

Womack Creek/Tates Hell Wetlands Restoration Annual Monitoring Report (2010)
Wakulla County

Impacts:

I-10 Little River Bridge; Gadsden Co.; FM 4073041; NW22; 0.45-acre impact; USACE Permit **SAJ-2002-05672 NW-JWS** issued 5/2/03.
US 319 at Curtis Mill Creek; Wakulla Co.; FM 2205061; NW22; 0.20-acre impact; USACE Permit **SAJ-2002-05045 NW-JWS** issued 2/6/03.
US 319 at Little Tide Creek; Wakulla Co.; FM 2205071; NW22; 0.17-acre impact; USACE Permit **SAJ-2002-00233 NW-JWS** issued 2/6/03.
Roberts Landing Road at Silver Lake Creek; Wakulla Co.; FM 4062261; NW22; 0.19-acre impact; USACE Permit **SAJ-2002-05047 NW-JWS** issued 2/6/03.

Mitigation: Womack Creek/Tates Hell

Monitoring Date: November 11, 2010

SCOPE

Bridge repair and construction at four sites have resulted in impacts that are being mitigated at this site. The Womack Creek/Tates Hell wetlands restoration site is located on the Ochlockonee River along the eastern side of State Road (SR) 67 in Tates Hell Swamp, Liberty County, Florida (Figure 1) at approximately 30°1.5'N and 84°35'W in Section 2, Township 6S, Range 4W. It is part of the 200,000 acres (>300 miles²) Tates Hell Swamp, which is low-lying, poorly drained land between the Apalachicola and Ochlockonee rivers. Although this area historically was dominated by a variety of wetland types including wet savanna, wet flatwoods, cypress strands and hardwood swamps, much of the swamp was converted to slash pine (*Pinus elliotii*) plantation during the 1960s and 1970s. Since 1993, the NFWFMD, working with Florida Division of Forestry (DOF), has conducted restoration of portions of Tates Hell Swamp. A long-term vision is eventual restoration of the natural communities of the entire swamp. This mitigation project complements these ongoing efforts by focusing on an area not previously slated for restoration activities.

MITIGATION PROJECT

To mitigate for 1.0 acre of wetland impact related to the four bridge projects, a 70-acre tract in the Womack Creek drainage of Tates Hell Swamp (Figure 2) was selected for restoration activities. The site is directly adjacent to the Ochlockonee River and consists of approximately 50 acres that will be restored to bottomland hardwood forest with about 20 acres of existing wetlands (Figure 3). The restoration areas were clear cut in the early 1990's and not replanted. These areas were left fallow, allowed to regenerate and were dominated by 6 to 20-foot laurel oaks, live oaks, water oaks, sweet gum, maple and titi.

Restoration Activities

The project was divided into two phases with all site preparation activities (mechanical reduction and burning) included in phase one and vegetation planting in phase two. Phase 1 was completed from 2005-2007 and Phase 2 was completed in 2008. Due to the vagaries of the weather no burning was carried out in the area until Fall 2007, when an unsuccessful partial burn was attempted just prior to planting. Only partial success was noted with both burns because of the limited amount of fuel on site. Re-planting is scheduled for Winter 2010/2011.

Annual monitoring of the restoration site was carried out on 11 November 2010 (Figures 4-7). A series of transects was walked over the site noting vegetation present. One hundred and eleven plant species were observed (Table 1). The dominant species were FAC and FACW species. There were numerous sweetgum seedlings at the site (FACW), which is a good indicator of latent site hydrology. The herbaceous and shrub species were primarily FAC species, so it will be important to ensure an effective burn is completed, preferably in the growing season. With the degree of wetness being experienced this year there is a very good likelihood of progress toward project goals if: (1) tree species are allowed to re-establish the closed canopy that is natural for a bottomland forest community and (2) spot treatment of Japanese climbing fern is completed. It should be noted that fire is not a significant factor in the maintenance and development of the bottomland forest community.

WORK SCHEDULE

Coordination with Florida Division of Forestry (Tates Hell State Forest): **communication ongoing**

Wiregrass planted on approximately 20 acres of site: **completed 01/18/08**

Annual monitoring performed: **completed 11/11/08**

Herbicide treatment for cogon grass: **Spring 2010**

Annual monitoring performed: **completed 11/01/10**

Re-planting: **Proposed for Winter 2010/2011, not completed**

SUCCESS CRITERIA

Mechanical reduction and burn: mechanical reduction of shrub and overstory was carried out by walkdown (May 2005), roller chop (August 2005), and gyrotrack (December 2007); a partial burn was carried out (September 2007) followed by a more successful second burn (December 2007). **Completed & Met**

Supplemental planting of 20 acres with wiregrass plugs on 3-ft centers: planting was completed in January 2008. **Completed & Met**

Vegetative cover shall be at least 85% with jurisdictional wetland vegetation for a period of one year: **Annual monitoring indicated that wetland vegetation coverage was 60-75% depending on site location. Dominant vegetation in restoration area was FAC and FACW.**

Survival of the planted wiregrass shall be 85%: **Annual monitoring indicated that wiregrass survival was 40-45%. Planting of additional materials will occur in winter 2010/2011.**

Nuisance exotic species shall be controlled and kept to less than 5% of the total percent cover: **Annual monitoring indicated less than 5% cover of exotic species. The small patch of *Imperata cylindrica* that was treated in 2010 was not re-located. Small *Lygodium japonicum* plants were found scattered throughout the restoration area but cover was less than 5% of the total area.**

CONCLUSIONS

All success criteria were met with the exception of wiregrass survival. This community is being restored to bottomland forest, so wiregrass would not naturally be a component of the community. For this reason, the low survival of wiregrass should not be an indicator of unsuccessful restoration. There is a very good likelihood of progress toward project goals if tree species are allowed to re-establish the closed canopy that is natural for a bottomland forest community and the natural closed canopy that is characteristic of this community is allowed to regenerate. It should be noted that fire is not a significant factor in the maintenance and development of the bottomland forest community. Also spot treatment of Japanese climbing fern will prevent further infestation and the displacement of native, desirable species.

Figure 1. General location of the Womack Creek mitigation site along the Ochlockonee River in the northeastern portion of Tates Hell State Forest.

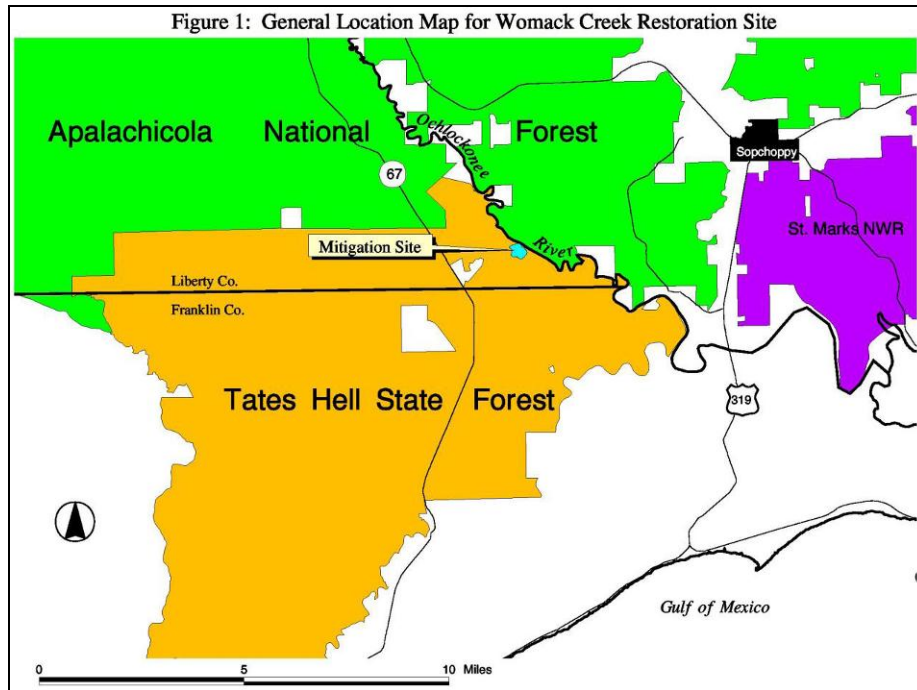


Figure 2. Site location indicating proximity to the Ochlockonee River and Womack Creek.

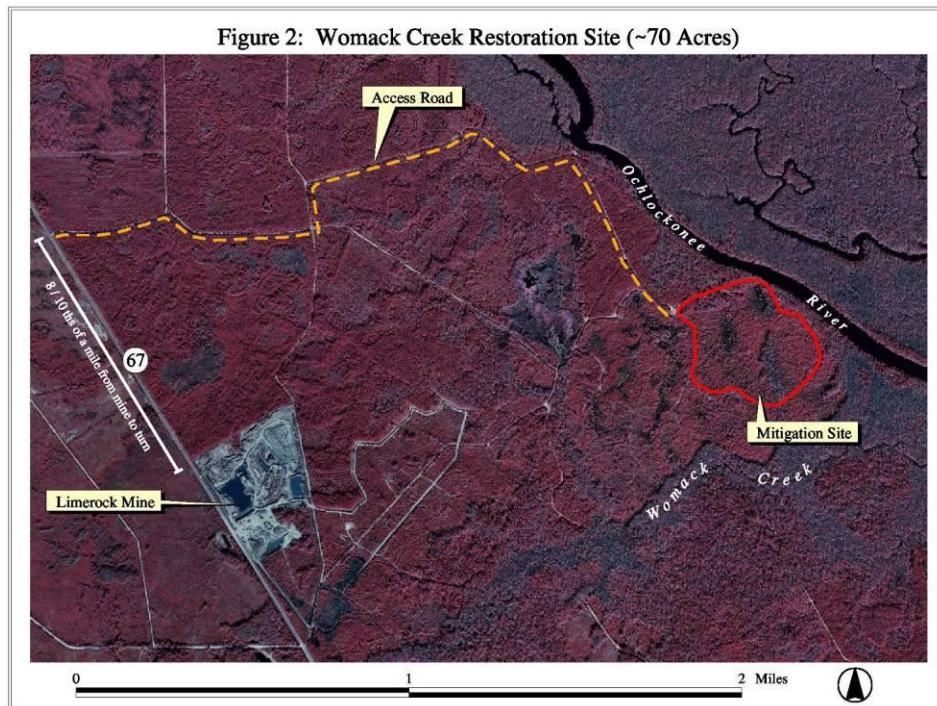


Figure 3. Aerial photograph of the site indicating locations of cypress and gum dominated wetlands (darker, elongated patches in central and northern portions of site).

Womack Creek Mitigation Area



Figure 4. Typical appearance of restoration portion of site. Photo was taken facing south.



Figure 5. Typical appearance of replanted portion of site – early successional ground cover and woody debris.



Figure 6. Wiregrass survival in mechanically treated area.



Figure 7. Typical appearance of natural portion of site.



Table 1. Vegetation species list observed during the annual monitoring of the Womack Creek mitigation site on 01 November 2010.

Scientific Name	Common Name	2008	2009	2010	Dominant	Form
<i>Acer floridanum</i>	Florida maple			X		Tree
<i>Acer rubrum</i>	Red maple			X		Tree
<i>Andropogon glomeratus</i>	Bushy bluestem			X		Herb
<i>Andropogon virginicus</i>	Broom sedge	X	X	X	X	Tree
<i>Ampelopsis arborea</i>	Peppervine			X		Vine
<i>Aristida stricta</i>	Wire grass	X	X	X		Tree
<i>Baccharis halmifolia</i>	Groundsel tree		X	X		Shrub
<i>Bidens mitis</i>	Spanish needles			X		Herb
<i>Boehmeria cylindrica</i>	False nettle			X		Herb
<i>Callicarpa americana</i>	Beauty berry	X	X	X	X	Tree
<i>Carex sp.</i>	Caric sedge	X	X	X		Tree
<i>Carpinus caroliniana</i>	Ironwood			X		Tree
<i>Carya glabra</i>	Pignut hickory			X		Tree
<i>Centella asiatica</i>	Centella	X		X		Tree
<i>Chasmanthium laxum</i>	Slender woodoats			X		Herb
<i>Cliftonia monoplylla</i>	Black titi	X		X	X	Tree
<i>Cornus foemina</i>	Swamp dogwood			X		Shrub
<i>Conyza canadensis</i>	Horseweed			X		Herb
<i>Crataegus marshallii</i>	Parsley hawthorn			X		Shrub
<i>Cyperus odoratus</i>	Fragrant flatsedge			X		Herb
<i>Cyperus spp.</i>	Sedge	X		X		Tree
<i>Cyrilla racemiflora</i>	Titi			X		Shrub
<i>Dicanthelium spp.</i>	Witch grass	X		X		Tree
<i>Dichanthelium aciculare</i>	Needleleaf witchgrass	X	X	X		Shrub
<i>Diodia virginiana</i>	Virginia buttonweed			X		Herb
<i>Diospyros virginiana</i>	Persimmon	X		X		Shrub
<i>Elephantopus carolinianus</i>	Carolina Elephantsfoot			X		Herb
<i>Eragrostis elliottii</i>	Elliott lovegrass	X		X		Shrub
<i>Erechtites hieraciifolius</i>	Fireweed			X		Herb
<i>Eupatorium capillifolium</i>	Dog fennel	X	X	X		Shrub
<i>Eupatorium compositifolium</i>	Yankeeweed			X		Herb
<i>Euthamia caroliniana</i>	Flat-topped goldenrod	X		X		Shrub
<i>Fraxinus caroliniana</i>	Carolina ash			X		Tree
<i>Fuirena squarrosa</i>	Lake-rush	X		X		Shrub
<i>Hammamelis virginiana</i>	Witchhazel			X		Shrub
<i>Heterotheca subaxillaris</i>	Camphorweed			X		Herb
<i>Hypericum gentianoides</i>	Orange grass	X	X	X		Shrub
<i>Hypericum hypericoides.</i>	St. Andrew's cross		X	X		Shrub
<i>Hyptis alata</i>	Musk mint	X		X		Shrub
<i>Ilex cassine</i>	Dahoon			X		Shrub
<i>Ilex coriacea</i>	Tall gall berry	X		X		Shrub
<i>Ilex glabra</i>	Gall berry	X		X		Shrub
<i>Ilex opaca</i>	American holly	X		X		Shrub
<i>Ilex vomitoria</i>	Yaupon	X		X		Shrub
<i>Gelsemium rankii</i>	Swamp Jessamine			X		Vine
<i>Gelsemium sempervirens</i>	Jessamine		X	X		Vine
<i>Jacquemontia taminifolia</i>	Hairy clustervine			X		Vine
<i>Juncus effusus</i>	Soft rush	X		X		Vine
<i>Juncus marginatus</i>	Shore rush			X		Herb
<i>Juncus megacephalus</i>	Large headed rush	X		X		Vine
<i>Juncus sp.</i>	Rush		X	X		Herb
<i>Juncus repens</i>	Lesser creeping rush			X		Herb
<i>Liquidambar styraciflua</i>	Sweet gum	X	X	X	X	Herb
<i>Ludwigia sp.</i>	Seedbox	X	X	X		Herb
<i>Lycopodium aloperuroides</i>	Fox clubmoss	X				Herb
* <i>Lygodium japonicum</i>	Japanese climbing fern			X		Vine

Scientific Name	Common Name	2008	2009	2010	Dominant	Form
<i>Lyonia ligustrina</i> var. <i>foliosiflora</i>	Maleberry			X		Shrub
<i>Lyonia lucida</i>	Fetterbush			X		Shrub
<i>Magnolia grandiflora</i>	Southern magnolia	X	X	X		Herb
<i>Magnolia virginiana</i>	Silver bay	X	X	X		Herb
** <i>Matelea</i> sp.	Spinypod			X		Vine
<i>Myrica cerifera</i>	Wax myrtle	X	X	X		Herb
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Swamp tupelo			X	X	Tree
<i>Nyssa ogeche</i>	Ogeechee tupelo			X	X	Tree
<i>Osmunda cinnamomea</i>	Cinnamon fern	X	X	X		Herb
<i>Panicum verrucosum</i>	Warty panicum			X		Herb
<i>Paspalum</i> sp.	Paspalum			X		Herb
<i>Paspalum setaceum</i>	Slender paspalum			X		Herb
<i>Paspalum urvillei</i>	Vaseygrass			X		Herb
<i>Passiflora incarnata</i>	Passionflower			X		Vine
<i>Persea palustris</i>	Swampbay			X	X	Tree
<i>Pinus glabra</i>	Spruce pine	X	X	X	X	Herb
<i>Pinus taeda</i>	Loblolly Pine			X	X	Tree
<i>Pluchea foetida</i>	Camphor weed	X	X	X		Herb
<i>Polygonum punctatum</i>	Smartweed		X	X		Herb
<i>Polypremum procumbens</i>	Rustweed	X	X	X		Herb
<i>Pteridium aquilinum</i>	Bracken fern	X	X	X	X	Herb
<i>Quercus hemisphaerica</i>	Diamond oak	X	X	X		Herb
<i>Quercus nigra</i>	Water oak			X		Tree
<i>Quercus michauxii</i>	Swamp chestnut oak			X		Tree
<i>Rhaphidophyllum hystrix</i>	Needle palm	X	X	X	X	Herb
<i>Rhexia mariana</i>	Pale meadow beauty	X		X		Herb
<i>Rubus argutus</i>	Black berry	X	X	X		Herb
<i>Rubus trivialis</i>	Dew berry	X		X		Herb
<i>Sabal minor</i>	Bluestem palm	X	X	X		Herb
<i>Sabal palmetto</i>	Sabal palm	X	X	X		Herb
<i>Saururus cernuus</i>	Lizard's tail	X		X		Herb
<i>Scirpus cyperinus</i>	Wool-grass	X		X		Herb
<i>Scleria triglomerata</i>	Nut sedge	X	X	X		Herb
<i>Scoparia dulcis</i>	Sweetbroom			X		Herb
<i>Smilax bona-nox</i>	Greenbriar			X		Vine
<i>Smilax glauca</i>	Greenbriar		X	X		Vine
<i>Smilax laurifolia</i>	Greenbriar	X	X	X		Vine
<i>Solidago fistulosa</i>	Pine barrens goldenrod	X	X	X	X	Herb
<i>Sporobolus indicus</i>	Smutgrass			X		Herb
<i>Symplocos tinctoria</i>	Horse sugar			X		Shrub
<i>Taxodium distichum</i>	Bald cypress			X		Tree
<i>Thelypteris</i> sp.	Maidenfern			X		Herb
<i>Tillandsia usneoides</i>	Spanish moss			X		Epiphyte
<i>Toxicodendron radicans</i>	Poison ivy			X		Vine
<i>Trichostema dichotomum</i>	Forked bluecurls			X		Herb
<i>Vaccinium arboreum</i>	Sparkleberry			X		Shrub
<i>Vaccinium corymbosum</i>	Highbush blueberry	X	X	X		Herb
<i>Vaccinium elliotii</i>	Elliott's blueberry			X		Shrub
<i>Viburnum dentatum</i>	Arrowwood	X		X		Herb
<i>Viola lanceolata</i>	Bog white violet	X				Herb
<i>Vitis rotundifolia</i>	Muscadine grape	X	X	X		Herb
<i>Vitis</i> sp.	Grape			X		Vine
<i>Woodwardia areolata</i>	Netted chain fern	X	X	X		Herb
<i>Woodwardia virginica</i>	Virginia chain fern			X		Herb
<i>Xyris</i> sp.	Yellow-eyed grass	X		X		Herb

Site Inspection Field Form	
Project: Womack Creek	Date: 11/1/2010
Name(s) of Data Collectors: Caitlin Elam and Alex Barth	Weather: 70-80°F/Partly Cloudy
Environmental Description: Photo #'s	
Polygon: GPS Location: Time: 9am	
Qualitative Assessment	
<ol style="list-style-type: none"> 1. Mechanical reduction and burn: mechanical reduction of shrub and overstory was carried out by walkdown (May 2005), roller chop (August 2005), and gyrotrack (December 2007); a partial burn was carried out (September 2007) followed by a more successful second burn (December 2007). 2. Supplemental planting of 20 acres with wiregrass plugs on 3-ft centers: planting was completed in January 2008. 3. Vegetative cover shall be at least 85% with jurisdictional wetland vegetation for a period of one year: <u>annual monitoring indicated that wetland vegetation coverage was 60-75% depending on site location.</u> 4. Survival of the planted wiregrass shall be 85%: <u>annual monitoring indicated that wiregrass survival was still 40-45%, after a second planting in Fall 2009.</u> 5. Nuisance exotic species shall be controlled and kept to less than 5% of the total percent cover: <u>annual monitoring indicated less than 5% cover of exotic species. A small patch of <i>Imperata cylindrica</i> was noted on the eastern side of the tract and will be treated with herbicide in Fall 2009 and this was not re-located in 2010. However, <i>Lygodium japonicum</i> was scattered throughout the restoration area comprising less than 5% total cover but still an issue that should be addressed with proper treatment.</u> 	
On at least a yearly basis, the site will be inspected as follows:	
A: Perimeter for signs of trespassing, fencing and signage integrity and infestation by exotic or nuisance vegetation;	
Signage intact along western boundary; eastern boundary open to public access (no gate).	
B: Internal Roads (Both public and maintenance) for signs of dumping or trespassing, erosion, bridges and road integrity, and exotic or nuisance species infestations;	
Internal road overgrown and covered with debris in some places, otherwise intact.	
C: All construction areas for stabilization and re-vegetation, structure, operation, and integrity;	
No construction areas at this time.	

D: Representative polygons for each UMAM community for fuel load, exotic or nuisance species, planted material survival, groundcover, and shrub condition.

Wetland areas seem show appropriate species cover and composition, although they were not inundated because it has been unseasonably dry. Vegetation in the ecotones is primarily herb dominated and consists of native early successional species. Cover of more desirable species may increase with continued management (i.e. fire). Walk down/ Roller-chopped area predominately early successional vines and sparse shrubs such as *Passiflora incarnata*, *Liquidambar styraciflua*, and *Callicarpa americana*. Some remnant low areas of *Aristida stricta* and/or *Muhlenbergia capillaris* persist and *Rhaphidophyllum hystrix* is also scattered throughout. The FLEPPC nuisance species *Lygodium japonicum* is also scattered throughout the upland areas. Woody debris from roller-chopping is dense and may be preventing the establishment/persistence of some herbaceous species such as wiregrass. Wiregrass survival is excellent in patches and non-existent in some areas; overall 40-45% of plugs appear to be persisting. If managed as a pine flatwoods, a prescribed burn would remove dead woody debris and allow for the re-establishment of herbaceous cover. Bottomland hardwood forest, the original natural community, does not rely on fire for maintenance or development.

Vegetation Assessment Field Form Qualitative Assessment: Womack Creek	
Date: 11/01/10	
Name(s) of Data Collectors: Caitlin Elam and Alex Barth	Weather: 70-80°F/Partly Cloudy
Environmental Description: Photo #'s	
Polygon: GPS Location: Time: 9 am	
Exotic infestations: <i>Lygodium japonicum</i> Fuel Load: Minor fire suppression. Abundance of sweet gum seedlings and Passionflower vines.	
<ul style="list-style-type: none"> Wildlife Observations: <u>Black snake, hawk</u> Water depth: <u>Below the soil surface, unseasonably dry weather.</u> Is the community observed along the walk path representative of the community being measured? <u>The wetland areas are in very good condition, but the upland areas appear to be in a transitional phase that is to be expected during the process of restoration.</u> To what degree is the restoration in this area trending towards success? <u>The area is open and there is some native species survival so it is potentially trending towards success.</u> Potential Problems and solutions: <u>Treatment of <i>Lygodium japonicum</i> is necessary to prevent growth and spread, but these plants are in the upland area and would be killed by fire. Woody debris left after roller-chopping is preventing the development of an appropriate herbaceous stratum and will provide high levels of medium fuel when burned. This area was historically bottomland forest as indicated by the presence of mature <i>Pinus glabra</i> and <i>Rhaphidophyllum hystrix</i>, the position on the landscape, and the similar species composition of the adjacent plant communities.</u> 	

Plant Species observed:

Scientific Name	Common Name	2008	2009	2010	Dominant	Form
<i>Acer floridanum</i>	Florida maple			X		Tree
<i>Acer rubrum</i>	Red maple			X		Tree
<i>Andropogon glomeratus</i>	Bushy bluestem			X		Herb
<i>Andropogon virginicus</i>	Broom sedge	X	X	X	X	Tree
<i>Ampelopsis arborea</i>	Peppervine			X		Vine
<i>Aristida stricta</i>	Wire grass	X	X	X		Tree
<i>Baccharis halmifolia</i>	Groundsel tree		X	X		Shrub
<i>Bidens mitis</i>	Spanish needles			X		Herb
<i>Boehmeria cylindrica</i>	False nettle			X		Herb
<i>Callicarpa americana</i>	Beauty berry	X	X	X	X	Tree
<i>Carex sp.</i>	Caric sedge	X	X	X		Tree
<i>Carpinus caroliniana</i>	Ironwood			X		Tree
<i>Carya glabra</i>	Pignut hickory			X		Tree
<i>Centella asiatica</i>	Centella	X		X		Tree
<i>Chasmanthium laxum</i>	Slender woodoats			X		Herb
<i>Cliftonia monophylla</i>	Black titi	X		X	X	Tree
<i>Cornus foemina</i>	Swamp dogwood			X		Shrub
<i>Conyza canadensis</i>	Horseweed			X		Herb
<i>Crataegus marshallii</i>	Parsley hawthorn			X		Shrub
<i>Cyperus odoratus</i>	Fragrant flatsedge			X		Herb
<i>Cyperus spp.</i>	Sedge	X		X		Tree
<i>Cyrilla racemiflora</i>	Titi			X		Shrub
<i>Dicanthelium spp.</i>	Witch grass	X		X		Tree
<i>Dichantherium aciculare</i>	Needleleaf witchgrass	X	X	X		Shrub
<i>Diodia virginiana</i>	Virginia buttonweed			X		Herb
<i>Diospyros virginiana</i>	Persimmon	X		X		Shrub
<i>Elephantopus carolinianus</i>	Carolina Elephantsfoot			X		Herb
<i>Eragrostis elliotii</i>	Elliott lovegrass	X		X		Shrub
<i>Erechtites hieraciifolius</i>	Fireweed			X		Herb
<i>Eupatorium capillifolium</i>	Dog fennel	X	X	X		Shrub
<i>Eupatorium compositifolium</i>	Yankee weed			X		Herb
<i>Euthamia caroliniana</i>	Flat-topped goldenrod	X		X		Shrub

Scientific Name	Common Name	2008	2009	2010	Dominant	Form
<i>Fraxinus caroliniana</i>	Carolina ash			X		Tree
<i>Fuirena squarrosa</i>	Lake-rush	X		X		Shrub
<i>Hammamelis virginiana</i>	Witchhazel			X		Shrub
<i>Heterotheca subaxillaris</i>	Camphorweed			X		Herb
<i>Hypericum gentianoides</i>	Orange grass	X	X	X		Shrub
<i>Hypericum hypericoides</i>	St. Andrew's cross		X	X		Shrub
<i>Hyptis alata</i>	Musk mint	X		X		Shrub
<i>Ilex cassine</i>	Dahoon			X		Shrub
<i>Ilex coriacea</i>	Tall gall berry	X		X		Shrub
<i>Ilex glabra</i>	Gall berry	X		X		Shrub
<i>Ilex opaca</i>	American holly	X		X		Shrub
<i>Ilex vomitoria</i>	Yaupon	X		X		Shrub
<i>Gelsemium rankii</i>	Swamp Jessamine			X		Vine
<i>Gelsemium sempervirens</i>	Jessamine		X	X		Vine
<i>Jacquemontia tamnifolia</i>	Hairy clustervine			X		Vine
<i>Juncus effusus</i>	Soft rush	X		X		Vine
<i>Juncus marginatus</i>	Shore rush			X		Herb
<i>Juncus megagephalus</i>	Large headed rush	X		X		Vine
<i>Juncus sp.</i>	Rush		X	X		Herb
<i>Juncus repens</i>	Lesser creeping rush			X		Herb
<i>Liquidambar styraciflua</i>	Sweet gum	X	X	X	X	Herb
<i>Ludwigia sp.</i>	Seedbox	X	X	X		Herb
<i>Lycopodium aloperuroides</i>	Fox clubmoss	X				Herb
* <i>Lygodium japonicum</i>	Japanese climbing fern			X		Vine
<i>Lyonia ligustrina var. foliosiflora</i>	Maleberry			X		Shrub
<i>Lyonia lucida</i>	Fetterbush			X		Shrub
<i>Magnolia grandiflora</i>	Southern magnolia	X	X	X		Herb
<i>Magnolia virginiana</i>	Silver bay	X	X	X		Herb
** <i>Matelea sp.</i>	Spiny pod			X		Vine
<i>Myrica cerifera</i>	Wax myrtle	X	X	X		Herb
<i>Nyssa sylvatica var. biflora</i>	Swamp tupelo			X	X	Tree
<i>Nyssa ogeche</i>	Ogeechee tupelo			X	X	Tree
<i>Osmunda cinnamomea</i>	Cinnamon fern	X	X	X		Herb
<i>Panicum verrucosum</i>	Warty panicum			X		Herb
<i>Paspalum sp.</i>	Paspalum			X		Herb
<i>Paspalum setaceum</i>	Slender paspalum			X		Herb
<i>Paspalum urvillei</i>	Vaseygrass			X		Herb
<i>Passiflora incarnata</i>	Passionflower			X		Vine
<i>Persea palustris</i>	Swampbay			X	X	Tree
<i>Pinus glabra</i>	Spruce pine	X	X	X	X	Herb
<i>Pinus taeda</i>	Loblolly Pine			X	X	Tree
<i>Pluchea foetida</i>	Camphor weed	X	X	X		Herb
<i>Polygonum punctatum</i>	Smartweed		X	X		Herb
<i>Polypremum procumbens</i>	Rustweed	X	X	X		Herb
<i>Pteridium aquilinum</i>	Bracken fern	X	X	X	X	Herb
<i>Quercus hemisphaerica</i>	Diamond oak	X	X	X		Herb
<i>Quercus nigra</i>	Water oak			X		Tree
<i>Quercus michauxii</i>	Swamp chestnut oak			X		Tree
<i>Rhapidophyllum hystrix</i>	Needle palm	X	X	X	X	Herb
<i>Rhexia mariana</i>	Pale meadow beauty	X		X		Herb
<i>Rubus argutus</i>	Black berry	X	X	X		Herb
<i>Rubus trivialis</i>	Dew berry	X		X		Herb
<i>Sabal minor</i>	Bluestem palm	X	X	X		Herb
<i>Sabal palmetto</i>	Sabal palm	X	X	X		Herb
<i>Saururus cernuus</i>	Lizard's tail	X		X		Herb
<i>Scirpus cyperinus</i>	Wool-grass	X		X		Herb
<i>Scleria triglomerata</i>	Nut sedge	X	X	X		Herb
<i>Scoparia dulcis</i>	Sweetbroom			X		Herb

Scientific Name	Common Name	2008	2009	2010	Dominant	Form
<i>Smilax bona-nox</i>	Greenbriar			X		Vine
<i>Smilax glauca</i>	Greenbriar		X	X		Vine
<i>Smilax laurifolia</i>	Greenbriar	X	X	X		Vine
<i>Solidago fistulosa</i>	Pine barrens goldenrod	X	X	X	X	Herb
<i>Sporobolus indicus</i>	Smutgrass			X		Herb
<i>Symplocos tinctoria</i>	Horse sugar			X		Shrub
<i>Taxodium distichum</i>	Bald cypress			X		Tree
<i>Thelypteris</i> sp.	Maidenfern			X		Herb
<i>Tillandsia usneoides</i>	Spanish moss			X		Epiphyte
<i>Toxicodendron radicans</i>	Poison ivy			X		Vine
<i>Trichostema dichotomum</i>	Forked bluecurls			X		Herb
<i>Vaccinium arboreum</i>	Sparkleberry			X		Shrub
<i>Vaccinium corymbosum</i>	Highbush blueberry	X	X	X		Herb
<i>Vaccinium elliotii</i>	Elliott's blueberry			X		Shrub
<i>Viburnum dentatum</i>	Arrowwood	X		X		Herb
<i>Viola lanceolata</i>	Bog white violet	X				Herb
<i>Vitis rotundifolia</i>	Muscadine grape	X	X	X		Herb
<i>Vitis</i> sp.	Grape			X		Vine
<i>Woodwardia areolata</i>	Netted chain fern	X	X	X		Herb
<i>Woodwardia virginica</i>	Virginia chain fern			X		Herb
<i>Xyris</i> sp.	Yellow-eyed grass	X		X		Herb

*FLEPPC Listed Category I or II

**State-Endangered