1.2 | Loblolly Shortleaf Pine | Bottomland Hardwood | PFO1A |
| Segment 3 | 1.9 | Loblolly Shortleaf Pine | Bottomland Hardwood | PEM1Ch; PFO1A |
| Segment 4 | 1.1 | Loblolly Shortleaf Pine | Pasture Hay | |
| Segment 5 | 0.7 | Loblolly Shortleaf Pine | Pasture Hay | |
| Segment 6 | 0.3 | Mixed Pine Hardwood | Loblolly Shortleaf Pine | |
| Segment 7 | 1.1 | Loblolly Shortleaf Pine | Bottomland Hardwood | PFO1A; PFO1Ad |
| Segment 8 | 0.6 | Loblolly Shortleaf Pine | Hardwood Forest | |
| Segment 9 | 0.7 | Loblolly Shortleaf Pine | Hardwood Forest | |
| Segment 10 | 0.9 | Hardwood Forest | Loblolly Shortleaf Pine | |
| Segment 11 | 2.3 | Loblolly Shortleaf Pine | Hardwood Forest | |
| Segment 12 | 0.6 | Clearcut Sparse Vegetation | Loblolly Shortleaf Pine | PUBHh |
| Segment 13 | 0.3 | Loblolly Shortleaf Pine | Row Crop | U |
| Segment 14 | 1.4 | Row Crop | Cypress Gum Swamp | PFO4A; PFO1F; PFO1A |
| Segment 15 | 3.1 | Loblolly Shortleaf Pine | Hardwood Forest | PFO1A; PUBHh |
| Segment 16 | 0.3 | Loblolly Shortleaf Pine | Bottomland Hardwood | PFO1A |
| Segment 17 | 0.6 | Mixed Pine Hardwood | Cypress Gum Swamp | PUBHx; PEM1C; PSS4A; PFO1C; U |
| Segment 18 | 0.3 | Loblolly Shortleaf Pine | Row Crop | |
| Segment 19 | 0.2 | Loblolly Shortleaf Pine | Row Crop | |
| Segment 20 | 2.8 | Pasture Hay | Loblolly Shortleaf Pine | PFO1A; PUBHx; PFO1C; PEM1A |
| Segment 21 | 0.1 | Hardwood Forest | Cypress Gum Swamp | PFO1A |
| Segment 22 | 0.1 | Loblolly Shortleaf Pine | Evergreen Forested Wetland | |
| Segment 23 | 0.1 | Freshwater Marsh | Clearcut Sparse Vegetation | PEM1F |
| Segment 24 | 0.5 | Bottomland Hardwood | Hardwood Forest | PFO1A; PFO1Ch |
| Segment 25 | 0.3 | Bottomland Hardwood | Cypress Gum Swamp | PFO1A |
| Segment 26 | 0.3 | Loblolly Shortleaf Pine | Bottomland Hardwood | PFO1Ad |
| Segment 27 | 0.2 | Bottomland Hardwood | Cypress Gum Swamp | PFO1A |
| Segment 28 | 0.5 | Bottomland Hardwood | Cypress Gum Swamp | PFO1C; PFO1A |
| Segment 29 | 0.2 | Loblolly Shortleaf Pine | Cypress Gum Swamp | PFO1Ad; PEM1F; PFO1C |
| Segment 30 | 0.3 | Freshwater Marsh | Cypress Gum Swamp | PFO1/4A; PSS1C; PEM1/FO1Fb |
| Segment 31 | 0.1 | Hardwood Forest | Bottomland Hardwood | PFO1/4A |

(CONTINUED) - VOGTLE-SCHERER TRANSMISSION CORRIDOR

| Segment 32 0.5 | | HABITAT | SUB-HABITAT WETLAND | | |
|----------------|-----|-------------------------|---------------------|---|--|
| | | Loblolly Shortleaf Pine | Cypress Gum Swamp | PFO1/4A; PFO1A; PFO4A; PEM1A; PEM1Ah; PUBHh | |
| Segment 33 | 0.6 | Row Crop | Bottomland Hardwood | U | |
| Segment 34 | 1.1 | Loblolly Shortleaf Pine | Freshwater Marsh | PFO1A; PFO1A; PFO1C; PEM1C; | |
| Segment 35 | 0.8 | Row Crop | Hardwood Forest | PFO1A | |
| Segment 36 | 0.1 | Hardwood Forest | Bottomland Hardwood | PFO1B | |
| Segment 37 | 0.5 | Bottomland Hardwood | Pasture Hay | PFO1B; PFO1C | |

VOGTLE-GOSHEN TRANSMISSION CORRIDOR

| SEGMENT | MILES | HABITAT | SUB-HABITAT | WETLAND TYPE | | |
|-----------|-------|--|------------------------|---|--|--|
| Segment 1 | 0.3 | Loblolly Shortleaf Pine | Hardwood Forest | | | |
| Segment 2 | 1.2 | 1.2 Loblolly Shortleaf Bottomland Hardwood | | PEM1A; PFO1A; PEM1B; PFO1B; R2UBH | | |
| Segment 3 | 0.5 | Hardwood Forest | Bottomland Hardwood | РЕМ1В | | |
| Segment 4 | 1.7 | Clearcut Sparse Vegetation | Row Crop | PFO1A; PFO1B | | |
| Segment 5 | 1.0 | Sandhill | Open Water | PFO1B; PFO1C | | |

VOGTLE-THALMANN TRANSMISSION CORRIDOR

| SEGMENT | MILES | HABITAT | SUB-HABITAT | WETLAND TYPE | |
|------------|-------|---|-------------------------------|--|--|
| Segment 1 | 0.6 | Row Crop | Mixed Pine Hardwood | PFO1Ch; PUBHh; PSS1Ah | |
| Segment 2 | 1.5 | Pasture Hay | Row Crop | PFO1B; PSS3B | |
| Segment 3 | 0.3 | Loblolly Shortleaf Pine Hardwood Forest | | PSS1/3B; PFO1C | |
| Segment 4 | 0.4 | Freshwater Marsh | Loblolly Shortleaf Pine | PEM1Ad | |
| Segment 5 | 1.5 | Loblolly Shortleaf Pine | Clearcut Sparse Vegetation | PFO1A; PFO6F; PEM1F; U | |
| Segment 6 | 0.1 | Loblolly Slash Pine | Bottomland Hardwood | PFO1C | |
| Segment 7 | 0.3 | Loblolly Slash Pine | Bottomland Hardwood | PFO1/4A; PFO1C; PFO1A | |
| Segment 8 | 0.6 | Bottomland Hardwood | Cypress Gum Swamp | PFO1C; PFO1/4A; PFO6F; PFO1A | |
| Segment 9 | 1.9 | Loblolly Slash Pine | Cypress Gum Swamp | PFO1C; PFO1A; U | |
| Segment 10 | 0.8 | Loblolly Slash Pine | Cypress Gum Swamp | PFO1/2C; PFO1/4A | |
| Segment 11 | 2.1 | Bottomland Hardwood | Hardwood Forest | PFO1/3B; PFO6F; PFO1/4B; PFO1B; U | |
| Segment 12 | 1.2 | Loblolly Slash Pine | Bottomland Hardwood | PFO1B; PFO6F; PFO1/4B; U | |
| Segment 13 | 1.5 | Bottomland Hardwood | Evergreen Forested Wetland | PFO1C; PFO1A; PFO6F; U | |
| Segment 14 | 1.4 | Clearcut Sparse Vegetation | Loblolly Slash Pine | | |
| Segment 15 | 0.2 | Pasture Hay | Hardwood Forest | | |
| Segment 16 | 1.0 | Loblolly Slash Pine | Cypress Gum Swamp | PFO1/4A | |
| Segment 17 | 1.7 | Loblolly Slash Pine | Bottomland Hardwood | PFO1/3B; PFO1C; PFO6C; PSS3B; PFO1/4B; PFO4/1A; PFO7B; PEM1A | |
| Segment 18 | 1.5 | Bottomland Hardwood | Loblolly Slash Pine | PSS3B; PFO1C; PFO7B; PFO1/3B; PFO6F; U | |
| Segment 19 | 0.2 | Loblolly Slash Pine | Clearcut Sparse Vegetation | PFO4B; PSS1C | |
| Segment 20 | 0.1 | Clearcut Sparse Vegetation | Loblolly Slash Pine | PFO1/2C | |
| Segment 21 | 2.0 | Clearcut Sparse Vegetation | Cypress Gum Swamp | PFO1C; PFO1B; PFO6F; U | |
| Segment 22 | 0.6 | Cypress Gum Swamp | Long Leaf Pine | PFO4/2C | |

(CONTINUED) - VOGTLE-THALMANN TRANSMISSION CORRIDOR

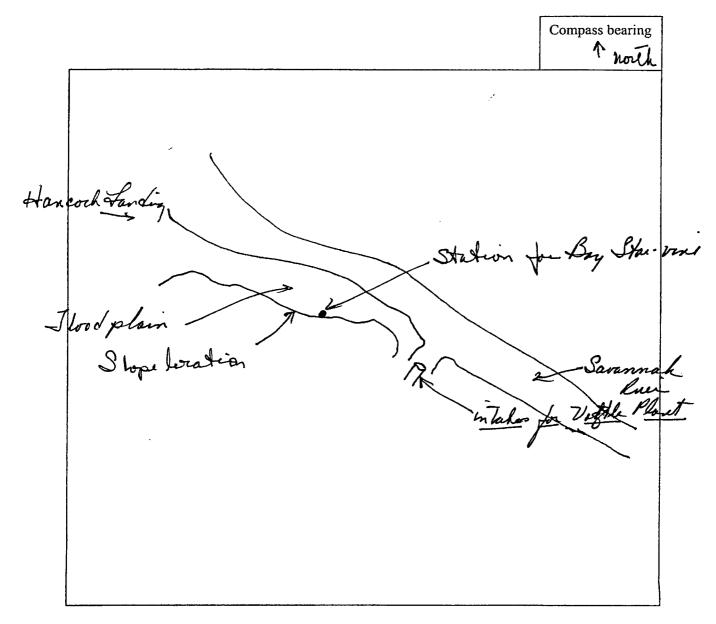
| SEGMENT | MILES | HABITAT | SUB-HABITAT | WETLAND TYPE | |
|------------|-------|--|-------------------------------|---|--|
| Segment 23 | 0.2 | Loblolly Slash Pine | Evergreen Forested Wetland | PFO3Bd; PFO1Cd; PFO7B | |
| Segment 24 | 1.2 | Loblolly Slash Pine | Live Oak | PFO4B; PFO1C; PFO4B | |
| Segment 25 | 0.6 | Cypress Gum Evergreen Forested Swamp Wetland | | PFO1/4Bd; PFO1Cd; U | |
| Segment 26 | 1.5 | Loblolly Slash Pine | Cypress Gum Swamp | PFO1CD; PFO1C; PEM1A; U | |
| Segment 27 | 1.6 | Cypress Gum Swamp | Loblolly Slash Pine | PFO1C; PFO1A; U | |
| Segment 28 | 2.5 | Loblolly Slash Pine | Cypress Gum Swamp | PFO1A; PFO1C; PFO1/4C; PFO1/4A; U | |
| Segment 29 | 0.7 | Cypress Gum Swamp | Loblolly Slash Pine | PFO6F; PFO1C; PUBHX; U | |
| Segment 30 | 1.6 | Cypress Gum Swamp | Cypress Gum Swamp | R1UBV; PFO6T | |
| Segment 31 | 0.2 | Cypress Gum Swamp | Cypress Gum Swamp | PFO1F | |
| Segment 32 | 0.2 | Cypress Gum Swamp | Clearcut Sparse Vegetation | U | |
| Segment 33 | 0.7 | Cypress Gum Swamp | Evergreen Forested Wetland | PFO6F; PFO1/4A; PFO1C; PFo1/4C; PFO4A | |
| Segment 34 | 0.4 | Cypress Gum Swamp | Cypress Gum Swamp | PFO1A; PFO1C; PFO6F; | |
| Segment 35 | 0.2 | Cypress Gum Swamp | Clearcut Sparse Vegetation | PFO6F | |
| Segment 36 | 0.7 | Cypress Gum Swamp | Cypress Gum Swamp | PFO1A; PFO1Cd; U | |
| Segment 37 | 0.3 | Cypress Gum Swamp | Clearcut Sparse Vegetation | PFO6C; PFO6F; U | |
| Segment 38 | 0.7 | Loblolly Slash Pine | Cypress Gum Swamp | PFO6F; PFO1C; U | |
| Segment 39 | 0.8 | Loblolly Slash Pine | Cypress Gum Swamp | PFO1C; PFO6F; U | |
| Segment 40 | 3.5 | Loblolly Slash Pine | Cypress Gum Swamp | PFO6F; PSS1Ad; PFO1Ad; PFO6Fd; U | |
| Segment 41 | 1.9 | Sandhill | Clearcut Sparse Vegetation | PFO1C; PFO6F; PFO4/1A; PFO1/3C; PFO7B; U | |

APPENDIX D - OCCURRENCE DATA SHEETS

SPECIES OCCURRENCE DATA SHEET

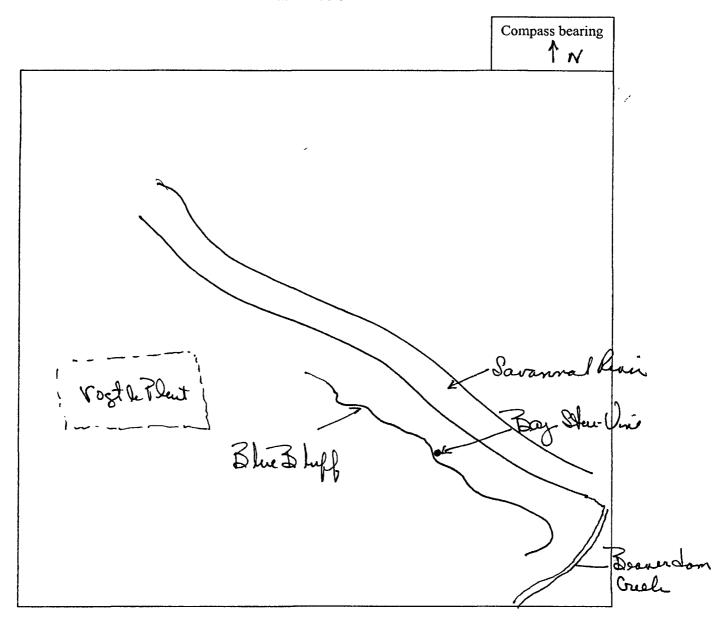
| Segment ID | Votle ?! | . 4 | Occurrence ID: | | USGS q | uad: (| · / N | |
|--|--------------------------|----------------------------------|----------------|---------------------|---------------|----------------|-------------------------|-----------------------|
| Examiner(s): | 7.900000 | - Ed Hentonia | L. Mard. | | Date: | uau. C | 4-12-05 | / |
| Site coordinates: | Lat: 33 | 15361 | - W.III. | | Long: | | 81.7599 | , |
| GPS used? | YN | Accuracy ± feet | Photo ID | 's | | Number | 010 131 | |
| | 22 Jest OC-2 Bay Star-Un | | | | | | none | |
| Location/directions | <u> </u> | - 5 | | 7-, | | | | |
| | | eff (Streps nad Kin | apperor i | logse) co nals ± | Xbone NE o | flood ma | plain of Use of Poss | L |
| Scientific Na | ame | Common | Name | Cover Class | No. Plants | No. Patches | , Distribution | Gross Area (acres) |
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| chisonder of | opia | Bay Star- | UNI ! | + | 50-60 | B | A | 4aau |
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| Notes | | | | <u> </u> | | · | ' | · |
| Describe habitat in de Wood of Lench of on Low 4 | styp- Slope | slope abou Campy c Slope 2 | completely | , alose | 1. P. | lants | nal sna mue Cl | now imberg |
| | | | | | | | | |
| - | Cover | class | | Distribution | · | | lo. Plants | |
| | - = Abs | | 3 = 25-50% | A - infrequen | it | 1 2 | - single plant | |
| | + = <1% | 5 | 4 = 50-75% | B - evenly | | | - <20 | |
| | 1 = 1-5 | | 5 = 75-95% | | | | | |
| | | | | C - localized | | | - 20-99 | |
| | 2 = 5-2 | 5% | 6 = 95-100% | D - frequent | | | - 100-999 | |
| | NS = no | ot surveyed for | | E - dense | | E | - > 1,000 | |
| | | | | | | | | |

Occurrence Sketch



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | VOEIL. | Plant 10 | Occurrence ID: | 3 | USGS o | uad: .S | hell Bluff I | anderi |
|--|-----------------------------|--------------------|----------------|----------------------------|---------------|----------------|-------------------------|-----------------------|
| Examiner(s): | EdoHart | rotean | | | Date: | | 4-12-05 | - J |
| Site coordinates: | Lat: 3 | 3.03303 | | | Long: | - | 81 73182 | |
| GPS used? | YN | Accuracy ± feet | Photo ID | 's | Tower | Number | none. | |
| Location/directions | Betwee | | 49-160 | @ ^ | avon | nah E | eni. | |
| Scientific Na | me | Common | Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) |
| Schisondia ? | Cahen | Bay Star | - vini | Class | rtants | ratties | Distribution | (acres) |
| Notes Evidence of reproduct Stages of developmen Potential risk to comm Describe habitat in de | t? nunity (envas tail | (Blue d mile co | Bhiff) | abone | Ja. | vanance | ah Pene | |
| | Cover (| | 3 = 25-50% | Distribution | | 12 | lo, Plants | |
| | - = Abse + = <1% | ent | 4 = 50-75% | A - infreque B - evenly | ent | E | - single plant - <20 | |
| | - = Abse | ent K | | A - infreque | ent | E | - single plant | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

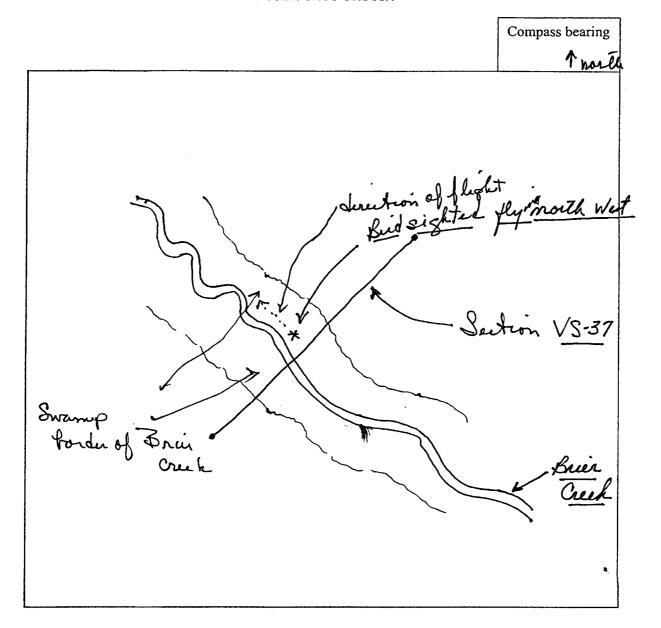
| Segment ID | VS-28 | | Occurrence ID: | 4 | USGS q | uad: | Bellevue | |
|---|----------|------------------------|----------------|----------------------------|---------------|----------------|--|-----------------------|
| Examiner(s): | J. Varne | r - L. Mead | | | Date: | | 4-14-05 | |
| Site coordinates: | Lat:3 | 2,99641 | | | Long: | | 82. 9807 | 6 |
| GPS used? | Y | Accuracy ± feet | Photo ID' | S | Tower | Number | • | |
| Location/directions | <u> </u> | 12 ft | Oc-4910 | ud Stack to | and re | | | |
| Location/directions | | • | | | | | | |
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| Scientific Na | ittie | Common | name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) |
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| Notes Evidence of reproduc Stages of developmen | nt? | | | | | | | |
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| Describe habitat in de | etait | | | | | | | |
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| | Cover c | | 3 = 25-50% | Distributio A - infrequ | | | No. Plants A - single plant | |
| | + = <1% | | 4 = 50-75% | B - evenly | | | B- <20 | |
| | 1 = 1-5% | | 5 = 75-95% | C - localize | ·d | | C - 20-99 | |
| | 2 = 5-25 | | 6 = 95-100% | D - frequer | | | D - 100-999 | |
| | | t surveyed for | 0 /3-100% | E - dense | | | E - > 1,000 | |

Compass bearing Deviction of Hight Swamp border of looky heele Rocky Creek

- · Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

Full hote: Snift fried flyin North aust mear enter of Fransmassion courds. Observation line about 7 minutes

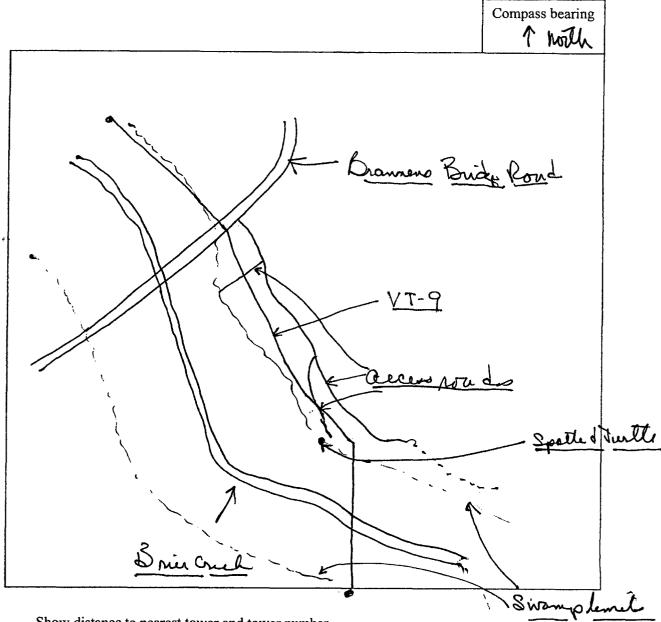
| Segment ID | V5-37 | | Occurrence ID: | 5 | USGS q | uad: | Cldlewrod | |
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| Examiner(s): | J. Yarns | r-L. Mea | 1e | | Date: | | 4-14-03 | |
| Site coordinates: GPS used? | YN | 3.09271 Accuracy ± fee | t Photo II |)'s | Long: Tower | | <u>- 81.9145</u> 7 43 | |
| Location/directions | | 20 | | | ! | | / | |
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| Scientific Na | | Commo | on Name | 1 Cayor | l No | No. | T, | Conn Aren |
| Scientific No | anne | Commic | ii Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) |
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| Notes Evidence of reproduc | tion? | | | | | | | |
| Stages of developmer | it? | | | | | | | |
| Potential risk to common Describe habitat in de | | ves): | | | | | | |
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| | Cover c | | 3 = 25-50% | Distributio A - infreque | | | lo. Plants l - single plant | |
| | + = <1% | | 4 = 50-75% | B - evenly | | | 3- <20 | |
| · | 1 = 1-5% | | 5 = 75-95% | C - localize | d | | - 20-99 | |
| | 2 = 5-25 | % | 6 = 95-100% | D - frequen | it | | - 100-999 | |
| | NS = no | t surveyed for | | E - dense | | E | - > 1,000 | |



- · Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

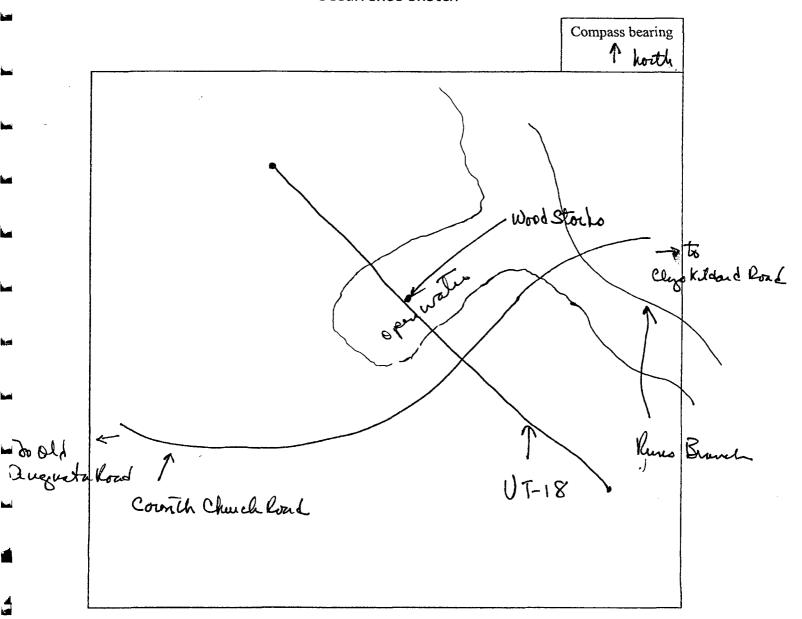
Field hate: Single buid flyering Northwest once Swamp bords of Brief Creek. Observation time about 12 menute.

| Segment ID | VT | -9 | Occur | rence ID: | 6 | USGS q | uad: 🗼 | nier Creek | Fandur |
|---|--------------|------------|-----------------|------------|--------------|-------------------|---------------|-------------------|------------|
| Examiner(s): | | | | | | | | | 205 |
| Site coordinates: | Lat: | 32 | <u>: 805943</u> | T = 1 | | Long: | | 81.47717 | 6 |
| GPS used? | Υ | N | Accuracy ± feet | Photo ID | 'S | Tower | Number | 132 | |
| Location/directions | | | | L | | | | | |
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| Scientific Na | ame | | Common Name | • | Cover | No. | No. | ' | Gross Area |
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| | | over cla | | 3 5r 500 | Distribution | n | | lo. Plants | |
| | | = Absent | | 3 = 25-50% | A - infreque | ent | | l - single plant | |
| | + | = <1% | | 4 = 50-75% | B - evenly | | 1 | 3- < 20 | |
| | 1 | = 1-5% | | 5 = 75-95% | C - localize | d | - 1 | - 20-99 | |
| | 1 2 | = 5-25% | | = 95-100% | D - frequen | t | | - 100-999 | |
| | <u> </u> | | | | | - | | - > 1,000 | |
| | IN | (S = not s | surveyed for | | E - dense | | | 1,000 | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

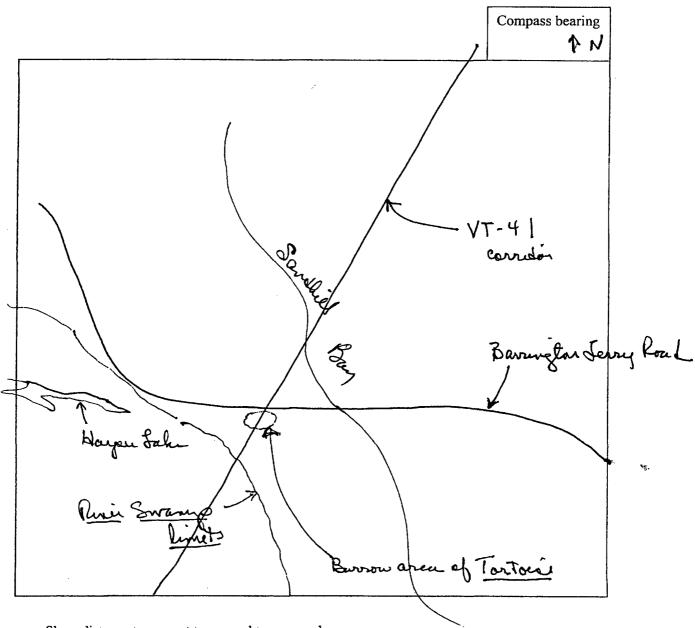
| Segment ID | VT-17 | | Occurrence ID: | 7 | USGS q | uad: (| 20 Brights | | |
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| Examiner(s): | Ed Heuton | ix - J. Varner | | | Date: | (| Caril 16 Zur | S | |
| Site coordinates: | Lat: 32 | 551613 | | | Long: | | 81.3866 | 45 | |
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| | mu C | Kyo Kilvare | Kond | | | | |] | |
| corneth Church Road approximately . 3 mile Swaf ganton's with Clyo Kilder Road | | | | | | | | | |
| | | | | | | | | | |
| Scientific Na | ıme | Common | Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area | |
| | | | | Class | Plants | Patches | Distribution | (acres) | |
| mycleria anse | rico wo | Wood Sto | rh #1 | | | | | | |
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| | nt? nunity (envasi etail walu Wal | ves)? i with law | • | | | | | òn | |
| | Cover | | | Distribution | | | lo, Plants | | |
| | - = Abse | | 3 = 25-50% | A - infreque | ent | | - single plant | | |
| | + = <1% | | 4 = 50-75% | B - evenly | | В | - <20 | | |
| | 1 = 1-5% | 1 | 5 = 75-95% | C - localized | d | C | - 20-99 | | |
| | 2 = 5-25 | % | 6 = 95-100% | D - frequent | t | | - 100-999 | | |
| | NS = no | t surveyed for | | E - dense | | E | - > 1,000 | | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- · Show the location of occurrence boundary
- Show scale relationships

Filld holes: Ino wood aboth were observed feeding in aperwater Forists took flight thereling SW and then circling back once the feeding area and the disappearing behind tree his of leves Foranch sowamp area. Observation time was about 15-18 minutes

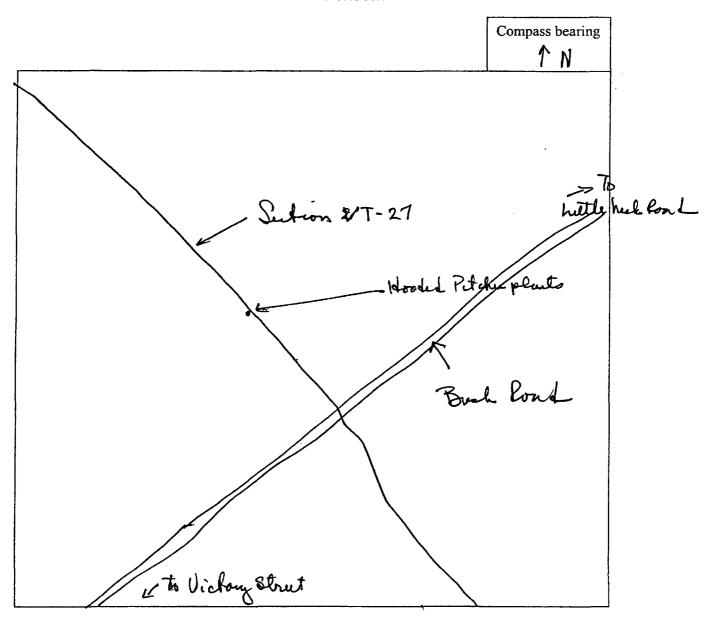
| Segment ID | VT | -पा | | Occurrence ID: | 8 | USGS o | uad: | of | |
|----------------------------|---------|---------------------|-------------------|-----------------|-------------------------|--|--------------|------------------|------------|
| Examiner(s): | 7 | . Vasa | | | | Date: | | 4-13-05 | |
| Site coordinates: | Lat: | 3 | 1.473704 | | | Long: | | - 81.59084 | } |
| GPS used? | Ŷ | N | Accuracy ± feet | Photo ID | | Tower | Number | | · |
| | <u></u> | | 8/12 | <u> 048</u> | 3. Tor bowi & | urrou) | | 610 | |
| Location/directions | | | 7 | | | | | | |
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| Scientific N | 2000 | —т | Common | Namo | Cover | No. | No. | 1, | Cross Ason |
| Scientific No | anne | | Common | Hame | Class | Plants | Patches | Distribution | Gross Area |
| | | | | | Class | Flaires | ratthes | Distribution | (acres) |
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| Notes | | | | | | | | | |
| Notes Evidence of reproduc | tion? | | | | | | | | į. |
| Stages of developmen | | | | | | | | | |
| Potential risk to com | | anvacive | ac 17 | | | | | | |
| Describe habitat in de | | -11492144 | .s _j . | | | | | | |
| Describe Habitat III de | Clan | | | | | | | | |
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| | | over cla = Absen | | 3 = 25-50% | Distributio A - infrequ | n ont | | lo. Plants | |
| | L | | | I | | ent | l l | l - single plant | |
| | + | = <1% | - | 4 = 50-75% | B - evenly | | E | 3- <20 | |
| | 1 | = 1-5% | | 5 = 75-95% | C - localize | ed | | - 20-99 | |
| | | | | | | | | | |
| | 2 | = 5-25% | | 6 = 95-100% | D - frequer |)t | i | - 100-999 | |
| | | C = no+ | surveyed for | | E - dense | | E | - > 1,000 | |
| | 1.17 | 2 - HOL | en rejeu IVI | | - UC113C | | 1 | | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- · Show scale relationships

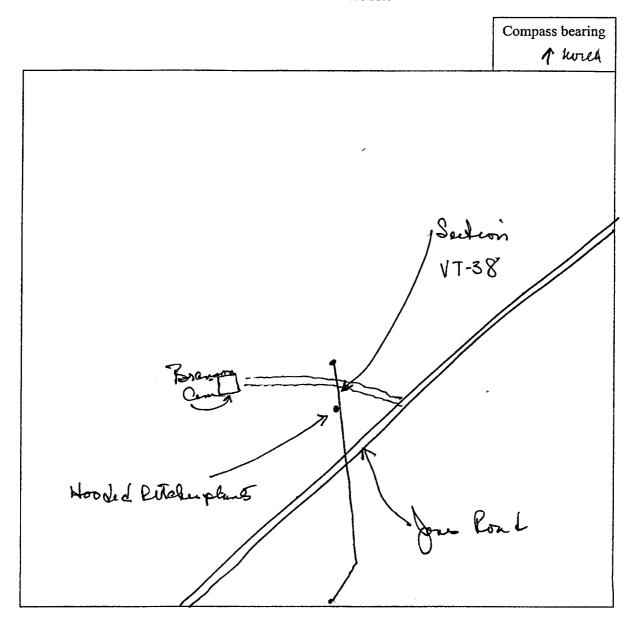
So Square meter arece. 3 (three) burrows were abordoned, one hourson tours pour was also not in use.

| Segment ID | YT-7 | | Occurrence ID: | 9 | USGS q | uad: | meldrim | SE |
|--|-------------|---------------------------------------|----------------|---------------------------|---------------|----------------|--------------------------------|-----------------------|
| Examiner(s): | Varne | | | Date: | | | 4-15-09 | Ş |
| Site coordinates: | | 32,04421 | | | Long: | 81,30790 | 0 | |
| GPS used? | Y | Accuracy ± feet | Photo ID' | 5 boole LRAdee | | Number | 394 | |
| Location/directions | | | | | | | | |
| | app | romately .06 an | ile North | of Bu | a Ron | d in | sulcin | VT-27 |
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| Scientific Na | ame | Common | Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) |
| Sasa arever min | <i>6</i> 2 | Hoode 1 Detal | uplant | 1 | Q | 40-50 | D | Zauce |
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| Notes | | | | | | | | |
| Evidence of reproduc Stages of developmen | | | | | | | | į |
| Potential risk to com | munity (env | asives)? | | | | | | |
| Describe habitat in de | etail | | | | | | | |
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| grasses. | | | | | | | | |
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| | Cove | er class Absent | 3 = 25-50% | Distribution A - infreque | nt . | | No. Plants A - single plant | |
| | += < | | 4 = 50-75% | B - evenly | · · · | | 3- <20 | |
| | 1 = 1 | 1-5% | 5 = 75-95% | C - localized | ı | | C - 20-99 | |
| | 2 = 5 | 5-25% | 6 = 95-100% | D - frequent | | | D - 100-999 | |
| | NS = | not surveyed for | | E - dense | | E | - > 1,000 | |



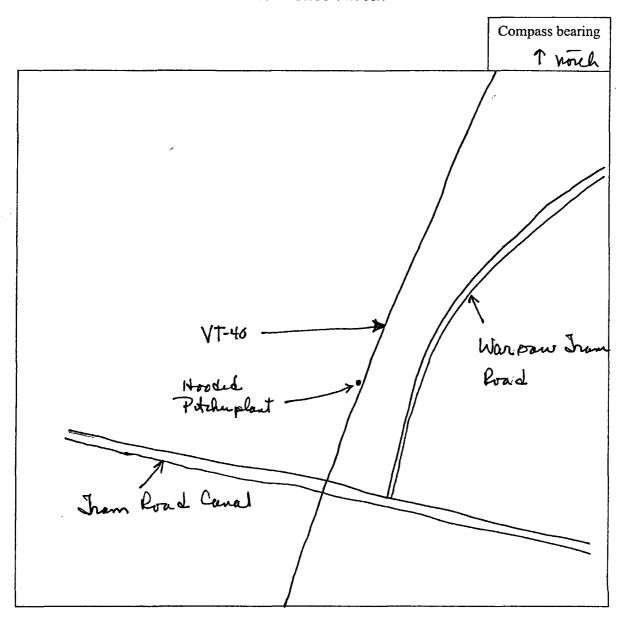
- · Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | VT-38 | Occ | currence ID: | 10 | USGS qu | uad: | East of he | dowice |
|---|---------------------------------|-----------------|--------------------------|---|---------------|----------------|--------------------------------|-----------------------|
| Examiner(s): | J. V | anu - L. mende | | | Date: | | 4-14-05 | |
| Site coordinates: | Lat: 3 | 1, 66729 | | | Long: | | -81.5073 | 6 |
| GPS used? | Y | Accuracy ± feet | Photo ID' | s how White | Tower t | Number | | |
| Location/directions | horth. | of Jones Roa | | | | of no | ad to B | laxeon |
| Scientific N | ame | Common Na | me ! | Cover Class | No. Plants | No. Patches | , Distribution | Gross Area (acres) |
| Parnacenia m | nnos | Hooded Pitch | - plan | + | 150-150 | 810 | A | No anu |
| Notes Evidence of reproductions Stages of development of the composerible habitat in describe habitat in describe habitat of the composerible | nt? Imunity (envas Jetail | ives)? | on we | المنع الم | Lofa | lauer | nestion | |
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| | | riass | | | | | lo Plants | |
| | Cover - = Abs | | 3 = 25-50% | <u>Distributio</u> A - infreque | n_ · | | lo, Plants | |
| | Cover | ent | 3 = 25-50% 4 = 50-75% | Distributio | n_ · | 1 | No. Plants No. Single plant | |
| | Cover - = Abs | ent | | <u>Distributio</u> A - infreque | n ent | F E | \ - single plant | |
| | Cover - = Abs + = <1% | ent 6 | 4 = 50-75% | Distributio A - infreque B - evenly | n · | E C | A - single plant B- <20 | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | V- | r- 40 | | Occurrence ID: | // | USGS o | uad: 🔪 | January J 4-13-05 | | |
|--|--|---|--|--|--------------|-------------|----------|----------------------|------------------|--|
| Examiner(s): Site coordinates: | | | ru - L. Mead | <u>. </u> | | Date: | | 81,529 | | |
| GPS used? | Y | <u>37.</u> N | 580710 Accuracy ± feet | Photo ID | 's | | Number | | 7 | |
| | - | • | 1211. | | Hoodelpho | | | 569 | | |
| Location/directions | | | | | | | | | | |
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| | 77 | NOT W | nally 1500 | fr mores | 7 ~ | ram k | wad C | anal | | |
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| Scientific N | 3 me | | Common | Namo | Cover | No. | No. | T. | Gross Area | |
| Scientific N | anne | | Common | Name | Class | Plants | Patches | Distribution | (acres) | |
| | ······································ | | | | Class | | racenes | | 1, | |
| Sarracene o | minos. | | Hooded PJ. | Sherplant | + | 3 | 2 | A | bes the Heath ar | |
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| Man | | | | | | | | | | |
| Notes | tion? | no | | | | | | | | |
| Evidence of reproduc | | | 4.0 | 0 7 | | | | | | |
| Stages of development Potential risk to com | nt: X | Del V | sais pereku | planto | | | | | | |
| Describe habitat in d | mumuy (c etail | IIVasive | Es): None | | | | | | 1 | |
| Describe nabitat in d | ctan | | | | | | | |] | |
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| | C. | over cla | 155 | | Distributio | n | | lo. Plants | | |
| | | = Absen | | 3 = 25-50% | A - infrequ | ent | | - single plant | | |
| | L | = <1% | ······································ | 4 = 50-75% | B - evenly | | | - <20 | | |
| | | | | | 1 | | | | | |
| 1 | | = 1-5% | | 5 = 75-95% | C - localize | | | - 20-99 | | |
| 1 | 2 | = 5-25% | | 6 = 95-100% | D - frequer | it | D | - 100-999 | | |
| | | | | | | | E | - > 1,000 | | |
| | l N | \$ = n ot | surveyed for | | E - dense | | | | | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | VT10 | /2 | Occurrence ID: | 12 | USGS q | uad: | | |
|-----------------------|--|--|-----------------------------|--|--------------------|----------------------|----------------|--------------|
| Examiner(s): | | - Hartowicz | | ······································ | Date: | | 2-25-0 | _ |
| Site coordinates: | | 37912365 | | | Long: | - { | 1-25-0 | 7 |
| GPS used? | YN | | Photo ID | 's | Tower | Number | 1 - 202 | |
| Location/directions | 1 | 1 22 | | | -D | 111 | 1 - 200 | |
| 0 | lake | Unnam | ed roa | cla | er of | y of | Spring | field |
| Sand | cold | Unnam Augusta | Rd) to | near | por | verl | ne the | - right |
| Pand | 000 | 11-11 | + | 00.1 | 11 | 1: | Non 20 | 1 |
| rona | on su | rad tha | parac | ies, | ene i | ine. | gri No | meg |
| | dista | nce wh | ere to | e sta | od / | lurn | sand c | roses |
| | und | er the Common | line to | seda | ed0 | Vilde | He Mat | area. |
| Scientific Na | ame | Common | Name | Cover | Ng. | No. | // | Gross Area |
| | | 1 | | Class | Plants | Patches | Distribution | (acres) |
| Gopherus | solushi | Gopher Tor | toise | | | | | |
| 7 | 777 | 115/ | | | | | | |
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| line in two les pine, | er-ler sand ie tor blueber | Crapher ves)? power ie Elev ly borde tories b ry, palm of Sand | en ac Ineque etto are | tive . Sand whi | hur Pon te s | rows ad", rand | alexandra de | ed |
| | | | | | | | | |
| | Cover c | | | Distribution | | | lo. Plants | |
| | - = Abse | | 3 = 25-50% | A - infrequer | nt | | - single plant | |
| | + = <1% | | 4 = 50-75% | B - evenly | | | 3- <20 | |
| | 1 = 1-5% | | 5 = 75-95% | C - localized | | | - 20-99 | |
| | 2 = 5-25 | % | 6 = 95-100% | D - frequent | | | - 100-999 | |
| | No | A | | - | | Į E | - > 1,000 | 1 |

Compass bearing very sandy

very sandy

gopher tortoise

burrown in

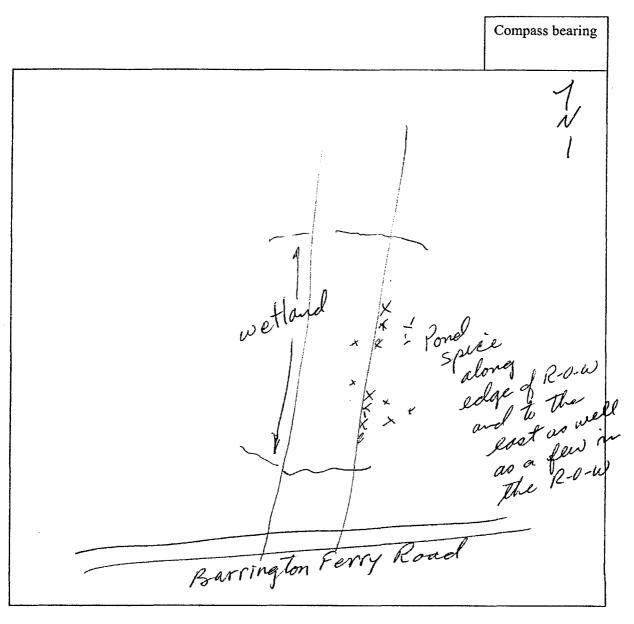
pine plantations Sand road

Burrow on

R-0-W

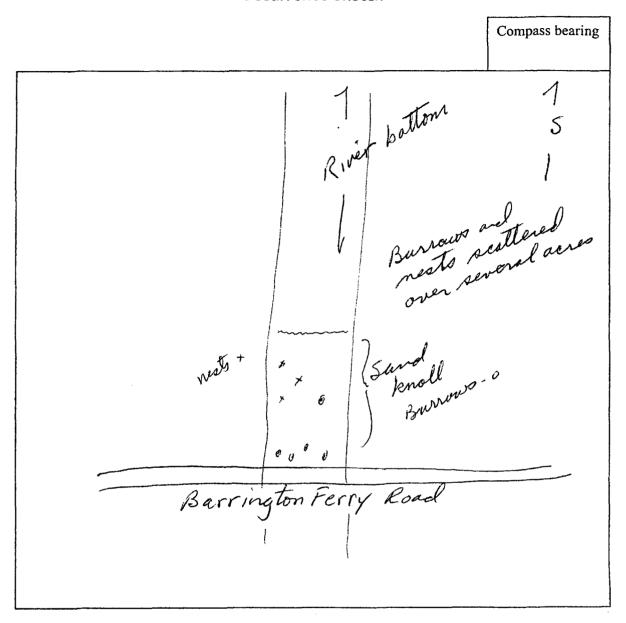
- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | VT. | 12 41 | Occurrence ID: | 13 | USGS q | uad: | | |
|--|--|-------------------------------------|----------------|--------------------------------------|------------------------|----------------------|--|--------------------|
| Examiner(s): | Meade | + Hartowic | 2 2 | | Date: | 8 | -23-05 | - |
| Site coordinates: | Lat: 31. | 46892993 | | | Long: | 5 | 31.5943595 | |
| GPS used? | Y | Accuracy ± feet | Photo ID | 's uca | Tower I | Number | | |
| Litsea aed | hess on en well | Than 1000 ast side | | | | No. Patches | Ton Fer ing water | Gross Area (acres) |
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| Notes Evidence of reproduc Stages of developmer Potential risk to com Describe habitat in de Stages of developmer And And And And And And And And And And | nt? munity (envasi etail etail are or ever des evera | et edge et in the ep + hus l sma -w | f 1 | he p R-0 teolo heer d sp | lants De of none | are hut the owed how | along a few R-o-W d in, e Sesp | the |
| | Cover | | , | Distribution | n | | lo, Plants | |
| | - = Abse | | 3 × 25-50% | A - infreque | ent | | - single plant | |
| | + = <1% | | 4 = 50-75% | B - evenly | | | - <20 | |
| | 1 = 1-5% | | 5 = 75-95% | C - localize | | | - 20-99 | |
| | 2 = 5-25 |)% | 6 = 95-100% | D - frequen | t | | - 100-999 | |
| | NS = no | t surveyed for | | E - dense | | E | - > 1,000 | |



- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | VT 42 | . (| Occurrence ID: | 80. | USGS q | uad: | | |
|---------------------|--|-----------------|----------------|---------------------------|---------------|----------------|--------------------------------------|-----------------------|
| Examiner(s): | Meade | + Hactowie | <u> </u> | | Date: | 8 | 3-23-05 | |
| | | 46816 | | | Long: | | 81,59548 | |
| GPS used? | Y | Accuracy ± feet | | S | Tower | Number | | |
| Location/directions | adjoc | on lan | d sour | th of | Barknow | sing ll. | ton Fe | rej |
| Scientific Nan | ne | Common | Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) |
| α / | -/-/- | | + 1. | | · wite | raccies | DISC IDUCION | (acres) |
| Gopherus p. | oly shen | rus Goobe | rTortoise | 2 | | _ | | |
| 1-1 | 71 | יוף | | | | | | |
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| | | | · | | | | <u>-</u> | |
| | Cover ct | | 3 = 25-50% | Distribution A - infreque | | | No. Plants A - single plant | |
| | + = <1% | | 4 = 50-75% | B - evenly | | | B- <20 | |
| | | | | | | | | |
| | 1 = 1-5% | | 5 = 75-95% | C - localize | | | C - 20-99 | |
| | 2 = 5-259 | 6 | 6 = 95-100% | D - frequen | t | | D - 100-999 | |
| | NS = not | surveyed for | | E - dense | | | E - > 1,000 | |



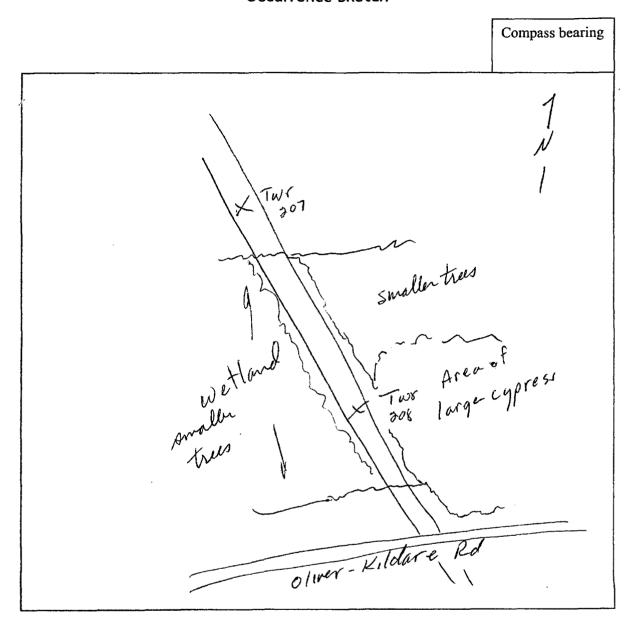
- Show distance to nearest tower and tower number
- Show location of ROW boundary
- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | VT 4 | 0 | Occurrence ID: | 14 | USGS q | | | • | | | |
|---|---|--|----------------|--------------------|---------------|----------------------|--------------|-----------------------|--|--|--|
| Examiner(s): | Nead | le a Harta | wicz | 77 | Date: | 8 | 1-23-05 | | | | |
| Site coordinates: | Lat: 31,9 | | Long: | Long: -81.52850577 | | | | | | | |
| GPS used? | Y N | Accuracy ± feet | Photo ID | | | Number 5 <i>e</i> | 1573 to | No 570 | | | |
| Location/directions | 112,0 | 1 autor Ta | il R.S | < : | o is | 1000 | Lo C.J | col | | | |
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| | eul | W. of GatorTail Rd 52 is 100 yels Sofce cut sol. 15' from colge of power line | | | | | | | | | |
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| Scientific N | ame | Common | Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) | | | |
| | • | 1001 | - 1 / | | | | Distribution | (acres) | | | |
| Sarv. mi | nov | Hooded pit | cher plan | T | 300 | 32 | | | | | |
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| Notes | | | 0 | . < | <u>.</u> | τ | | 7 | | | |
| Evidence of reproduc | | SZ | and 53 |) > = | s. min | or u | wo loca | cuons | | | |
| Stages of developmen | | ives\7 | | | | | | | | | |
| Potential risk to com Describe habitat in d | . • • | ives)? | | | | | | | | | |
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| | | α | i wax | - 7) | , | | | ., | | | |
| W. side of line 5. minor 4 - 22 clumps scattered over 1/2 acre | | | | | | | | | | | |
| | 5.n | uvor T - | 22 00 | www. | | -0 1 | 3 1- 1 | 10 | | | |
| af R-O-W average 10 penns / clump | | | | | | | | | | | |
| af R-O-W average 10 plants / clamp | | | | | | | | | | | |
| 2nd occurence sheet for this segment | | | | | | | | | | | |
| | Cover | class | | Distributio | n | | io. Plants | | | | |
| | - = Absent 3 = 25-50% A - infrequent A - single plant | | | | | | | | | | |
| | + = <1% 4 = 50-75% B - evenly B- <20 | | | | | | | | | | |
| | 1 = 1-5% 5 = 75-95% C - localized C - 20-99 | | | | | | | | | | |
| | 2 = 5-25% 6 = 95-100% D - frequent D - 100-999 | | | | | | | | | | |
| | NC | ot surveyed for | l | E - dense | | E | - > 1,000 | | | | |
| | 1 42 = 46 | ot surveyed for | | E - dense | | | | | | | |

| | Compass bearing | | |
|---|-----------------|--|--|
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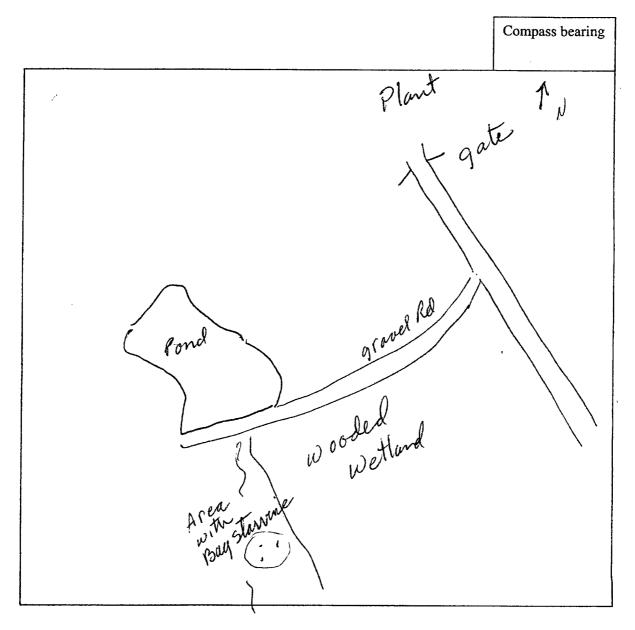
- Show distance to nearest tower and tower number
- Show location of ROW boundary
 Show the location of occurrence boundary
 Show scale relationships

| Segment ID | VT | 77 | Occurrence ID: | 11/11/ | USGS q | uad: | | | | |
|---|--|--------------------|----------------|-----------------------------|---------------|----------------|--------------------|-----------------------|--|--|
| Examiner(s): | Mead | le + Hartowi | cz | | Date: | | -25-05 | | | |
| Site coordinates: | | ,55161265 | | | Long: | | 25-05 81.386645 | 32 | | |
| GPS used? | YN | Accuracy ± feet | Photo ID | 's | Tower | Number 20 | 7-20 | 8 | | |
| North of aliver (Clyo)-Kildare Road and southeast of Edwards Loop Road P, 47 in Deharme GA atlas | | | | | | | | | | |
| Scientific N | ame | Common | Name | Cover Class | No. Plants | No. Patches | Distribution | Gross Area (acres) | | |
| Mycteria a | meric | ina Wood | stork | | | | | | | |
| V | | | | | | | | | | |
| | | | | | | | | | | |
| Notes Evidence of reproduction? Stages of development? Potential risk to community (envasives)? Describe habitat in detail A the highway and lies between towers 207-209. The area was cleared for the powerline but a stand of very large cypress and tupelo is adjacent to the line on the northeast side. Counted 17 birds, some feeding some lasquing on logs or perched in large cypress. 2nd accurence sheet for this site | | | | | | | | | | |
| | | er class Absent | 3 = 25-50% | Distributio A - infreque | | | | | | |
| | + = <1% 4 = 50-75% | | | | | | - <20 | | | |
| | 1 = 1-5% 5 = 75-95% 2 = 5-25% 6 = 95-100% | | | | | C - 20-99 | | | | |
| | | | | | | | D - 100-999 | | | |
| | 2 = 5-25% 6 = 95-100% D - frequ | | | | | | E -> 1,000 | | | |
| | 1 | not surveyed for | | E - dense | | 1 - | - 1,000 | | | |



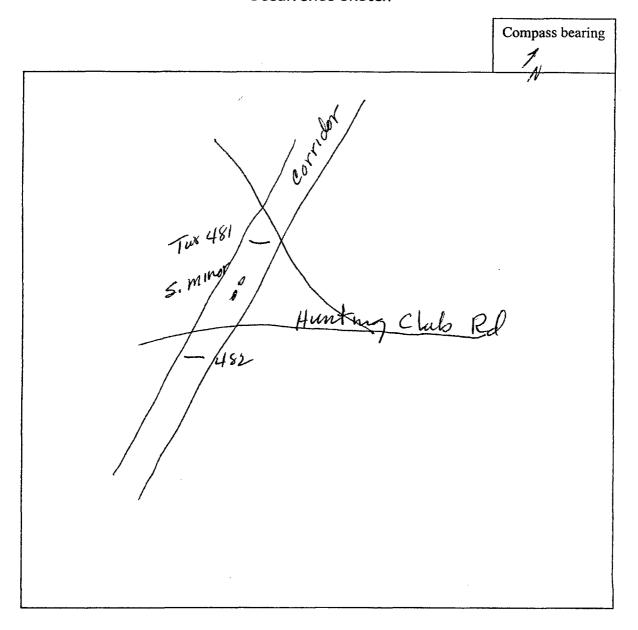
- Show distance to nearest tower and tower number
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- Show the location of occurrence boundary
- Show scale relationships

| Segment ID | Va | atte | Plant | Occurrence ID: | 16 | USGS q | uad: | Gurard | NW |
|--|--------------------------|-------------|-----------------|----------------|--------------|---|-------------|----------------|------------|
| Examiner(s): | Varner + Hartowicz | | | Z Date: | | | 10-25-05 | | |
| Site coordinates: | Lat: | | 12985 | | | Long: | | 1.7530 | <u> </u> |
| GPS used? | Y | N | Accuracy ± feet | Photo ID | S | Tower | Number | | |
| Location/directions | | 1 | | | | | | | 4 |
| cocacion an eccions | | | | | | | | | |
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| Scientific Na | ime | | Common | Name · | Cover | No. | No. | · | Gross Area |
| | | | | | Class | Plants | Patches | Distribution | (acres) |
| Schisano | lia | - | Bry Starvine | | | 3 | 3 | | |
| (() | | | - Sur purce | | | | | | |
| glavra | | | | | | | | ļ | |
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| | | | | | | | | | |
| Notes Evidence of reproduct Stages of developmen Potential risk to comm Describe habitat in de | it? nunity : etail | | vines (| on dig | feren | It | Tees | in a | |
| | | Cover cla | ass | | Distribution | n | , | io. Plants | |
| | | - = Absen | | 3 = 25-50% | A - infreque | ent | 7 | - single plant | |
| | r | + = <1% | | 4 = 50-75% | B - evenly | · - · · · · · · · · · · · · · · · · · · | F | 3- <20 | |
| | | 1 = 1-5% | | 5 = 75-95% | C - tocalize | d | | - 20-99 | |
| | F | 2 = 5-25% | 6 | 6 = 95-100% | D - frequen | t | | - 100-999 | |
| | <u> </u> | NC * | current for | | E dance | | E | - > 1,000 | |



- Show distance to nearest tower and tower number
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- Show the location of occurrence boundary
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| Segment ID | 0 | <u> </u> | <u> </u> | Occurrence ID: | 77 | USGS q | nad. | · · · · · · · · · · · · · · · · · · · | |
|--|--------------------------|------------------|--------------------|-----------------|----------------|---------------|-------------|---------------------------------------|----------------|
| Examiner(s): | 1 Act | andi | er + Harta | | | Date: | | 0-29-0 | |
| Site coordinates: | Lat: | ann g | | swicz_ | | Long: | | 81-459 | 7-2 |
| GPS used? | ν | N | Accuracy ± feet | Photo ID | <u> </u> | | Mumber | | 2 |
| Gi 5 daca. | Y | ' '' | Accuracy 1 leet | 11100012 | • | Tower | 17:75 4 | 181 | |
| Location/directions | | | | | | | <u> </u> | | |
| | 16 | 20 y | ols N. g | 1 Kun | ting (| Club | Road | L | |
| Scientific Na | ame | | Common | Name | Cover | No. | No. | / | Gross Area |
| 001=111111 | | - 1 | | | Class | Plants | Patches | Distribution | (acres) |
| | | | 11 0 1 | +1 1 | | 2 | | | |
| Saracenea | mil | 101 | Hooded | DII char Plat | | 25 | 2 | <u> </u> | |
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| | | | | | | L | l | L | |
| Evidence of reproduct Stages of development Potential risk to compute Describe habitat in describe habitat | nt? munity (etail | | es)? 2 si hetwe | mall c en 48 | lump 31 - c | us app 182 | Nox | imatel | |
| | | | | | | | | | |
| | \top_{a} | Cover cl | ass | | Distributio | n | | lo, Plants | |
| | | = Abser | | 3 = 25-50% | A - infreque | | | \ - single plant | |
| | - | + = <1% | | 4 = 50-75% | B - evenly | | I | 3- <20 | |
| | L_ | I = 1-5% | | 5 = 75-95% | C - localize | rd | [- | - 20-99 | |
| | L | 2 = 5-25% | | 6 = 95-100% | D - frequen | | |) - 100-999 | |
| | - | | | 0 - 73-100% | J - IT EQUEI | | | - > 1,000 | |
| | | NS = not | surveyed for | | E - dense | | | > 1,000 | |



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Ph: 859-977-2000 Fax: 859-977-2001