#### **TATE'S HELL - WOMACK CREEK MITIGATION SITE**

Annual Monitoring Report, Year 4 January 12, 2012

#### **PROJECT OVERVIEW**

Impacts:	I-10 Little River Bridge, Gadsden Co.
	US 319 at Curtis Mill Creek, Wakulla Co.
	US 319 at Little Tide Creek, Wakulla Co.
	Roberts Landing Road at Silver Lake Creek, Wakulla Co.
USACE Permit No.:	SAJ-2002-05672 NW-JWS, issued 5/2/2003
	SAJ-2002-05045 NW-JWS, issued 2/6/2003
	SAJ-2002-00233 NW-JWS, issued 2/6/2003
	SAJ-2002-05047 NW-JWS, issued 2/6/2003
Mitigation:	Tate's Hell – Womack Creek, Liberty County
Permittee/Consultant:	FDOT
Responsible Party for Monitoring:	Northwest Florida Water Management District (NWFWMD) 81 Water Management Dr. Havana, FL 32333
Date of Inspection:	November 9, 2011
I .	
Inspectors:	Leigh Brooks, Graham Lewis

#### **Purpose of the Approved Project**

The Womack Creek mitigation project seeks to restore/enhance wetlands to compensate for loss of 1.0 acres of wetlands associated with the above four FDOT bridge repair and construction projects; all sites are proximate and within the Ochlockonee River watershed. The project area is part of the 200,000-acre (>300 miles<sup>2</sup>) Tate's Hell State Forest. Tate's Hell Swamp is low-lying, poorly drained land between the Apalachicola and Ochlockonee rivers. 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 silvicultural use during the 1960s and 1970s, diminishing the natural attributes of the swamp. Since 1993, the NWFWMD, working with Florida Forest Service (FFS), has improved hydrology and habitat in localized portions of Tate's Hell State Forest.

#### **Location and Directions**

The Womack Creek/Tate's Hell wetland restoration site is located on the west side of the Ochlockonee River, east of State Road 67 in Tate's Hell Swamp, Liberty County, Florida (Figures 1 and 2) at approximately 30°1.5'N and 84°35'W in Section 2, Township 6S, Range 4W.

#### **Project Summary**

A contingency plan is being implemented in the Womack Creek drainage of Tate's Hell Swamp for wetland restoration and long-term ecological management. Initially, a 70-acre tract directly adjacent to the Ochlockonee River was selected. It consisted of approximately 50 acres initially

thought to be historic hydric pine and 20 acres of existing forested hardwood wetlands. The 50 acres had been logged prior to public ownership, left fallow, and was overgrown with pioneer tree species. The original mitigation plan called for mechanical reduction of the vegetation followed by a site burn and planting of wiregrass on 20 acres of the parcel. After unsuccessful efforts to establish wet flatwoods (see Mitigation Activities section below) and a re-evaluation of the historical vegetation on the site, the target natural community was modified to a more appropriate bottomland hardwood forest. The Interagency Review Team (IRT) concurred, as documented in the IRT Quarterly Meeting Minutes from August 11, 2009.

#### **MITIGATION ACTIVITIES**

#### **Description of Management 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. Mechanical reduction was initiated in May 2005 with a walk down of the woody shrubs on about 50 acres of the site. All vegetation less than about 6-8 inches in diameter was pushed; larger hardwoods and scattered pines were left standing. Walk down was followed by roller chopping most of the site after 2-3 months. 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. Additional mechanical reduction was completed with a gyrotrack in December 2007 followed shortly by a second burn. Only partial success was noted with both burns because of the limited amount of fuel on site.

Phase two was initiated in early 2008 with a total of 96,075 wiregrass (*Aristida stricta*) tubelings planted on 3-ft centers on 18 January 2008 over approximately 20 acres of the site. After the following annual monitoring indicated that planted wiregrass survival was only about 40-45% likely resulting from poor site conditions for that species, the mitigation plan was re-examined. Re-evaluation of historical aerials and vegetation suggested that the site was, in fact, a transitional bottomland hardwood community. The mitigation plan was revised, and authorized by the IRT, to include a new bottomland hardwood community target.

A new but partially overlapping area of 20 acres immediately south of the initial site was mapped for bottomland hardwood restoration (Figures 3 and 4). Planting of three tree species – swamp chesnut oak (*Quercus michauxii*), black gum (*Nyssa biflora*), and spruce pine (*Pinus glabra*) – was conducted on 16 December 2010. Bare-root seedlings were planted on 12 foot centers over 20 acres. Two thousand trees of each species (6,000 trees total) were planted, yielding a density of about 300 trees per acre.

Herbicide treatment of nuisance exotic cogongrass (*Imperata cylindrical*) was conducted in Spring 2010 and May 2011. Subsequent observation shortly after the most recent treatment indicated browning of grass but apparently eradication was not fully successful (see Monitoring Observations below).

#### Anticipated Work Schedule for 2012

- Herbicide treatment of cogongrass and climbing fern
- Continued annual site inspection with photo-documentation
- No replanting necessary at this time

#### MONITORING REQUIREMENTS

- Annual site inspection to determine planting and community goal success
- Photo-documentation of site
- Annual report describing condition of vegetation submitted to the Corps for four years or until wetland impacts have been adequately compensated.

#### SUMMARY OF MONITORING ACTIVITIES

### **Monitoring Observations**

The current monitoring was carried out on November 9, 2011, and consisted of a meandering pedestrian survey throughout the site with photographs taken at a variety of points (Figures 3 and 4). Field sheets are attached documenting site conditions and observed species. Several new plant species were found during the 2011 inspection. To date, 120 species have been observed within the site with significant regrowth and colonization of appropriate species for the revised target community (i.e., bottomland hardwoods).

The mitigation area ground surface was dry on the day of this site visit due to extended drought conditions. The open areas that had previously been subject to mechanical shrub reduction and fire displayed diverse and dense native groundcover (Photos 1-3), with many plants in seed. Density of the herbs and shrubs was evidenced by difficulty walking, having to push down vegetation that was often thick and overhead. Several species were early successional and abundant including dog fennel (*Eupatorium capillifolium*), beautyberry (*Callicarpa americana*), and sweetgum (*Liquidambar styraciflua*). There were also more persistent wetland species such as netted chain fern (*Woodwardia areolata*), arrowwood (*Viburnum dentatum*), and numerous overcup oak (*Quercus lyrata*) saplings (Photo 4). Spruce pine saplings were also common; it could not be determined if they were planted or natural as there were many mature trees on site that could be parent trees. Red maple (*Acer rubrum*) saplings were common. Very few of the planted swamp chestnut oaks (Photo 5) were found and no planted black gums were observed.

Most of the plants listed in the prior year monitoring report vegetation species list were observed. Additional species seen were false foxglove (*Agalinis sp.*), swamp sunflower (*Helianthus angustifolius*), cogongrass (*Imperata cylindrica*), nailwort (*Paronychia sp.*), overcup oak (*Quercus lyrata*), saw palmetto (*Serenoa repens*), bagpod (*Sesbania vesicaria*), foxtail grass (*Setaria sp.*), and American wisteria (*Wisteria frutescens*).

One large patch of cogongrass (<u>Photo 6</u>) was found (see location in Figure 3). There were numerous occurrences of Japanese climbing fern yet none covered more than a very small area. Overall cover of nuisance exotic species was less than five percent. The cogongrass patch was noted in previous monitoring and was treated unsuccessfully in both 2010 and 2011; further treatment is necessary.

Numerous wildlife and wildlife signs were observed during the monitoring. A site that appeared to be frequented by black bear was found under a tree (east of photo point 3, Figure 3) where vegetation was matted down and there were several large scats.

#### Success Criteria

The following success criteria, taken from the specific Mitigation Plans attached to each permit, were evaluated in previous annual inspections but are re-iterated here. Because the wiregrass survival criterion was not met, a re-evaluation of the mitigation plan was undertaken in consultation with the IRT and the Florida Forest Service. A revised plan was developed that included a modification of the targeted restoration community to bottomland hardwoods and a revised planting plan. This plan was implemented with the planting of more appropriate species as described in the Management Activities section above. Monitoring of recent hardwood plantings will continue.

	Performance Standard	Condition Met
Mititation Plan SC1	Mechanical reduction and burn	Yes
Mititation Plan SC2	Planting of 10 acres +supplemental 10 acres of wiregrass	Yes
Mititation Plan SC3	Survival of the planted wiregrass shall be 85%.	No*
Mititation Plan SC4	Nuisance exotic species shall be less than 5% of the total vegetative cover.	Yes

\*see discussion in Description of Management Activities section and above

The following performance standards, taken from the Northwest Florida Umbrella, Watershedbased, Regional Mitigation Plan (NWFWMD July 2006, revised March 2009) were also evaluated during the recent site inspection; all success criteria were met.

	Restoration Success Criteria	Condition Met
RC1	Desired species showing evidence of increasing coverage.	Yes
RC2	Invasive exotic species cover $\le 1\%$ and nuisance native and non-invasive exotic species cover $\le 5\%$ of sites.	Yes
RC3	Increase in appropriate herbaceous, shrub and/or tree species.	Yes
RC4	Kind and total coverage of herbaceous species appropriate for management goals and target natural community.	Yes
RC5	Kind and total coverage of shrub species appropriate for management goals and target natural community.	Yes
RC6	Kind and total coverage of tree species appropriate for management goals and target natural community.	Yes
RC7	Maintain the ecological conditions so that the mitigation UMAM scores are met for each of the specified community types.	Yes

#### CONCLUSIONS

All success criteria were met with the exception of wiregrass survival. Since the revised contingency plan for this site calls for restoration to a bottomland forest, wiregrass is not naturally a component of the habitat. Thus, a low survival of wiregrass should not be an

indicator of unsuccessful restoration. Care is required in the original designation of target communities for mitigation activities such that chances for successful completion are enhanced. However, when either target communities are incorrectly identified or specific restoration plans do not meet their performance standards, adjusting management plans in an adaptive manner is warranted. Flexibility is needed to achieve the desired mitigation objectives.

Given the recent observations, there is a strong likelihood of progress toward project goals if tree species are allowed to regenerate and re-establish the closed canopy that is natural for a bottomland forest community. Further augmentation of hardwood species, despite the low survival of recent planting, is not warranted at this time but will be evaluated during future monitoring. It should be noted that fire is not a significant factor in the maintenance and development of a bottomland forest community. Continued spot treatments of cogongrass and Japanese climbing fern will prevent further infestation and displacement of native, desirable species.



Figure 1. General location for the Womack Creek mitigation site in northeastern Tates Hell State Forest.



Figure 2. Location map for the Womack Creek mitigation site.



Figure 3. 2010 aerial image of mitigation site with original and current project boundaries shown. Also indicated are locations of the new hardwood planting areas and recent photo points. <u>RTN</u>



Figure 4. Topography of the mitigation site taken from LiDAR imagery (2006).

<u>RTN</u>



Photo 1. Representative photograph of natural diversity amidst abundant dog fennel. Photo Point 4, looking southwest. 11/09/2011.



Photo 2. Representative photograph of natural diversity amidst abundant dog fennel. Photo point 5, looking northeast. 11/09/2011.



Photo 3. Representative photograph of natural diversity amidst abundant dog fennel. Photo point 5, looking northeast. 11/09/2011. RTN



Photo 4. Overcup oak (Quercus lyrata) natural regeneration. 11/09/2011.

<u>RTN</u>



Photo 5. Swamp chestnut oak (Quercus michauxii) planted seedling. 11/09/2011.



Photo 6. Cogongrass (Imperata cylindrica) patch on east side of site. Photo point 6. 11/09/2011. <u>RTN</u>

Site Inspection Field Form					
Project: Womack Creek – Tates Hell	Date: November 9, 2011				
Name(s) of Data Collectors: Leigh Brooks,	Weather: sunny, wind light (<5mph)				
Graham Lewis					
Environmental Description: bottomland hard	wood forest				
GPS Location: 30°1.5'N, 84°35'W					
Time: 3:00 pm					
On at least a yearly basis, the site will be in	nspected as follows:				
A: Perimeter for signs of trespassing, fencing	g and signage integrity and infestation by				
exoue of nuisance vegetation.					
The site is not blocked from public access as access is allowed. Site is not fenced.	it is part of the Tates Hell State Forest;				
<ul> <li>B: Internal Roads (Both public and maintenance) for signs of dumping or trespassing, erosion, bridges and road integrity, and exotic or nuisance species infestations:</li> <li>Public access is not restricted. Despite continued access, no signs of dumping and only minor littering were noted. Numerous observances of climbing fern through the site but very limited in spatial coverage. Small patch of cogongrass noted on eastern side of site along internal road.</li> <li>C: All construction areas for stabilization and re-vegetation, structure, operation, and integrity:</li> </ul>					
N/A	l community for fuel local eventie er muiernes				
species, planted material survival, groundcover, and shrub condition:					
<ul> <li>-fuel load relatively low on site as area has had several recent burns of varying success.</li> <li>-some exotic/invasives noted on site but coverage is less than 5%</li> <li>-planted hardwood survival is low yet site has ample and appropriate species colonization</li> <li>-native hardwood species are recolonizing the site with numerous species reproducing and expanding coverage.</li> </ul>					

Vegetation Assessment Field Form Qualitative Assessment					
Project: Womack Creek – Tates Hell	Date: November 9, 2011				
Name(s) of Data Collectors: Leigh Brooks, Graham Lewis	Weather: sunny, wind light (<5mph)				
Environmental Description: bottomland hardwood forest					
Polygon: GPS Location: 30°1.5'N, 84°35'W					
Nuisance Species: cogongrass and Japanese climbing fern <5%					
Wildlife Observations: numerous avifauna, bear scat and signs of bedding					
Water depth:N/A					

Is the community observed along the walk path representative of the community being measured? Yes To what degree is the restoration in this area trending towards success? With high natural recruitment rates and supplemental planting, the site is trending toward the revised target of a bottomland hardwood forest

Potential Problems and solutions: some exotic invasives were noted that will require further treatment for eradication

Scientific Name	Common Name	2008 <sup>1</sup>	2009 <sup>1</sup>	2010 <sup>1</sup>	2011 <sup>2</sup>	Dominant
Acer floridanum	Florida maple			Х		
Acer rubrum	Red maple			Х		
Agalinis sp.	False foxglove				Х	
Andropogon glomeratus	Bushy bluestem			Х		
Andropogon virginicus	Broom sedge	X	Х	Х		Х
Ampelopsis arborea	Peppervine			Х		
Aristida stricta	Wire grass	Х	Х	Х		
Baccharis halmifolia	Groundsel tree		Х	Х		
Bidens mitis	Spanish needles			Х		
Boehmeria cyllindrica	False nettle			Х		
Callicarpa americana	Beauty berry	Х	Х	Х		Х
Carex sp.	Caric sedge	Х	Х	Х		
Carpinus caroliniana	Ironwood			Х		
Carya glabra	Pignut hickory			Х		
Centella asiatica	Centella	Х		Х		
Chasmanthium laxum	Slender woodoats			Х		
Cliftonia monoplylla	Black titi	Х		Х		Х
Cornus foemina	Swamp dogwood			Х		
Conyza canadensis	Horseweed			Х		
Crategus marshallii	Parsley hawthorn			Х		
Cyperus odoratus	Fragrant flatsedge			Х		
Cyperus spp.	Sedge	Х		Х		
Cyrilla racemiflora	Titi			Х		
Dicanthelium spp.	Witch grass	Х		Х		
Dichanthelium aciculare	Needleleaf witchgrass	Х	Х	Х		
Diodia virginiana	Virginia buttonweed			Х		
Diospyros virginiana	Persimmon	Х		Х		
Elephantopus carolinianus	Carolina elephantsfoot			Х		
Eragrostis elliottii	Elliott lovegrass	Х		Х		
Erechtites hieraciifolius	Fireweed			Х		
Eupatorium capillifolium	Dog fennel	Х	Х	Х		Х
Eupatorium compositifolium	Yankeeweed			Х		
Euthamia caroliniana	Flat-topped goldenrod	Х		Х		
Fraxinus caroliniana	Carolina ash			Х		
Fuirena squarrosa	Lake-rush	Х		Х		
Hammemelis virginiana	Witchhazel			Х		
Helianthus angustifolius	Swamp sunflower				Х	

# NWFWMD Qualitative Monitoring Field Forms

Intervention of a system         X         X         X           Hypericum inperiodids.         St. Andrew's cross         X         X         X           Hypericum inperiodids.         St. Andrew's cross         X         X         X           Hypericum inperiodids.         St. Andrew's cross         X         X         X           Idex contineea         Tail gall berry         X         X         X           Idex contineea         Gall berry         X         X         X           Idex contineea         Annencam holly         X         X         X           Idex continea         Cognograss         -         X         X           Idex continea         Cognograss         -         X         -           Idex continea         Swamp jessamine         X         X         -           Idex continea         Swamp jessamine         X         X         -           Idex continea         Swamp jessamine         X         X         -           Idex continea         Swaft grash fills         X         X         -           Idex contarginatus         Shore rush         X         X         -           Idex contrine report         Rush	Scientific Name	Common Name	2008 <sup>1</sup>	2009 <sup>1</sup>	<b>2010<sup>1</sup></b>	<b>2011</b> <sup>2</sup>	Dominant
Impericant generations         Orange grass         X         X         X           Hypric unperication         St. Andrew's coss         X         X         X           Hypric unperication         Musk mint         X         X         X           Her continee         Dahoon         X         X         X           Itex continee         Dahoon         X         X         X           Itex continee         Dahoon         X         X         X           Itex optica         American holly         X         X         X           Itex optica         American holly         X         X         X           Itex optica         American holly         X         X         X           Itex optica         Cogongrass         X         X         X           Gelsemin makii         Swamp jessamine         X         X         X           Jancus efficiosos         Soft rush         X         X <t< td=""><td>Heterotheca subaxillaris</td><td>Camphorweed</td><td></td><td></td><td>Х</td><td></td><td></td></t<>	Heterotheca subaxillaris	Camphorweed			Х		
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Idex coriacea     Tall gall berry     X     X       Idex gabra     Gall berry     X     X       Idex opaca     American holly     X     X       Idex opaca     Yaupon     X     X       Idex omitoria     Yaupon     X     X       Idex omitoria     Yaupon     X     X       Idex omitoria     Yaupon     X     X       Gelsemian wanki     Swamp jessamine     X     X       Gelsemian wanki     Swamp jessamine     X     X       Jancus efficiasis     Sobor rush     X     X       Jancus efficiasis     Sobor rush     X     X       Jancus repens     Lesser creeping rush     X     X       Laguidambar styraciflua     Sweet gum     X     X       Lycopodium aloperuroides     Fox clubmoss     X     X       Lycopodium aloperuroides     Fox clubmoss     X     X       Lycopodium indoperuroides     Suthern magnolia     X     X       Magnolia grandiflora     Suthern magnolia     X     X       Magnolia virginiana     Silver bay     X     X       Magnolia virginiana     Silver bay     X     X       Mysia ogeche     Ogecheche upolo     X     X       Owinda clin	Ilex cassine	Dahoon			Х		
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Gelsenium rankti     Swamp jessamine     X     X       Gelsenium sempervirens     Jessamine     X     X       Jaucus megacephalus     Soft rush     X     X       Jaucus megacephalus     Large headed rush     X     X       Jaucus megacephalus     Large headed rush     X     X       Jaucus sepacephalus     Large headed rush     X     X       Jaucus sepacephalus     Lesser creeping rush     X     X       Liquidambar styrciffua     Sweet gum     X     X     X       Liquidambar styrciffua     Sweet gum     X     X     X       Lycopoldum aloperuroides     Fox clubmoss     X     X     X       Lyconia ligustrina vas. foliosiffora     Maleberry     X     X     X       Lyconia ligustrina vas. foliosiffora     Southern magnolia     X     X     X       Magnolia virginiana     Silver bay     X     X     X       Magnolia virginiana     Silver bay     X     X     X       Mysia ogeeche     Ogeechee tupelo     X     X       Mysia ogeech     Ogeechee tupelo     X     X       Paroizum verucosum     Warty panicum     X     X       Paradium verucosum     Warty panicum     X     X       Pa	Imperata cylindrica	Cogongrass				Х	
Gelsemium sempervirens     Jessamine     X     X       Juacquemoniu tammifolia     Hairy clustervine     X     X       Juncus effusus     Soft rush     X     X       Juncus marginatus     Shore rush     X     X       Juncus segechalus     Large headed rush     X     X       Juncus regens     Lesser creeping rush     X     X       Liquidambar styraciflua     Sweet gum     X     X     X       Lycopolium aloperuroides     Fox clubmoss     X     X     X       Magnolia yradiflora     Maleberry     X     X     X       Lyonia luciadi     Fetterbush     X     X     X       Magnolia yrighinan     Sliver bay     X     X     X       Magnolia yrighinan     Sliver bay     X     X     X       Nyssa ogeeche     Ogeechee tupelo     X     X     X       Nyssa ogeeche     Ogeechee tupelo     X     X	Gelsemium rankii	Swamp jessamine			Х		
Jacquemonita tamnifolia     Hairy clustervine     X     X       Juncus marginatus     Soft rush     X     X       Juncus marginatus     Shore rush     X     X       Juncus segacephalus     Large headed rush     X     X       Juncus sepens     Lesser creeping rush     X     X       Liquidambar styraciflua     Sweet gum     X     X     X       Liquidambar styraciflua     Sweet gum     X     X     X       Liquidambar styraciflua     Sweet gum     X     X     X       Lycopolium aloperuroides     Fox clubmoss     X     X     X       Lyconia liquistrina var. foliosiflora     Maleberry     X     X     X       Lyonia liquistrina var. foliosiflora     Southern magnolia     X     X     X       Magnola grandiflora     Southern magnolia     X     X     X       Magnola virginiana     Silver bay     X     X     X       Myssa sylvatica var. biflora     Swamp tupelo     X     X     X       Nyssa sylvatica var. biflora     Swamp tupelo     X     X     X       Paraolum verrieucoum     War y panicum     X     X     X       Paraicum verrucoum     War y panicum     X     Papalum       Pasalitora incan	Gelsemium sempervirens	Jessamine		Х	Х		
Juncus efficausSoft rushXXJuncus marginatusShore rushXXJuncus marginatusLarge headed rushXXJuncus sp.RushXXJuncus regensLesser creeping rushXXLiquidambar styracifluaSweet gumXXLiquidambar styracifluaSweet gumXXLycopodium aloperuroidesFox clubmossXXLycopodium aloperuroidesFox clubmossXXLycoin fugurina var. folosifloraMaleberryXXLyonia lucidaFetterbushXXMagnolia grandifloraSoluberrXXMagnolia grandifloraSoluber magnoliaXXMagnolia virginianaSilver bayXX**Matelea sp.SpinypodXXMyrica ceriferaWax myrtleXXNyssa ogecheOpechee tupeloXXParonychia sp.PaspalumXPapalum strucumParanychia sp.PaspalumXPapalum strucumPaspalum setaceumSlever paspalumXXPassiflora incarnataPassinflowerXXPassiflora incarnataPassinflowerXXParkea falukarisSwamphayXXPastedaLobolly pineXXPastedaLobolly pineXXPastedaLobolly pineXXPastedaDianond oakXX<	Jacquemontia tamnifolia	Hairy clustervine			Х		
Inneus marginatus         Shore rush         X         X           Juncus magacephalus         Large headed rush         X         X         X           Juncus sp.         Rush         X         X         X         X           Juncus sp.         Rush         X         X         X         X           Juncus sp.         Reset creeping rush         X         X         X         X           Liquidambar syraciflua         Sweet gum         X         X         X         X         X           Lycopolitum aloperuroides         Fox clubmoss         X         X         X         X         X           Lyonia liquistrina var. foliosiflora         Maleberry         X         X         X         X           Magnolia grandiflora         Southern magnolia         X         X         X         X           Magnolia virginiana         Silver bay         X         X         X         X           Magnolia virginiana         Silver bay         X         X         X         X           Magnolia virginiana         Silver bay         X         X         X         X           Mysea sylvatica var. biflora         Wax myrtle         X         X         X	Juncus effusus	Soft rush	Х		Х		
Juncus megacephalusLarge headed rushXXXJuncus sp.RushXXXJuncus spensLesser creeping rushXXXLiquidambar styracifluaSweet gumXXXXLiquidambar styracifluaSweet gumXXXXXLycopodium aloperuroidesFox clubmossXXXXXLycopidium iaponicumJapanese climbing fernXXXLLyonia lucidaFetterbushXXXXLMagnolia grandifloraSouthern magnoliaXXXXLMagnolia virginianaSilver bayXXXXLMagnolia crifteraWax myrtleXXXXLNyssa sylvatica var. bifloraSwamp tupeloXXXXNyssa sylvatica var. bifloraSwamp tupeloXXXLPariour verrucosumWarty panicumXXXPPaapalum sp.PaspalumXXPPaspalumXXPaspalum sp.PasionflowerXXXPPassionflowerXXXXPPassiplaraStruce pineXXXXPurst dadaLoblolly pineXXXPPust dafaraPastevedXXXXPPust dafaraQuercus ingradWateved<	Juncus marginatus	Shore rush			Х		
Juncus sp.RushXXJuncus repensLesser creeping rushXXLiquidambar styracifluaSweet gumXXXLiquidambar styracifluaSweet gumXXXLudwigia sp.SeedboxXXXLycopodium aloperuroidesFox clubmossXXLyconia liquitrina var. foliosifloraMaleberryXXLyonia liquitrina var. foliosifloraMaleberryXXLyonia liquitrina var. foliosifloraSouthern magnoliaXXXMagnolia grandifloraSouthern magnoliaXXXMagnolia virginianaSilver bayXXXMysica ceriferaWax myrtleXXXMyssa sylvatica var. bifloraSwamp tupeloXXXNyssa sylvatica var. bifloraSwamp tupeloXXXParicum vertucosumWarty panicumXXParaonychia sp.Panicum vertucosumWarty panicumXXPapalam sp.Paspalum sp.PaspalumXXXPaspalum steaceumSlender paspalumXXXPaspalum steaceumSlender paspalumXXXPaspalum steaceumSpruce pineXXXPaspalum steaceumSpruce pineXXXPaspalum steaceumSpruce pineXXXPaspalum steadaLoblolly pineXXXPolypre	Juncus megacephalus	Large headed rush	Х		Х		
Increase repensLesser creeping rushXXLiquidambar styracifluaSweet gumXXXLadwigia sp.SeedboxXXXLudwigia sp.Fox clubmossXXXLycopodium alopentrovidesFox clubmossXXXLyonia ligustrina var. foliosifloraMaleberryXXXLyonia ligustrina var. foliosifloraMaleberryXXXLyonia ligustrina var. foliosifloraMaleberryXXXMagnolia grandifloraSouthern magnoliaXXXXMagnolia grandifloraSouthern magnoliaXXXXMagnolia virginianaSilver bayXXXXMerica ceriferaWax myrtleXXXXNyssa ogecheOgecechee tupeloXXXXOsmanda cinnamomeaCinnamon femXXXParonychia sp.Paronychia sp.PaspalumXXPaspalum sp.Paspalum sp.PaspalumXXPaspalum sp.Paspalum urvilleiVaseygrassXXXPaspalum urvilleiVaseygrassXXXPaspalum urvilleiVaseygrassXXXPersea palustrisSwampbayXXXPoligonum punctatumSmartweedXXXPoligonum punctatumSmartweedXXXPolygonum punctatum <td>Juncus sp.</td> <td>Rush</td> <td></td> <td>Х</td> <td>Х</td> <td></td> <td></td>	Juncus sp.	Rush		Х	Х		
Liquidambar styracifluaSweet gumXXXXLudwigia sp.SeedboxXXXXLycopodium aloperuroidesFox clubmossXXXLyconia ligustrina var, foliosifloraMaleberryXXXLyonia ligustrina var, foliosifloraMaleberryXXXLyonia ligustrina var, foliosifloraSouthern magnoliaXXXMagnolia grandifloraSouthern magnoliaXXXMagnolia virginianaSilver bayXXXMyrica ceriferaWax myrtleXXXMyssa sylvaica var. bifforaSwamp tupeloXXXNyssa sylvaica var. bifforaOgeechee tupeloXXXPanicum verucosumWarty panicumXXXPanicum verucosumWarty panicumXXPapalum sp.Papalum sp.PaspalumXXPapalum sp.Paspalum sp.PaspalumXXXPassifora incarnataPassionflowerXXXPassifora incarnataSpruce pineXXXPuselabraSpruce pineXXXPuselabraCamphor weedXXXPuselabraSpruce pineXXXPuselabraCamphor weedXXXPuselabraSwarededXXXPuselabraSwarededXXXPu	Juncus repens	Lesser creeping rush			Х		
Ludwigia sp.SeedboxXXXLycapodium aloperuvoidesFox clubmossXLyconia ligustrina var. foliosifloraMaleberryXXLyonia ligustrina var. foliosifloraMaleberryXXLyonia lucidaFetterbushXXMagnolia grandifloraSouthern magnoliaXXXMagnolia yriginanaSilver bayXXX**Matelea sp.SpinypodXXX**Matelea sp.SpinypodXXXNyssa ogecheOgechee tupeloXXXOsmunda cinnamomeaCinnamon fernXXXParonychia sp.PaspalumXXPaspalumParonychia sp.PaspalumXXPaspalumPaspalum sp.PaspalumXXXPaspalum sp.PaspalumXXXPaspalum straceumSlender paspalumXXXPassifora incurnataPassionflowerXXXPersea palustrisSwampbayXXXPinus glabraSpruce pineXXXPolygonum punctatumSmattweedXXXPolygonum punctatumSmattweedXXXPolygonum punctatumSmattweedXXXQuercus higraOvercup oakXXXQuercus hyntapaticaDiamond oakXXXQuercus hyntapatica	Liquidambar styraciflua	Sweet gum	X	Х	Х		X
Lycopodium aloperuroidesFox clubmossX*Lycopidium japonicumJapanese climbing fermXLyonia lucidaFetterbushXLyonia lucidaFetterbushXMagnolia grandifloraSouthern magnoliaXMagnolia virginianaSilver bayXMagnolia virginianaSilver bayX**Matelea sp.SpinypodXMyrica ceriferaWax myrtleXMyrica ceriferaWax myrtleXMyssa sylvatica var. bifloraSwamp tupeloXOsmunda cinnamomeaCinnamon fernXPanicum verucosumWarty panicumXPanicum verucosumWarty panicumXPaspalum sp.PaspalumXPaspalum setaceumSlender paspalumXPaspalum setaceumSlender paspalumXPinus uedaLoblolly pineXPinus glabraSpruce pineXPinus glabraSpruce pineXPolyconum procumbensRustweedPolyconum procumbensSwampbayPolyconum procumbensSwampbent oakPureidum aquilinumBracken fernAuXAustweedXXXPureidum aquilinumBracken fernXXAustweedXAustweedXAustweedXAustweedXAustweedXAustweedXAustweedXAustweedXAustweed	Ludwigia sp.	Seedbox	X	Х	Х		
*Lygoidium japonicum       Iapanese climbing fern       X         Lyonia ligustrina var. foliosiflora       Maleberry       X         Lyonia ligustrina var. foliosiflora       Southern magnolia       X       X         Magnolia grandiffora       Southern magnolia       X       X       X         Magnolia irginiana       Silver bay       X       X       X         **Matelea sp.       Spinypod       X       X       X         Myrica cerifera       Wax myrtle       X       X       X         Nyssa ogeche       Ogecche tupelo       X       X       X         Osmunda cinnamomea       Cinnamon fern       X       X       X         Panonychia sp.       Nailwort       X       X       Paspalum sp.         Paspalum sp.       Paspalum       X       X       Paspalum sp.         Paspalum setaceum       Slender paspalum       X       X       Passiflora incarnata         Passiflora incarnata       Passionflower       X       X       X         Passiflora incarnata       Passionflower       X       X       X         Persea palustris       Swampbay       X       X       X         Pinus glabra       Lobioly pine       X<	Lycopodium aloperuroides	Fox clubmoss	Х				
Lyonia ligustrina var. foliosifloraMaleberryXLyonia lucidaFetterbushXMagnolia virginianaSilver bayXXMagnolia virginianaSilver bayXX#*Matelea sp.SpinypodXX#wrica ceriferaWax myrtleXXMyrica ceriferaWax myrtleXXMysas sylvatica var. bifloraSwamp tupeloXXMysas sylvatica var. bifloraSwamp tupeloXXMysas sylvatica var. bifloraSwamp tupeloXXOsmunda cinnamoneaCinnamon fernXXPanicum verrucosumWaty panicumXXParopychia sp.PaspalumXXPaspalum setaceumSlender paspalumXXPaspalum setaceumSlender paspalumXXPersea palustrisSwampbayXXPinus glabraSpruce pineXXPinus teedaLobiolly pineXXPureforida Camphor weedXXXPoylgonum punctatumBracken fernXXQuercus hemisphaericaDiamond oakXXQuercus michauxiiSwamp chestnut oakXXRhapidophyllum hystrixNeedle palmXXSurgerSale palmXXXPolygonum punctatumBlack berryXXXQuercus michauxiiSwamp chestnut oakXXRhapidophyllum hystrixNeedle	*Lygodium japonicum	Japanese climbing fern			Х		
Lyonia lucidaFetterbushXMagnolia grandifloraSouthern magnoliaXXMagnolia virginianaSilver bayXX**Matelea sp.SpinypodXX**Matelea sp.SpinypodXXMyrica ceriferaWax myrtleXXNyssa sylvatica var. bifloraSwamp tupeloXXNyssa sylvatica var. bifloraSwamp tupeloXXNyssa sylvatica var. bifloraSwamp tupeloXXNyssa ogecheOgeechee tupeloXXXPanicum verucosumWarty panicumXXPanonychia sp.NailwortXXPaspalum sp.PaspalumXXPaspalum sp.PaspalumXXPaspalum urvilletVaseygrassXXPersea palustrisSwampbayXXPinus glabraSpruce pineXXPuluchea foetidaCamphor weedXXPolyprenum procumbensRustweedXXPolyprenum procumbensBracken fernXXQuercus higraWater oakXXQuercus nigraWater oakXXRubus trivialisDew berryXXSabal palmXXXSabal palmetoXXXSupportXXXPinus glabraSpruce pineXXPuta foetidaCamphor weedXXPolypre	Lyonia ligustrina var. foliosiflora	Maleberry			Х		
Magnolia grandifloraSouthern magnoliaXXXXMagnolia virginianaSilver bayXXXX**Matelea sp.SpinypodXXXXMyrica ceriferaWax myrtleXXXXNyssa sylvatica var. bifloraSwamp tupeloXXXXNyssa ogecheOgeechee tupeloXXXXOsmunda cinnamomeaCinnamon fernXXXXParioucin verucosumWarty panicumXXXParonychia sp.PaspalumXXPaspalum setaceumXPaspalum setaceumSlender paspalumXXPaspalum setaceumPaspilora incarnataPassionflowerXXXPassiglora incarnataPassionflowerXXXPinus glabraSpruce pineXXXPinus glabraCamphor weedXXXPoylgonum punctatumSmartweedXXXPoylgonum puncutatumBracken fernXXXQuercus nigraWater oakXXXQuercus nigraWater oakXXXRabus trivialisDew berryXXXRubus argutusBlack berryXXXQuercus michauxiiSwamp chestnut oakXXXRubus argutusBlack berryXXXSabal palmXXX <td>Lyonia lucida</td> <td>Fetterbush</td> <td></td> <td></td> <td>Х</td> <td></td> <td></td>	Lyonia lucida	Fetterbush			Х		
Magnolia virginianaSilver bayXXXX**Matelea sp.SpinypodXXXMyrica ceriferaWax myrtleXXXNyssa silverica var. bifloraSwamp tupeloXXXNyssa silverica var. bifloraSwamp tupeloXXXNyssa silverica var. bifloraOgeechee tupeloXXXPassa silverica var. bifloraOgeechee tupeloXXXParonychia sp.Qeechee tupeloXXXParonychia sp.NailwortXXPaspalum sp.Paspalum sp.PaspalumXXPaspalum sp.Paspalum urvilleiVaseygrassXXPaspalur sp.Passiflora incarnataPassionflowerXXXPassiflora incarnataPassionflowerXXXPinus glabraSpruce pineXXXXPinus taedaLobioly pineXXXXPolygonum punctatumSmartweedXXXXPolygenum procumbensRustweedXXXQuercus higraVater oakXXQuercus nigraWater oakXXXXXXQuercus nigraBlack herryXXXXXRubus argutusBlack berryXXXXXRubus trivialisDew berryXXXXXSabal pall	Magnolia grandiflora	Southern magnolia	Х	Х	Х		
**Matelea sp.       Spinypod       X       X         Myrica cerifera       Wax myrtle       X       X       X         Nyssa sylvatica var. biflora       Swamp tupelo       X       X       X         Nyssa sylvatica var. biflora       Ogeochee tupelo       X       X       X         Osmunda cinnamomea       Cinnamon fern       X       X       X         Panicum verucosum       Warty panicum       X       X       X         Paspalum sp.       Paspalum       X       X       X         Paspalum setaceum       Slender paspalum       X       X       Paspalum villei         Vassygrass       X       X       X       X         Paspalum uvillei       Vassygrass       X       X       X         Paspalum setaceum       Spruce pine       X       X       X         PassionTower       X       X       X       X         Passiglora incarnata       PassionTower       X       X       X         Pinus taeda       Lobiolly pine       X       X       X         Pinus taeda       Comphor weed       X       X       X         Polypremum procumbens       Rustweed       X       X	Magnolia virginiana	Silver bay	Х	Х	Х		
Myrica ceriferaWax myrtleXXXNyssa sylvatica var. bifloraSwamp tupeloXXXNyssa ogecheOgecche tupeloXXXOsmunda cinnamomeaCinnamon fernXXXPanicum verrucosumWarty panicumXXXPanicum verrucosumWarty panicumXXXPanicum verrucosumWarty panicumXXXPaspalum sp.PaspalumXXPaspalum setaceumPaspalum setaceumSlender paspalumXXYPaspalum urvilleiVaseygrassXXXPaspalum interiorXXXYPersea palustrisSwampbayXXXPinus glabraSpruce pineXXXPolyternum punctatumSmartweedXXXPolyternum procumbensRustweedXXXQuercus hightaOvercup oakXXXQuercus nigraWater oakXXXRhexia marianaPale meadow beautyXXXRubus argutusBlack berryXXXRubus trivialisDew berryXXXSabal palmericaDiamond oakXXXSubust trivialisDew berryXXXRubus argutusBlack berryXXXSabal palmericaSabal palmXXXS	**Matelea sp.	Spinypod			Х		
Nyssa sylvatica var. bifloraSwamp tupeloXXXNyssa ogecheOgecchee tupeloXXXOsmunda cinnamomeaCinnamon fernXXXPanicum verrucosumWarty panicumXXParonychia sp.NailwortXXPaspalum sp.PaspalumXXPaspalum setaceumSlender paspalumXYPaspalum setaceumSlender paspalumXYPaspalum urvilleiVaseygrassXYPassifora incarnataPassionflowerXXPersea palustrisSwampbayXXPinus glabraSpruce pineXXPinus glabraCamphor weedXXPoylgonum punctatumSmartweedXXPoylgonum punctatumBracken fernXXQuercus hemisphaericaDiamond oakXXQuercus nigraWater oakXXQuercus nigraWater oakXXRubus argutusBlack berryXXRubus argutusBlack berryXXRubus argutusBlack berryXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXScieria triationBlackeeXXSabal palmettoSabal palmXXScieria triationBlackeeXXSabal palmetto<	Myrica cerifera	Wax myrtle	Х	Х	Х		
Nyssa ogecheOgeechee tupeloXXXOsmunda cinnamomeaCinnamon fernXXXPanicum verrucosumWarty panicumXXParonychia sp.NailwortXXPaspalum sp.PaspalumXXPaspalum setaceumSlender paspalumXXPaspalum setaceumSlender paspalumXXPaspalum invilleiVaseygrassXXPersea palustrisSwampbayXXPersea palustrisSwampbayXXPinus glabraSpruce pineXXPinus glabraCamphor weedXXPolypremum procumbensRustweedXXPolypremum procumbensRustweedXXQuercus higraOvercup oakXXQuercus lyrataOvercup oakXXQuercus nichauxiiSwamp chestnut oakXXRhapidophyllum hystrixNeedle palmXXRubus argutusBlack berryXXXSabal palmettoSabal palmXXXSubus trivialisDew berryXXXSubus trivialisDew berryXXXSubus trivialisDew berryXXXSubus trivialisDew berryXXXSubus trivialisDew berryXXXSubus trivialisDew berryXXXSubus trivialis <t< td=""><td>Nyssa sylvatica var. biflora</td><td>Swamp tupelo</td><td></td><td></td><td>Х</td><td></td><td>Х</td></t<>	Nyssa sylvatica var. biflora	Swamp tupelo			Х		Х
Osmunda cinnamomeaCinnamon fernXXXXPanicum verrucosumWarty panicumXXPanicum verrucosumWarty panicumXXPanicum verrucosumWarty panicumXXPaspalum sp.PaspalumXXPaspalum sp.Slender paspalumXXPaspalum urvilleiVaseygrassXXPaspalum urvilleiVaseygrassXXPersea palustrisSwampbayXXPersea palustrisSymuce pineXXPinus glabraSpruce pineXXPinus glabraCamphor weedXXPolygonum punctatumSmartweedXXPolypremum procumbensRustweedXXPuerus hemisphaericaDiamond oakXXQuercus hemisphaericaDiamond oakXXQuercus nigraWater oakXXQuercus michauxiiSwamp chestnut oakXXRhapidophyllum hystrixNeedle palmXXRubus argutusBlack herryXXSabal palmXXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXScieria trialomerataNut sedgeXXScieria trialomerataNut sedgeXX	Nyssa ogeche	Ogeechee tupelo			Х		Х
Panicum verrucosumWarty panicumXParonychia sp.NailwortXPaspalum sp.PaspalumXPaspalum sp.PaspalumXPaspalum staceumSlender paspalumXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPaspalum urvilleiSpruce pinePinus glabraSpruce pinePinus glabraCamphor weedXPluchea foetidaCamphor weedXPolygonum punctatumSmartweedXPolygenum procumbensRustweedXPleridium aquilinumBracken fernXQuercus higraWater oakXQuercus nigraWater oakXQuercus nigraWater oakXQuercus nigraPale meadow beautyXRhapidophyllum hystrixNeedle palmXRubus argutusBlack berryXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXScieria triolomerataNut sedeeXXScieria triolomerataNut sedeeXX	Osmunda cinnamomea	Cinnamon fern	Х	Х	Х		
Paronychia sp.NailwortXPaspalum sp.PaspalumXPaspalum setaceumSlender paspalumXPaspalum setaceumSlender paspalumXPaspalum urvilleiVaseygrassXPassiflora incarnataPassionflowerXPersea palustrisSwampbayXXPersea palustrisSympbayXXPinus glabraSpruce pineXXPinus taedaLobiolly pineXXPolygonum punctatumSmartweedXXPolygonum punctatumBracken fernXXPleridium aquilinumBracken fernXXQuercus hemisphaericaDiamond oakXXQuercus nichauxiiSwamp chestnut oakXXRhapidophyllum hystrixNeedle palmXXRubus argutusBlack berryXXRubus rivialisDew berryXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXScleria trijelomerataWool-grassXXScleria trijelomerataNoi-grassXXScleria trijelomerataNoi-grassXX	Panicum verrucosum	Warty panicum			Х		
Paspalum sp.PaspalumXPaspalum setaceumSlender paspalumXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPassiflora incarnataPassionflowerXPersea palustrisSwampbayXXPersea palustrisSpruce pineXXPinus glabraSpruce pineXXPinus glabraCamphor weedXXPluchea foetidaCamphor weedXXPoylgonum punctatumSmartweedXXPoylgonum punctatumBracken fernXXPoylgonum punctatumBracken fernXXQuercus hemisphaericaDiamond oakXXQuercus hamisphaericaDiamond oakXXQuercus nigraWater oakXXQuercus nigraWater oakXXRubus argutusBlack berryXXRubus argutusBlack berryXXSabal minorBluestem palmXXSabal palmettoSabal palmXXScleria trivialisDew berryXXScleria trivialisKXXScleria trivialisKol-grassXXScleria trivialisKol-grassXXScleria trivialisKol-grassXXScleria trivialisKol-grassXXScleria trivilomerataNut sedeeXX	Paronychia sp.	Nailwort				Х	
Paspalum setaceumSlender paspalumXPaspalum urvilleiVaseygrassXPaspalum urvilleiVaseygrassXPersea palustrisSwampbayXPersea palustrisSwampbayXPinus glabraSpruce pineXPinus glabraLoblolly pineXPluchea foetidaCamphor weedXPoylgonum punctatumSmartweedXPolypremum procumbensRustweedXPotypremum procumbensRustweedXQuercus lyrataOvercup oakXQuercus nigraWater oakXQuercus nigraBlack berryXRubus argutusBlack berryXRubus argutusBlack berryXSabal palmettoSabal palmXSabal palmettoSabal palmXXXScirpus cyperinusWool-grassXXXScirpus cyperinusWool-grassXXXXXScirpus cyperinusWool-grassXXXScirpus cyperinusNut sedeeXXXXXScirpus cyperinusSolo-grassXXXXXXXXXXXXXXXXXXXXXXXXXXXX<	Paspalum sp.	Paspalum			Х		
Paspalum urvilleiVaseygrassXPassiflora incarnataPassionflowerXPersea palustrisSwampbayXXPinus glabraSpruce pineXXPinus taedaLoblolly pineXXPluchea foetidaCamphor weedXXPoylgonum punctatumSmartweedXXPolypremum procumbensRustweedXXPteridium aquilinumBracken fernXXQuercus hemisphaericaDiamond oakXXQuercus nigraWater oakXXQuercus nigraSwamp chestnut oakXXRhapidophyllum hystrixNeedle palmXXRubus argutusBlack berryXXRubus trivialisDew berryXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXScirpus cyperinusWool-grassXXScirpus cyperinusWool-grassXXScirpus cyperinusWool-grassXX	Paspalum setaceum	Slender paspalum			Х		
Passiflora incarnataPassionflowerXPersea palustrisSwampbayXXPinus glabraSpruce pineXXXPinus taedaLoblolly pineXXXPoylgonum punctatumSmartweedXXXPoylgonum punctatumSmartweedXXXPeridium aquilinumBracken fernXXXQuercus hemisphaericaDiamond oakXXXQuercus nigraWater oakXXXQuercus nigraWater oakXXXRhapidophyllum hystrixNeedle palmXXXRubus argutusBlack berryXXXRubus argutusBlack berryXXXSabal palmetroSabal palmXXXSabal palmetroSabal palmXXXScierpus cyperinusWool-grassXXXScierpus cyperinusWool-grassXXX	Paspalum urvillei	Vaseygrass			Х		
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Pinus glabraSpruce pineXXXXPinus taedaLoblolly pineXXXPluchea foetidaCamphor weedXXXPolgonum punctatumSmartweedXXXPolypremum procumbensRustweedXXXPteridium aquilinumBracken fernXXXQuercus hemisphaericaDiamond oakXXXQuercus lyrataOvercup oakXXXQuercus nigraWater oakXXXQuercus michauxiiSwamp chestnut oakXXXRhapidophyllum hystrixNeedle palmXXXRubus argutusBlack berryXXXRubus argutusBlack berryXXXSabal minorBluestem palmXXXSabal palmettoSabal palmXXXScieria trijelomerataNut sedgeXXX	Persea palustris	Swampbay			Х		Х
Pinus taedaLoblolly pineXXPluchea foetidaCamphor weedXXXPoylgonum punctatumSmartweedXXXPolypremum procumbensRustweedXXXPteridium aquilinumBracken fernXXXQuercus hemisphaericaDiamond oakXXXQuercus lyrataOvercup oakXXXQuercus nigraWater oakXXXQuercus michauxiiSwamp chestnut oakXXXRhapidophyllum hystrixNeedle palmXXXRubus argutusBlack berryXXXRubus argutusBlack berryXXXSabal minorBluestem palmXXXSabal palmettoSabal palmXXXScieria triglomerataWool-grassXXX	Pinus glabra	Spruce pine	Х	Х	Х		Х
Pluchea foetidaCamphor weedXXXPoylgonum punctatumSmartweedXXXPolypremum procumbensRustweedXXXPteridium aquilinumBracken fernXXXQuercus hemisphaericaDiamond oakXXXQuercus lyrataOvercup oakXXQQuercus nigraWater oakXXQQuercus michauxiiSwamp chestnut oakXXXRhapidophyllum hystrixNeedle palmXXXRubus argutusBlack berryXXXXSabal minorBluestem palmXXXSSabal palmettoSabal palmXXXXScierus cernuusLizard's tailXXXXScierus triviadiaWool-grassXXXX	Pinus taeda	Loblolly pine			Х		Х
Poylgonum punctatumSmartweedXXPolypremum procumbensRustweedXXXPteridium aquilinumBracken fernXXXQuercus hemisphaericaDiamond oakXXXQuercus lyrataOvercup oakXXQQuercus nigraWater oakXXQQuercus michauxiiSwamp chestnut oakXXQQuercus michauxiiSwamp chestnut oakXXXRhapidophyllum hystrixNeedle palmXXXRubus argutusBlack berryXXXRubus argutusBlack berryXXXSabal minorBluestem palmXXXSabal palmettoSabal palmXXXScierpus cyperinusWool-grassXXXScieria triglomerataNut sedeeXXX	Pluchea foetida	Camphor weed	Х	Х	Х		
Polypremum procumbensRustweedXXXXPteridium aquilinumBracken fernXXXXQuercus hemisphaericaDiamond oakXXXXQuercus lyrataOvercup oakXXXQuercus nigraWater oakXXXQuercus michauxiiSwamp chestnut oakXXXRhapidophyllum hystrixNeedle palmXXXRhexia marianaPale meadow beautyXXXRubus argutusBlack berryXXXSabal minorBluestem palmXXXSabal palmettoSabal palmXXXScirpus cyperinusWool-grassXXXScleria triglomerataNut sedgeXXX	Poylgonum punctatum	Smartweed		Х	Х		
Pteridium aquilinumBracken fernXXXXQuercus hemisphaericaDiamond oakXXXXQuercus lyrataOvercup oakXXXQuercus nigraWater oakXXXQuercus michauxiiSwamp chestnut oakXXXRhapidophyllum hystrixNeedle palmXXXRhexia marianaPale meadow beautyXXXRubus argutusBlack berryXXXRubus trivialisDew berryXXXSabal palmettoSabal palmXXXSacururus cernuusLizard's tailXXXScirpus cyperinusWool-grassXXX	Polypremum procumbens	Rustweed	X	Х	Х		
Quercus hemisphaericaDiamond oakXXXQuercus lyrataOvercup oakXXQuercus nigraWater oakXXQuercus michauxiiSwamp chestnut oakXXQuercus michauxiiSwamp chestnut oakXXRhapidophyllum hystrixNeedle palmXXRhexia marianaPale meadow beautyXXRubus argutusBlack berryXXRubus trivialisDew berryXXSabal minorBluestem palmXXSabal palmettoSabal palmXXScirpus cyperinusWool-grassXXScleria triglomerataNut sedgeXX	Pteridium aquilinum	Bracken fern	X	Х	Х		Х
Quercus lyrataOvercup oakXQuercus nigraWater oakXQuercus michauxiiSwamp chestnut oakXQuercus michauxiiSwamp chestnut oakXRhapidophyllum hystrixNeedle palmXRhexia marianaPale meadow beautyXRubus argutusBlack berryXRubus trivialisDew berryXSabal minorBluestem palmXSabal palmettoSabal palmXSacrurus cernuusLizard's tailXScirpus cyperinusWool-grassXNut sedgeXX	Ouercus hemisphaerica	Diamond oak	X	Х	X		
Quercus nigraWater oakXQuercus michauxiiSwamp chestnut oakXQuercus michauxiiSwamp chestnut oakXRhapidophyllum hystrixNeedle palmXRhexia marianaPale meadow beautyXRubus argutusBlack berryXRubus trivialisDew berrySabal minorBluestem palmXXSabal palmettoSabal palmXXSacrurus cernuusLizard's tailScirpus cyperinusWool-grassNut sedgeXXX	Ouercus lvrata	Overcup oak				Х	
Quercus michauxiiSwamp chestnut oakXQuercus michauxiiSwamp chestnut oakXRhapidophyllum hystrixNeedle palmXXRhexia marianaPale meadow beautyXXRubus argutusBlack berryXXRubus trivialisDew berryXXSabal minorBluestem palmXXSabal palmettoSabal palmXXSabal palmettoSabal palmXXScirpus cyperinusWool-grassXXScleria triglomerataNut sedgeXX	Quercus nigra	Water oak			X		
Rhapidophyllum hystrixNeedle palmXXXXRhexia marianaPale meadow beautyXXXXRubus argutusBlack berryXXXXRubus trivialisDew berryXXXXSabal minorBluestem palmXXXXSabal palmettoSabal palmXXXXSacrurus cernuusLizard's tailXXXXScirpus cyperinusWool-grassXXXX	Quercus michauxii	Swamp chestnut oak			X		
Rhexia marianaPale meadow beautyXXRubus argutusBlack berryXXRubus trivialisDew berryXXSabal minorBluestem palmXXSabal palmettoSabal palmXXSaururus cernuusLizard's tailXXScirpus cyperinusWool-grassXXScleria triglomerataNut sedgeXX	Rhapidophyllum hystrix	Needle palm	X	X	X		Х
Rubus argutusBlack berryXXXRubus trivialisDew berryXXXSabal minorBluestem palmXXXSabal palmettoSabal palmXXXSaururus cernuusLizard's tailXXXScirpus cyperinusWool-grassXXXScleria triglomerataNut sedgeXXX	Rhexia mariana	Pale meadow beauty	X		X		
Rubus trivialisDew berryXXSabal minorBluestem palmXXSabal palmettoSabal palmXXSaururus cernuusLizard's tailXXScirpus cyperinusWool-grassXXScleria triglomerataNut sedgeXX	Rubus argutus	Black berry	X	Х	X		
Sabal minorBluestem palmXXXSabal palmettoSabal palmXXXSaururus cernuusLizard's tailXXXScirpus cyperinusWool-grassXXXScleria triglomerataNut sedgeXXX	Rubus trivialis	Dew berry	X		X		
Sabal palmetto     Sabal palm     X     X       Saururus cernuus     Lizard's tail     X     X       Scirpus cyperinus     Wool-grass     X     X       Scleria triglomerata     Nut sedge     X     X	Sabal minor	Bluestem palm	X	X	X		
Saururus cernuus     Lizard's tail     X     X       Scirpus cyperinus     Wool-grass     X     X       Scleria triglomerata     Nut sedge     X     X	Sabal palmetto	Sabal palm	X	X	X		
Scirpus cyperinus     Wool-grass     X     X       Scleria triglomerata     Nut sedge     X     X	Saururus cernuus	Lizard's tail	X		X		
Scleria triglomerata     Nut sedge     X     X	Scirpus cyperinus	Wool-grass	X		X		
	Scleria triglomerata	Nut sedge	X	X	X		

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Scientific Name	Common Name	2008 <sup>1</sup>	2009 <sup>1</sup>	2010 <sup>1</sup>	2011 <sup>2</sup>	Dominant
Scoparia dulcis	Sweetbroom			Х		
Serenoa repens	Saw palmetto				Х	
Sesbania vesicaria	Bagpod				Х	
Setaria sp.	Foxtail grass				Х	
Smilax bona-nox	Greenbriar			Х		
Smilax glauca	Greenbriar		Х	Х		
Smilax laurifolia	Greenbriar	Х	Х	Х		
Solidago fistulosa	Pine barrens goldenrod	Х	Х	Х		Х
Sporobolus indicus	Smutgrass			Х		
Symplocos tinctoria	Horse sugar			Х		
Taxodium distichum	Bald cypress			Х		
Thelypteris sp.	Maidenfern			Х		
Tillandsia usneoides	Spanish moss			Х		
Toxicodendron radicans	Poison ivy			Х		
Trichostema dichotomum	Forked bluecurls			Х		
Vaccinium arboreum	Sparkleberry			Х		
Vaccinium corymbosum	Highbush blueberry	Х	Х	Х		
Vaccinium elliottii	Elliott's blueberry			Х		
Viburnum dentatum	Arrowwood	Х		Х		
Viola lanceolata	Bog white violet	Х				
Vitis rotundifolia	Muscadine grape	Х	Х	Х		
Vitis sp.	Grape			Х		
Wisteria frutescens	American wisteria				Х	
Woodwardia areolata	Netted chain fern	Х	Х	Х		
Woodwardia virginica	Virginia chain fern			Х		
<i>Xyris</i> sp.	Yellow-eyed grass	Х		Х		

<sup>1</sup> 2008-10 species were taken from the previous annual report.
 <sup>2</sup> 2011 species are only those new species not previously observed and reported in annual reports.

<u>RTN</u>