

**DOYLE CREEK/TATES HELL WETLANDS RESTORATION ANNUAL MONITORING REPORT
(2009)**

Franklin County

Nationwide Permit – SAJ-2004-706 (NW-TLZ) issued 4/26/2004

Impact: SR 65 in Franklin County, 2.27 acres of low quality wet flatwoods

Mitigation: Doyle Creek/Tates Hell Swamp

Monitoring date: October 30, 2009

SCOPE

Repaving and shoulder improvement of SR 65 in Franklin County for US 98 north to the Liberty County line will impact 2.27 acres of wetlands (wet flatwoods per FDOT Inventory). To plan for sufficient mitigation, it was assumed that the wetlands being impacted were of the highest quality and would be completely destroyed. In actuality, the impact wetlands were lower quality roadside areas diminished by right-of-way maintenance, runoff, and altered hydrology from ditches and berms.

PROPOSED MITIGATION

Background

The Doyle Creek/Tates Hell wetlands restoration site is located along the eastern side of Tower Road, north of State Road (SR) 65 in Tates Hell Swamp, Franklin County, Florida (Figure 1) at approximately 29° 52'N and 84° 55'W in Sections 10, 11, 14, 15, Township 7S, Range 7W. Tates Hell Swamp covers some 200,000 acres (>300 mi²) of low-lying, poorly drained land between the Apalachicola and Ochlockonee rivers in the Florida Panhandle. 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. Degradation of Tates Hell from silvicultural operations included the construction of over 800 miles of logging roads and drainage ditches, and the establishment of bedded pine stands. These actions disrupted natural flow patterns and caused a lowering of the water table across large sections of the swamp and ponding of some specific locations due to road construction. With the replacement of much of the natural vegetation with stands of bedded pine, the natural functions and biotic diversity (flora and fauna) of the swamp also were severely impacted.

The ecological health of the Apalachicola Bay is strongly influenced by freshwater flows from Tates Hell. In the early 1990s, the Northwest Florida Water Management District (NFWFMD) and the State of Florida began acquiring portions of Tates Hell Swamp for wetland habitat preservation and to forestall further water quality declines. Public acquisitions now total some 205,000 acres and are managed by the Florida Division of Forestry (DOF) as Tates Hell State Forest. Since 1993, the NFWFMD, working with 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.

Proposed Mitigation

To mitigate for a 2.27-acre wetland impact associated with the repaving and shoulder improvements to SR65 in Franklin County, a 25-acre wetland restoration site was selected within a 2,000-acre tract of cutover pine plantation. DOF clear cut the area in Fall 1998, roller chopped in Spring 2004 and burned in Spring 2005 and 2007. The approved mitigation plan (Figure 2) incorporates the elimination of 18,000 feet of logging roads and associated ditching by pushing the road-fill into the adjacent ditches, re-establishing natural grade, and revegetating the road footprint (approximately 25 acres) with wiregrass (*Aristida stricta*) and cypress (*Taxodium* spp.). Additionally, three hardened low-water crossings (HLWC) were installed downstream of the mitigation site to enhance hydrologic flows.

Restoration Activities

The project was divided into two phases with all construction activities (road removal and construction of HLWCs) included in phase one and vegetation planting in phase two. Construction began on February 10, 2006 and was completed by July 11, 2006. Nearly 18,000 feet of roadbed was pushed into the adjacent ditches (Figure 2). The roadbed footprint was contoured and graded to approximate adjacent land elevations and seeded with brown topped millet as an erosion control measure. Hardened low water crossings were installed at sites #3-#5 (Figure 2). Best management practices (BMP) were implemented during both road removal and construction of low water crossings.

On January 14-15, 2008, 68,075 wiregrass tubelings were planted on 4-foot centers throughout the roadbed footprint and partially replanted in Fall 2009. In addition, 2,725 cypress seedlings were planted in appropriate areas of the footprint.

Annual monitoring of the restoration site was carried out on 30 October 2009. Coverage of native groundcover ranges from 50-100%, with an average of 65-70% since project completion. The initial wiregrass plantings had poor survival (<25%), so it was replanted in Fall 2009. Cypress survival was high with greater than 80% of the planted individuals present and growing well. Less than 1% coverage of exotic species was noted throughout the site. The road bed sites were walked in their entirety noting species that were present. Number of plant species observed has increased from 51 in 2008 to 81 in 2009. Evidence of wildlife usage (e.g., tracks, scat) at the sites is provided at the end of the plant species observed table. Representative photos are appended to this report.

WORK SCHEDULE

Construction phase: completed July 2006

Re-vegetation of road footprint (~25 acres): initial planting completed January 2008 and wiregrass re-planting fall 2009

Monitoring: Annual

SUCCESS CRITERIA

The project's success criteria are:

- Soils on road footprint stabilized to prevent offsite discharges of turbid flows. **Completed.**
- BMP's installed during all construction phases. **Completed.**
- Minimum 80% native groundcover dominated by wiregrass within five years of restoration: only about 60-65% native groundcover has been established after two years with poor survival of planted wiregrass (<25%). **Replanting of wiregrass Fall 2009.**
- No more than 1% coverage of invasive or exotic plant species. Minor *Panicum repens* in eastern roadbed
- 80% survival of planted cypress within five years of restoration. **Met.**
- Annual photo documentation of restoration at permanent photo points for five years. **Completed.**

The monitoring completed on October 30, 2009 indicates compliance with all success criteria. The appended field form provides a listing of the observed species and general site observations related to the success criteria.

Figure 1. General location of the Doyle Creek mitigation site.

Location Map - Doyle Creek Mitigation Area

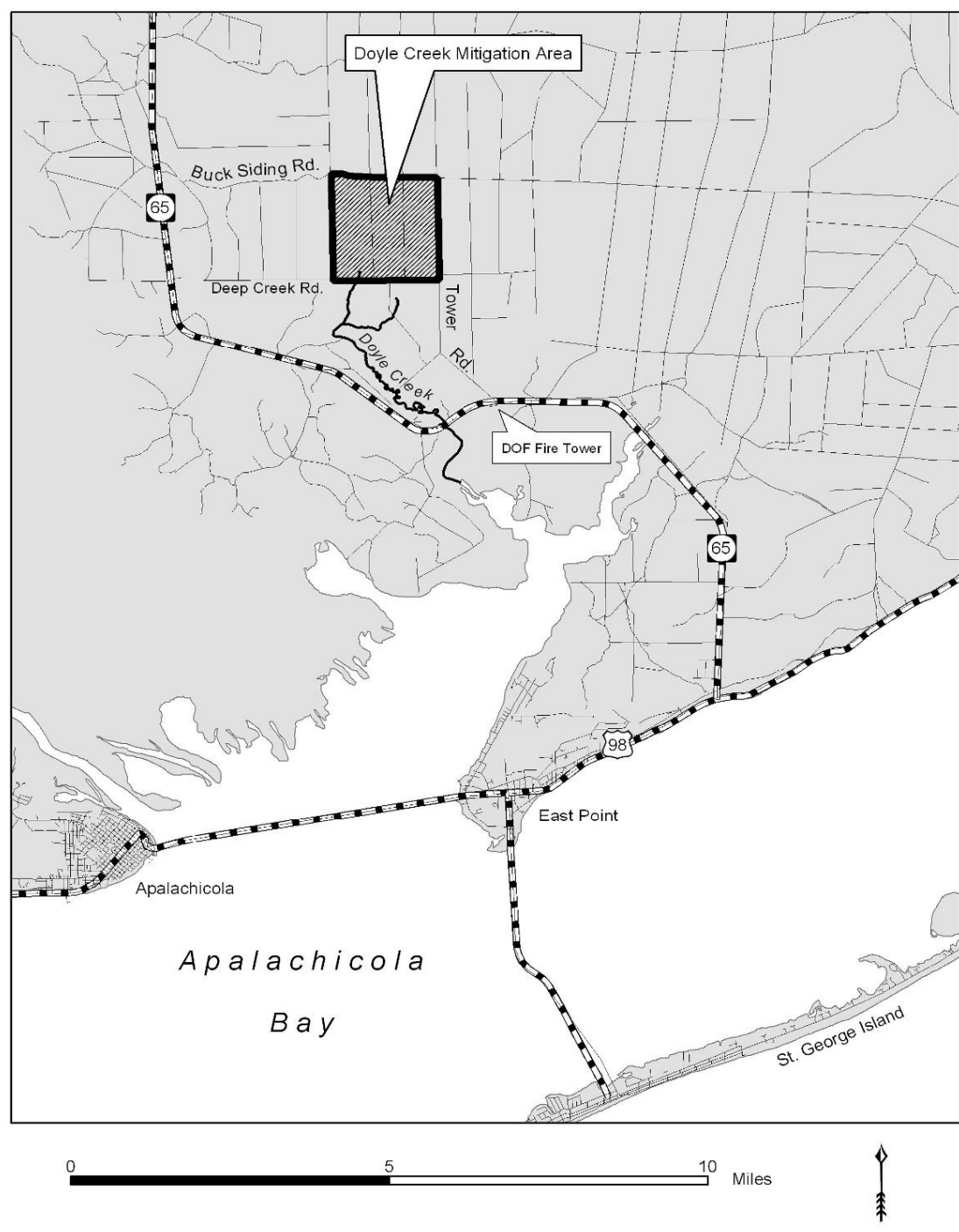


Figure 2. Doyle Creek mitigation site with location of each construction activity. Sites #1-2 are road removals; sites #3-5 are hardened low-water crossings.

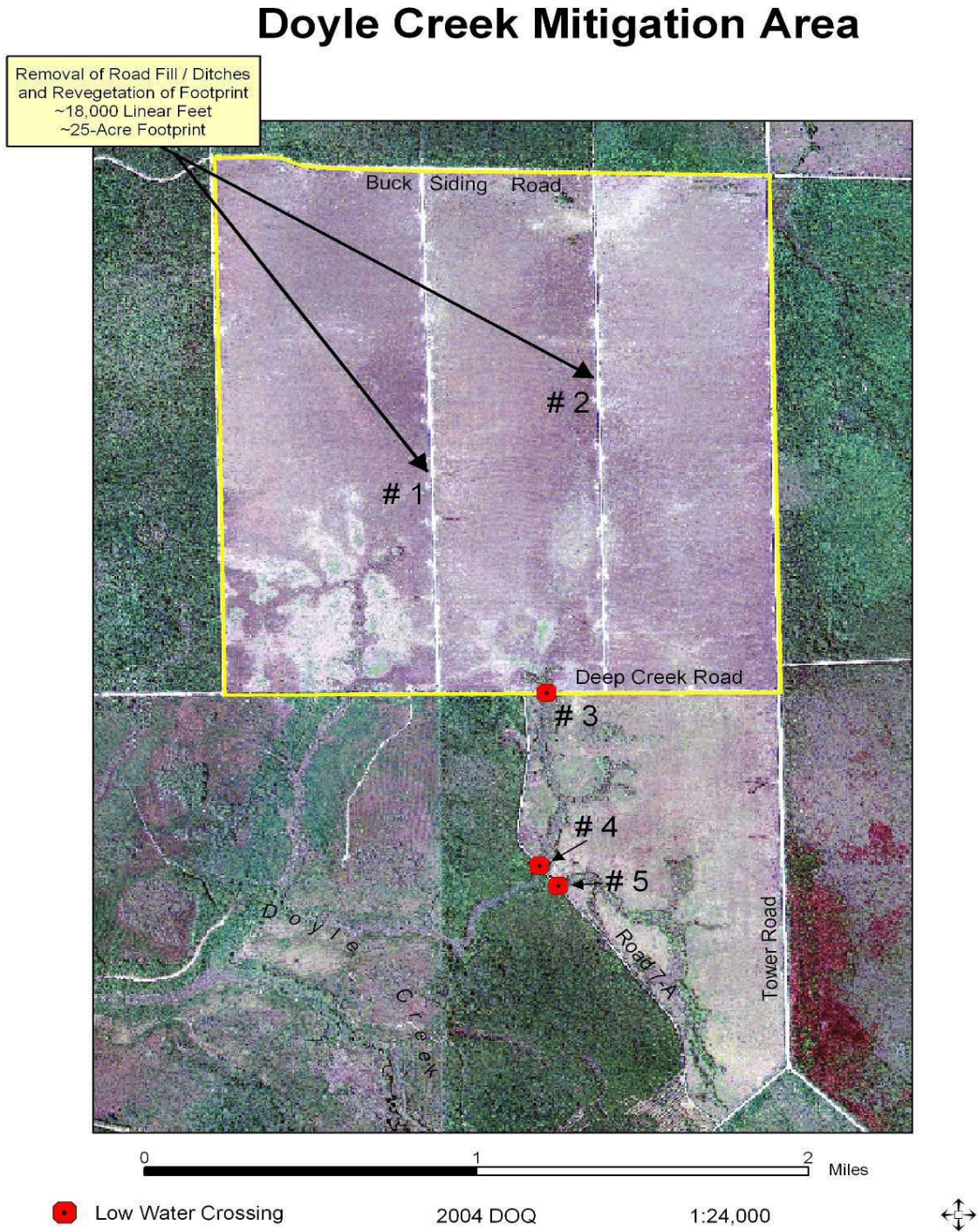


Figure 3. Road removal Site #1



Figure 4. Gator track in road removal area #1.



Figure 4. Road removal site #2, representative photos. Unfortunately the photos of the overall road aspect did not turn out, but the photo of site #1 is highly similar.



Site Inspection Field Form	
Project: Doyle Creek	Date: October 30, 2009
Name(s) of Data Collectors: Ann Redmond Bob Howell	Weather: cool, overcast
Environmental Description: Photo #'s	
Polygon: GPS Location: Time: 9 AM – 1 PM	
Qualitative Evaluation: Success criteria	
<ol style="list-style-type: none"> 1. Soils on road footprint stabilized to prevent offsite discharges of turbid flows: Done. 2. BMP's installed during all construction phases: Done. 3. Minimum 80% native groundcover dominated by wiregrass within five years of restoration: only about 60-65% native groundcover has been established after two years with poor survival of planted wiregrass (<25%). Replanting of wiregrass is scheduled for Fall 2009. Wiregrass presence in November 2009 was very good. As other native wetland species colonize the site , the need for wiregrass cover declines. 4. No more than 1% coverage of invasive or exotic plant species: no invasive or exotic species were noted in the annual surveys. Met, although preventive maintenance on the <i>P. repens</i> should be done. 5. 80% survival of planted cypress within five years of restoration: at least 80% survival of planted cypress was noted during the annual monitoring. 6. Annual photo documentation of restoration at permanent photo points for five years: photo documentation was taken during annual monitoring. 	
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. NA, although small area of <i>Panicum repens</i> on eastern road.	
B: Internal Roads (Both public and maintenance) for signs of dumping or trespassing, erosion, bridges and road integrity, and exotic or nuisance species infestations. NA	
C: All construction areas for stabilization and re-vegetation, structure, operation, and integrity. All areas have stabilized and “fit” into the surroundings.	
D: Representative polygons for each UMAM community for fuel load, exotic or nuisance species, planted material survival, groundcover, and shrub condition. One community. Increasing cover is all of appropriate species. Plant cover continues to increase and fuel loads are beginning to approximate that of adjacent wetland. Almost entirely herbaceous plant material, which is appropriate.	

Vegetation Assessment Field Form Qualitative Assessment: Doyle Creek	
Project: Date: October 30, 2009	
Name(s) of Data Collectors: Ann Redmond, Bob Howell	Weather: Cool, overcast.
Environmental Description: Photo #'s	
Polygon: GPS Location: Time: 9 AM – 1 PM	
Nuisance Species: <i>Panicum repens</i> , east road. plant cover increases.	Fuel Load: beginning to mimic environs as
Wildlife Observations listed at bottom of lists. Water depth varied from moist soil to shin depth, mostly 3' – 8" deep. 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? Clearly trending to success in the obvious development of a wetland flats community similar to its surroundings. Potential Problems and solutions. There is some <i>Panicum repens</i> which should be addressed on eastern road. Not large amounts.	

Scientific Name	Common Name	2008	2009	Natural Recruitment	Form
<i>Andropogon glomeratus</i>	Bushy bluestem	X	X	Yes	Herb
<i>Andropogon virginicus</i>	Broom sedge	X	X	Yes	Herb
<i>Aristida stricta</i>	Wiregrass	X	X	No	Herb
<i>Bidens coronata</i>	Crowned beggarticks	-	X	Yes	Herb
<i>Carex</i> sp.	Caric sedge	X	X	Yes	Herb
<i>Centella asiatica</i>	Centella	X	X	Yes	Herb
<i>Clethra alnifolia</i>	Coastal sweetpepperbish	-	X	Yes	Shrub
<i>Cliftonia monophylla</i>	Black ti ti	X	X	Yes	Shrub
<i>Cyperus lecontei</i>	Leconte's flatsedge	-	X	Yes	Herb
<i>Cyperus</i> sp.	Sedge	X	X	Yes	Herb
<i>Cyrilla racemiflora</i>	Titi	-	X	Yes	Shrub
<i>Dicanthelium</i> spp.	Witch grass	X	-	Yes	Herb
<i>Dichantherium aciculare</i>	Needleleaf witchgrass	X	-	Yes	Herb
<i>Drosera capillaris</i>	Pink sundew	X	X	Yes	Herb
<i>Echinochloa colonum</i>	Jungle grass	X	-	Yes	Herb
<i>Eleocharis atropurpurea</i>	Annual spikegrass	X	X	Yes	Herb
<i>Eleocharis tuberculosa</i>	Cone-cup spikerush	-	X	Yes	Herb
<i>Eragrostis elliotii</i>	Elliott lovegrass	X	X	Yes	Herb
<i>Eriocaulon decangulare</i>	Tenangle pipewort	-	X	Yes	Herb
<i>Eupatorium album</i>	White thoroughwort	-	X	Yes	Herb
<i>Euthamia caroliniana</i>	Slender flattop goldenrod	X	X	Yes	Herb
<i>Fimbristylis</i> sp.	Fringe rush	X	-	Yes	Herb
<i>Fuirena breviseta</i>	Saltmarsh umbrellasedge	X	X	Yes	Herb
<i>Fuirena pumila</i>	Dwarf umbrella grass	X	-	Yes	Herb
<i>Fuirena squarrosa</i>	Lake-rush	X	-	Yes	Herb
<i>Hydrocotyle</i> sp.	Marshpennywort	-	X	Yes	Herb
<i>Hypericum brachyphyllum</i>	St. John's wort	X	X	Yes	Shrub
<i>Hypericum gentianoides</i>	Orange grass	X	X	Yes	Herb
<i>Ilex glabra</i>	Gall berry	X	X	Yes	Shrub

<i>Scientific Name</i>	Common Name	2008	2009	Natural Recruitment	Form
<i>Ilex vomitoria</i>	Yaupon	X	X	Yes	Shrub
<i>Iva microcephala</i>	Piedmont marsh elder	-	X	Yes	Herb
<i>Juncus megacephalus</i>	Large headed rush	X	X	Yes	Herb
<i>Juncus pelocarpus</i>	Brownfruit rush	X	X	Yes	Herb
<i>Juncus polycephalus</i>	Manyhead rush	X	X	Yes	Herb
<i>Juncus repens</i>	Creeping rush	X	-	Yes	Herb
<i>Juncus trigonocarpus</i>	Redpod rush	X	X	Yes	Herb
<i>Lachnanthes caroliniana</i>	Redroot	X	X	Yes	Herb
<i>Lachnocaulon minus</i>	Small's bog button	X	-	Yes	Herb
<i>Leersia</i> sp.	Cut grass	X	X	Yes	Herb
<i>Ludwigia arcuata</i>	Ludwigia	X	X	Yes	Herb
<i>Ludwigia microcarpa</i>	Little seedbox	X	X	Yes	Herb
<i>Ludwigia palustris</i>	Marsh seedbox	-	X	Yes	Herb
<i>Ludwigia repens</i>	Creeping primrosewillow	-	X	Yes	Herb
<i>Ludwigia</i> sp.	Seedbox	-	X	Yes	Herb
<i>Lycopodium aloperuroides</i>	Fox clubmoss	X	X	Yes	Herb
<i>Lycopodium caroliniana</i>	Prostrate clubmoss	X	-	Yes	Herb
<i>Nymphaea odorata</i>	Fragrant water lily	X	X	Yes	Herb
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Swamp tupelo	X	X	Yes	Tree
<i>Panicum repens</i>	Torpedo grass	-	X	Yes	Herb
<i>Panicum rigidulum</i>	Redtop panicgrass	-	X	Yes	Herb
<i>Panicum verrucosum</i>	Warty panicgrass	-	X	Yes	Herb
<i>Panicum virgatum</i>	Switchgrass	-	X	Yes	Herb
<i>Persea palustris</i>	Swamp bay	-	X	Yes	Tree, sapling
<i>Pinus elliotii</i>	Slash pine	-	X	Yes	Tree, 18-36 inches
<i>Pluchea foetida</i>	Camphor weed	X	X	Yes	Herb
<i>Polypremum procumbens</i>	Rustweed or Juniperleaf	X	X	Yes	Herb
<i>Proserpinaca pectinata</i>	Combleaf mermaidweed	-	X	Yes	Herb
<i>Rhexia mariana</i>	Pale meadowbeauty	-	X	Yes	Herb
<i>Rhexia</i> sp.	Meadowbeauty	X	-	Yes	Herb
<i>Rhexia virginica</i>	Handsome harry	-	X	Yes	Herb
<i>Rhynchosopra cephalantha</i>	Bunched beaksedge	-	X	Yes	Herb
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	-	X	Yes	Herb
<i>Rhynchospora corniculata</i>	Short bristle beakrush	X	-	Yes	Herb
<i>Rhynchospora inundata</i>	Horned beakrush	X	-	Yes	Herb
<i>Rhynchospora wrightiana</i>	Wright's beaksedge	-	X	Yes	Herb
<i>Rubus</i> sp.	Blackberry	-	X	Yes	Vine
<i>Rynchospora intermixa</i>	Tufted beakrush	X	-	Yes	Herb
<i>Sagittaria graminea</i>	Grassy arrowhead	X	X	Yes	Herb
<i>Scirpus cyperinus</i>	Wool-grass	-	-	Yes	Herb
<i>Scoparia dulcis</i>	Sweetbroom or Licoriceweed	-	X	Yes	Herb
<i>Smilax laurifolia</i>	Greenbriar	X	X	Yes	Vine
<i>Solidago fistulosa</i>	Pinebarren goldenrod	-	X	Yes	Herb
<i>Stillingia aquatica</i>	Corkwood	X	X	Yes	Shrub

<i>Scientific Name</i>	Common Name	2008	2009	Natural Recruitment	Form
<i>Taxodium ascendens</i>	Pond-cypress	X	X	No	Tree
<i>Utricularia prupurea</i>	Eastern purple bladderwort	-	X	Yes	Herb
<i>Utricularia subulata</i>	Zig-zag bladderwort	X	X	Yes	Herb
<i>Viola lanceolata</i>	Bog white violet	X	X	Yes	Herb
<i>Woodwardia areolata</i>	Netted chain fern	X	-	Yes	Herb
<i>Xyris difformis</i> var. <i>curtissii</i>	Curtiss' yelloweyed grass	X	X	Yes	Herb
<i>Xyris flabelliformis</i>	Yellow-eyed grass	X	-	Yes	Herb
<i>Xyris</i> sp.	Yellow-eyed grass	X	X	Yes	Herb

Wildlife observations:

Deer (tracks)

Raccoon (tracks and scat)

Crayfish chimney

Rabbit (tracks and scat)

Snipe?

Mole cricket (furrows)

Alligator (tracks)

1.5-2-inch frog, brown with yellow side stripes

Water moccasin

Turtle (splash)

Topminnows/Darters

Marsh wren