

**Vegetation Monitoring at Four Northwest Florida Water  
Management District Mitigation Sites  
Fall 2016**

**Ann F. Johnson  
Gary E. Schultz  
Frank Price**

**December 2016**

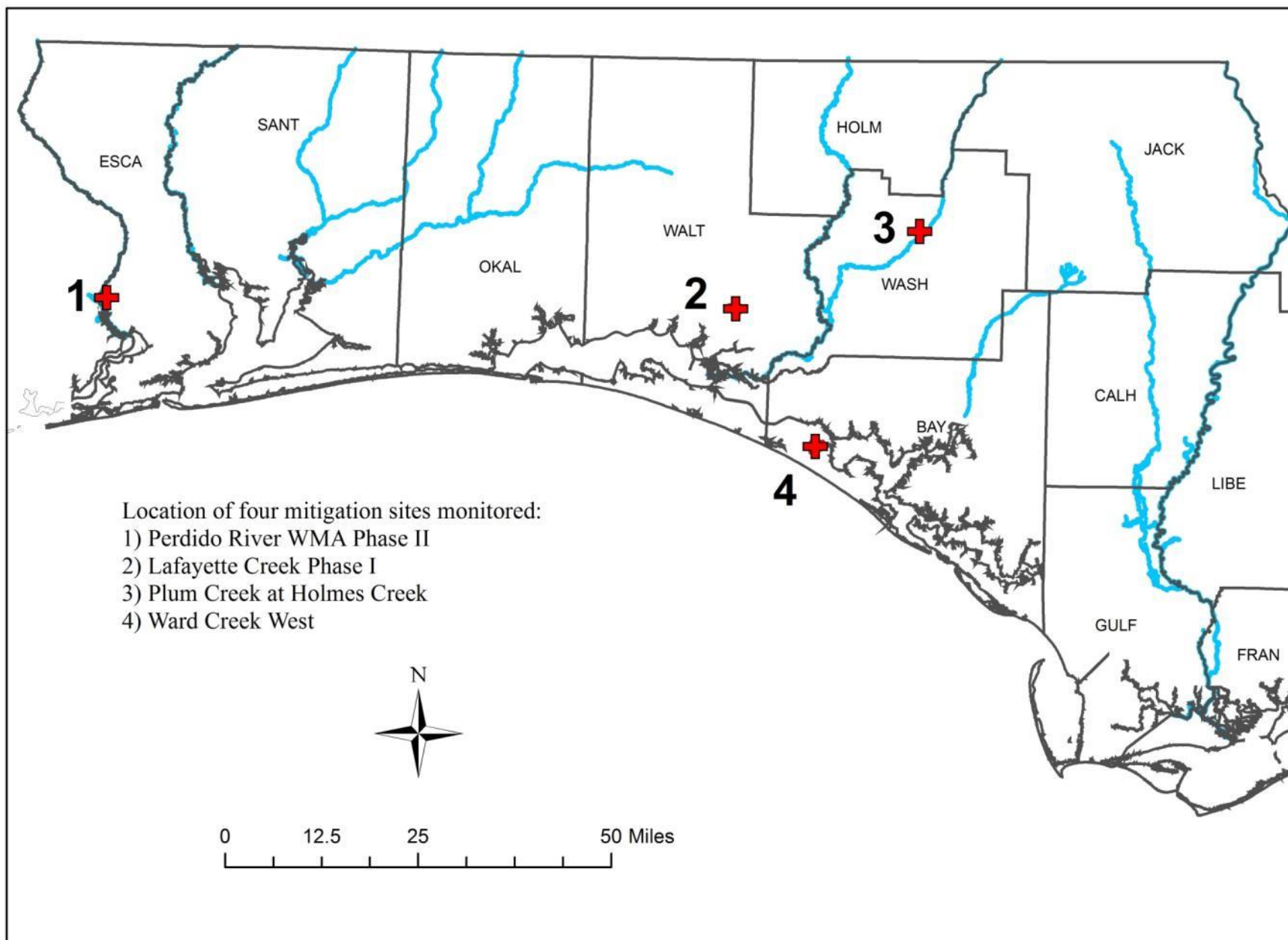
**Florida Natural Area Inventory  
1018 Thomasville Road, Suite 200-C  
Tallahassee, FL 32303  
Dan Hipes, Director**

Funding for this project was provided by the Northwest Florida Water Management District  
under the agreement PO 00170102-000 with the Florida Natural Areas Inventory  
Florida State University

This document contains separate qualitative and quantitative vegetation monitoring reports for four mitigation sites managed by the Northwest Florida Water Management District:

- 1) Perdido River Water Management Area – Phase II in Escambia County
- 2) Lafayette Creek – Phase I in Walton County
- 3) Plum Creek at Holmes Creek in Washington County
- 4) Ward Creek West in Bay County.

Except for the genus *Dichantheium*, taxonomy follows Wunderlin, R. P., B.F. Hanen, A.R. Franck, and F.B. Essig. 2016. Atlas of Florida Plants (<http://florida.plantatlas.usf.edu/>), Institute for Systematic Botany, University of South Florida, Tampa. *Dichantheium* follows the 2012 treatment by Freckman and Lelong in the Flora of North America (<http://herbarium.usu.edu/treatments/Dichantheium.htm#Dichantheium>).



**Ward Creek West Mitigation Site**  
**Qualitative and Quantitative Monitoring**  
**December 2016**

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**INTRODUCTION**

The Ward Creek West Mitigation Site consists of 724 acres in Bay County managed by the Northwest Florida Water Management District. It is located 0.5 mile west of SR 79 and 2.5 miles north of the junction of SR 79 and US 98. The Ward Creek West Mitigation Project aims to restore hydric pine flatwoods (HPF) and hydric pine savanna (HPS) which had been converted to slash pine plantation, as well as to convert portions of the mixed forested wetlands to cypress (CY; Figure WC-1). Quantitative and qualitative monitoring was used to document the current plant species composition and vegetation structure of these targeted communities. The site vegetation was previously monitored by FNAI biologists during the fall from 2012 through 2015.

**METHODS**

The quantitative monitoring utilized 300-foot-long permanent transect lines previously marked during the 2012 survey. In 2013, metal T-posts were placed at each end of the transects to provide permanent reference points. Two transects were located in both the hydric pine flatwoods and hydric pine savanna areas (Figure WC-1). Data recorded consisted of the visually estimated percent cover of each plant species found in fifteen separate 1-meter square quadrats. Tree trunks in quadrats were noted in comments but not recorded as cover; canopy over 2 m in height was also not recorded as cover in quadrats. The quadrats were located to the left side of the transect line 20 feet apart, starting at the 0 point and ending at 280 feet. The qualitative monitoring consisted of recording the species and vegetation structure observed along meandering pedestrian transects through each of the two target communities plus the cypress area. The field surveys were performed by FNAI botanist Ann Johnson on October 24-26, 2016.



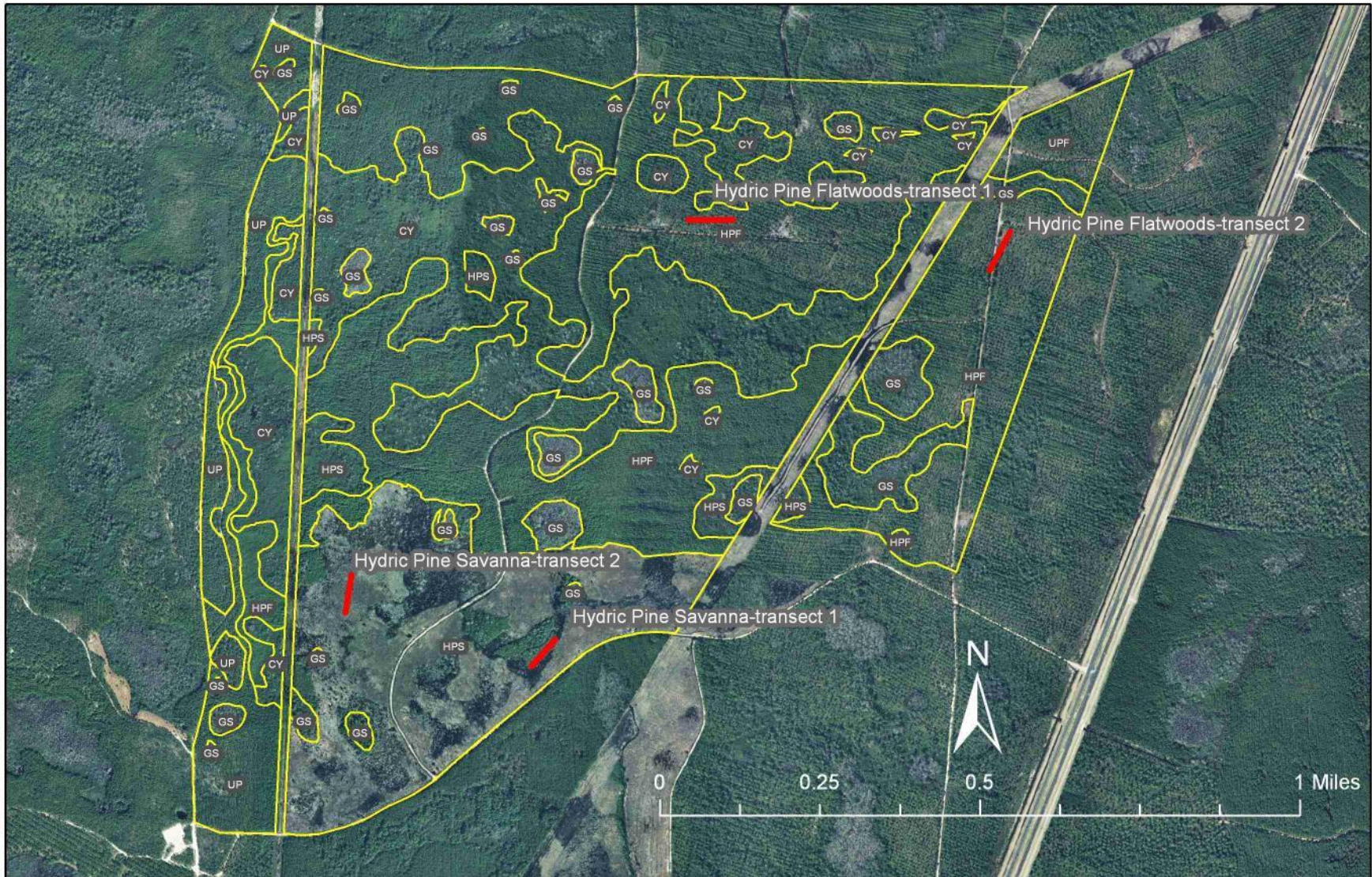


Figure WC-1. Location of permanent transects at Ward Creek West Mitigation Site. CY=Cypress, UP=Upland Pine, HPF=Hydric Pine Flatwoods, HPS=Hydric Pine Savanna, GS=Gum Swamp.

## RESULTS AND DISCUSSION

A total of 138 plant species were recorded during 2016 monitoring session in the target communities at Ward Creek West (Table WC-1).

Table WC-1. Plant species observed in the target communities at Ward Creek West Mitigation Site on October 24-26, 2016.

Scientific Name	Common Name	cypress	hydrich pine flatwoods	hydrich pine savanna	Grand Total
<i>Acer rubrum</i>	red maple	X	X		2
<i>Agalinis fasciculata</i>	beach false foxglove		X		1
<i>Andropogon arctatus</i>	pinewoods bluestem		X		1
<i>Andropogon glomeratus</i>	bushy bluestem		X		1
<i>Andropogon glomeratus var. glaucopsis</i>	purple bluestem		X	X	2
<i>Andropogon gyrans var. stenophyllus</i>	Elliott's bluestem			X	1
<i>Andropogon virginicus</i>	broomsedge bluestem		X	X	2
<i>Andropogon virginicus var. glaucus</i>	chalky bluestem		X	X	2
<i>Anthraenantia rufa</i>	purple silkyscale		X		1
<i>Aristida spiciformis</i>	bottlebrush threeawn		X		1
<i>Aristida stricta var. beyrichiana</i>	wiregrass		X	X	2
<i>Balduina angustifolia</i>	coastalplain honeycomb-head		X		1
<i>Bartonia virginica</i>	yellow screwstem			X	1
<i>Bidens mitis</i>	smallfruit beggarticks		X		1
<i>Bigelovia nudata</i>	pineland rayless goldenrod				1
<i>Calamovilfa curtissii</i>	Curtiss' sandgrass			X	1
<i>Carex striata</i>	Walter's sedge		X		1
<i>Carphephorus odoratissimus</i>	vanillaleaf		X		1
<i>Centella asiatica</i>	spadeleaf		X		1
<i>Chamaecrista fasciculata</i>	partridge pea		X		1
<i>Chrysopsis lanuginosa</i>	Lynn Haven goldenaster		X	X	2
<i>Clethra alnifolia</i>	sweet pepperbush	X	X		2
<i>Cliftonia monophylla</i>	black titi	X	X	X	3
<i>Coreopsis floridana</i>	Florida tickseed		X		1
<i>Ctenium aromaticum</i>	toothache grass			X	1
<i>Cyrilla racemiflora</i>	titi	X	X	X	3
<i>Dichantherium aciculare</i>	needleleaf witchgrass		X		1
<i>Dichantherium acuminatum var. longiligulatum</i>	tapered witchgrass			X	1
<i>Dichantherium commutatum</i>	variable witchgrass		X		1
<i>Dichantherium ensifolium</i>	cypress witchgrass		X		1
<i>Dichantherium portoricense</i>	hemlock witchgrass		X		1

Scientific Name	Common Name	cypress	hydric pine flatwoods	hydric pine savanna	Grand Total
<i>Dichantherium scabriusculum</i>	woolly witchgrass		X		1
<i>Dichantherium sp.</i>	witchgrass		X	X	2
<i>Dichantherium strigosum</i>	roughhair witchgrass		X		1
<i>Drosera capillaris</i>	pink sundew		X	X	2
<i>Eriocaulon decangulare</i>	tenangle pipewort		X	X	2
<i>Eupatorium capillifolium</i>	dogfennel		X		1
<i>Eupatorium leucolepis</i>	justiceweed			X	1
<i>Eupatorium mohrii</i>	Mohr's thoroughwort		X	X	2
<i>Euthamia caroliniana</i>	slender flattop goldenrod		X	X	2
<i>Fuirena breviseta</i>	saltmarsh umbrellasedge		X		1
<i>Fuirena scirpoidea</i>	southern umbrellasedge		X		1
<i>Gaylussacia dumosa</i>	dwarf huckleberry		X		1
<i>Gaylussacia frondosa var. tomentosa</i>	blue huckleberry		X		1
<i>Helianthus angustifolius</i>	narrowleaf sunflower			X	1
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort		X	X	2
<i>Hypericum cistifolium</i>	roundpod St. John's wort		X	X	2
<i>Hypericum fasciculatum</i>	peelbark St. John's wort		X	X	2
<i>Hypericum microsepalum</i>	flatwoods St. John's wort		X	X	2
<i>Hypericum tetrapetalum</i>	fourpetal St. John's wort		X	X	2
<i>Ilex cassine var. myrtifolia</i>	myrtle-leaved holly		X		1
<i>Ilex coriacea</i>	large gallberry	X	X	X	3
<i>Ilex glabra</i>	gallberry		X	X	2
<i>Ilex vomitoria</i>	yaupon		X	X	2
<i>Juncus scirpoides</i>	needlepod rush		X	X	2
<i>Juncus trigonocarpus</i>	redpod rush		X		1
<i>Kalmia hirsuta</i>	hairy wicky		X	X	2
<i>Lachnanthes caroliniana</i>	Carolina redroot		X	X	2
<i>Lachnocaulon anceps</i>	whitehead bogbutton		X	X	2
<i>Liatris spicata</i>	dense gayfeather		X		1
<i>Lobelia brevifolia</i>	shortleaf lobelia			X	1
<i>Lophiola aurea</i>	golden crest		X	X	2
<i>Ludwigia suffruticosa</i>	shrubby primrosewillow		X		1
<i>Lycopodiella alopecuroides</i>	foxtail club-moss			X	1
<i>Lycopodiella caroliniana</i>	slender club-moss			X	1
<i>Lyonia ferruginea</i>	rusty staggerbush		X		1
<i>Lyonia fruticosa</i>	coastalplain staggerbush			X	1
<i>Lyonia lucida</i>	fetterbush	X	X	X	3



Scientific Name	Common Name	cypress	hydrich pine flatwoods	hydrich pine savanna	Grand Total
<i>Magnolia virginiana</i>	sweetbay	X	X		2
<i>Myrica caroliniensis</i>	evergreen bayberry	X	X		2
<i>Nyssa ogeche</i>	ogeechee tupelo	X			1
<i>Nyssa sylvatica</i> var. <i>biflora</i>	swamp tupelo	X			1
<i>Nyssa ursina</i>	bog tupelo		X	X	2
<i>Oldenlandia uniflora</i>	clustered mille grains			X	1
<i>Onoclea sensibilis</i>	sensitive fern		X		1
<i>Osmunda cinnamomea</i>	cinnamon fern		X		1
<i>Oxypolis filiformis</i>	water cowbane		X		1
<i>Panicum hians</i>	gaping panicum		X		1
<i>Panicum longifolium</i>	panicum		X		1
<i>Panicum verrucosum</i>	warty panicgrass		X	X	2
<i>Panicum virgatum</i>	switchgrass			X	1
<i>Photinia pyrifolia</i>	red chokeberry		X		1
<i>Pinus elliottii</i>	slash pine	X	X	X	3
<i>Pinus serotina</i>	pond pine		X		1
<i>Pityopsis graminifolia</i>	narrowleaf silkgrass		X		1
<i>Pluchea foetida</i>	stinking camphorweed			X	1
<i>Polygala brevifolia</i>	littleleaf milkwort			X	1
<i>Polygala lutea</i>	orange milkwort		X		1
<i>Polygonella gracilis</i>	tall jointweed		X		1
<i>Proserpinaca pectinata</i>	combleaf mermaidweed		X		1
<i>Pteridium aquilinum</i>	bracken fern		X	X	2
<i>Pterocaulon pycnostachyum</i>	blackroot		X		1
<i>Quercus minima</i>	dwarf live oak		X		1
<i>Rhexia alifanus</i>	savannah meadowbeauty		X		1
<i>Rhexia mariana</i>	pale meadowbeauty		X		1
<i>Rhexia petiolata</i>	fringed meadowbeauty		X	X	2
<i>Rhexia virginica</i>	handsome harry		X	X	2
<i>Rhus copallinum</i>	winged sumac		X		1
<i>Rhynchospora cephalantha</i>	bunched beaksedge		X	X	2
<i>Rhynchospora chalarocephala</i>	loosehead beaksedge		X	X	2
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge		X	X	2
<i>Rhynchospora compressa</i>	flatfruit beaksedge		X	X	2
<i>Rhynchospora corniculata</i>	shortbristle horned beaksedge		X	X	2
<i>Rhynchospora fascicularis</i>	fascicled beaksedge		X	X	2
<i>Rhynchospora gracilentata</i>	slender beaksedge			X	1

Scientific Name	Common Name	cypress	hydric pine flatwoods	hydric pine savanna	Grand Total
<i>Rhynchospora microcephala</i>	bunched beaksedge			X	1
<i>Rhynchospora plumosa</i>	plumed beaksedge		X	X	2
<i>Rhynchospora</i> sp.	beaksedge			X	1
<i>Rubus cuneifolius</i>	sand blackberry		X		1
<i>Sabatia brevifolia</i>	shortleaf rosegentian		X	X	2
<i>Saccharum giganteum</i>	sugarcane plumegrass		X	X	2
<i>Sarracenia flava</i>	yellow pitcherplant			X	1
<i>Sarracenia psittacina</i>	parrot pitcherplant			X	1
<i>Sarracenia rubra</i>	sweet pitcherplant			X	1
<i>Scleria reticularis</i>	netted nutrush			X	1
<i>Serenoa repens</i>	saw palmetto	X	X		2
<i>Smilax auriculata</i>	earleaf greenbrier		X		1
<i>Smilax glauca</i>	cat greenbrier		X		1
<i>Smilax laurifolia</i>	laurel greenbrier	X	X	X	3
<i>Solidago fistulosa</i>	pinebarren goldenrod		X	X	2
<i>Sphagnum</i> sp.	sphagnum moss	X	X	X	3
<i>Sporobolus floridanus</i>	Florida dropseed			X	1
<i>Stillingia aquatica</i>	water toothleaf		X		1
<i>Syngonanthus flavidulus</i>	yellow hatpins			X	1
<i>Taxodium ascendens</i>	pond cypress	X			1
unknown graminoid	unknown graminoid		X	X	2
<i>Vaccinium corymbosum</i>	highbush blueberry		X		1
<i>Vaccinium darrowii</i>	Darrow's blueberry		X		1
<i>Vaccinium myrsinites</i>	shiny blueberry		X		1
<i>Vitis rotundifolia</i>	muscadine	X	X	X	3
<i>Woodwardia virginica</i>	Virginia chain fern		X		1
<i>Xyris ambigua</i>	coastalplain yellow-eyed grass		X	X	2
<i>Xyris brevifolia</i>	shortleaf yellow-eyed grass		X	X	2
<i>Xyris caroliniana</i>	Carolina yellow-eyed grass		X		1
<i>Xyris elliotii</i>	Elliott's yellow-eyed grass		X	X	2
<i>Xyris fimbriata</i>	fringed yellow-eyed grass		X	X	2
<i>Xyris flabelliformis</i>	savannah yellow-eyed grass			X	1
<i>Xyris stricta</i>	pineland yellow-eyed grass		X	X	2
<b>Total number of species: 138</b>		16	110	76	202

## Hydric Pine Flatwoods

**Qualitative sampling.** The hydric pine flatwoods areas had been disturbed in the past few years by the silviculture action of thinning of the mature planted slash pines. The soil was currently moist to dry, but old machinery ruts were evident. The open canopy of mature slash pines covered a variously dense shrub layer. The area near the western Transect 1 had been bedded years ago when the pines were planted. This area had a moderately dense shrub stratum and an herbaceous layer composed primarily of purple bluestem. The eastern section had more saw palmetto and gallberry and a diverse herbaceous cover with scattered wiregrass and beaksedges. The total number of species observed in this community was 110 (Table WC-1).

**Quantitative sampling.** The western Transect 1 (Table WC-2, Figure WC-2) had a total of 19 species with 50% bare ground. Purple bluestem contributed the most cover, followed by woody species (large gallberry and black titi, rusty staggerbush, and slash pine seedlings). The eastern Transect 2 (Table WC-3, Figure WC-3) had a total of 42 species with 45% bare ground. The vegetation was more diverse than in Transect 1. Shrubby species contributed most of the cover, primarily dwarf live oak and saw palmetto, with lesser amounts of gallberry and large gallberry. Purple bluestem made up most of the sparse herbaceous cover, with lesser amounts of shortleaf yellow-eyed grass and fascicled beaksedge.

Figure WC-2. Percent cover of plant species in Hydric Pine Flatwoods Transect 1.

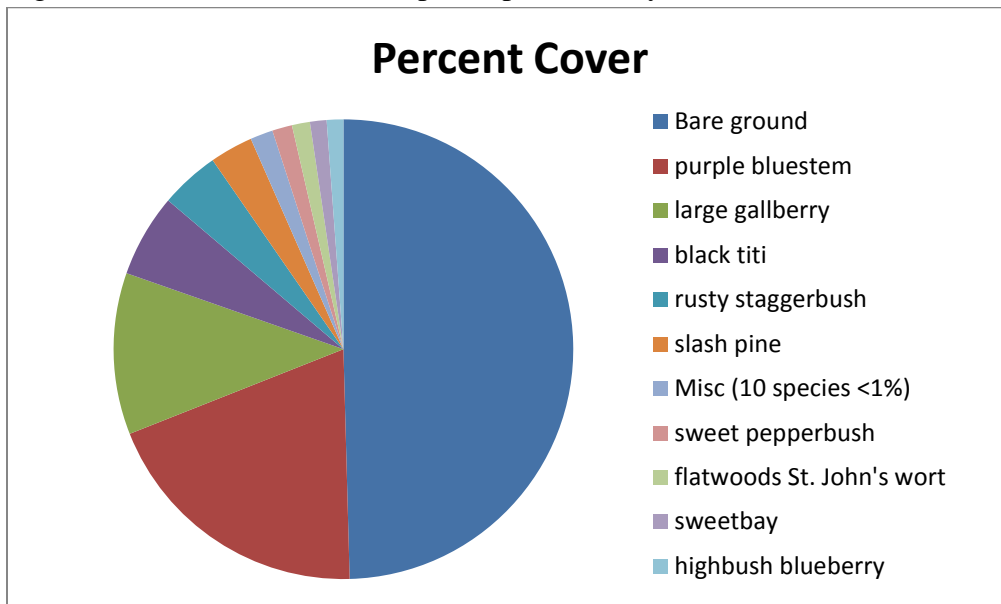


Table WC-2. Percent cover of plant species in Hydric Pine Flatwoods Transect 1 when sampled on October 25, 2016.

Scientific name	Common name	Average percent cover per quadrat
<i>Andropogon glomeratus</i> var. <i>glaucoptis</i>	purple bluestem	19.43
<i>Ilex coriacea</i>	large gallberry	11.37
<i>Cliftonia monophylla</i>	black titi	5.83
<i>Lyonia ferruginea</i>	rusty staggerbush	4.17
<i>Pinus elliotii</i>	slash pine	3.03
<i>Clethra alnifolia</i>	sweet pepperbush	1.40
<i>Hypericum microsepalum</i>	flatwoods St. John's wort	1.27
<i>Magnolia virginiana</i>	sweetbay	1.17
<i>Vaccinium corymbosum</i>	highbush blueberry	1.17
<i>Serenoa repens</i>	saw palmetto	0.53
<i>Smilax laurifolia</i>	laurel greenbrier	0.37
<i>Vitis rotundifolia</i>	muscadine	0.20
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	0.13
<i>Polygala lutea</i>	orange milkwort	0.10
<i>Rhexia petiolata</i>	fringed meadowbeauty	0.10
<i>Rhynchospora fascicularis</i>	fascicled beaksedge	0.07
<i>Rhynchospora cephalantha</i>	bunched beaksedge	0.03
<i>Rhynchospora chalarocephala</i>	loosehead beaksedge	0.03
<i>Xyris ambigua</i>	coastalplain yellow-eyed	0.03
	Bare ground	49.57

Figure WC-3. Percent cover of plant species in Hydric Pine Flatwoods Transect 2.

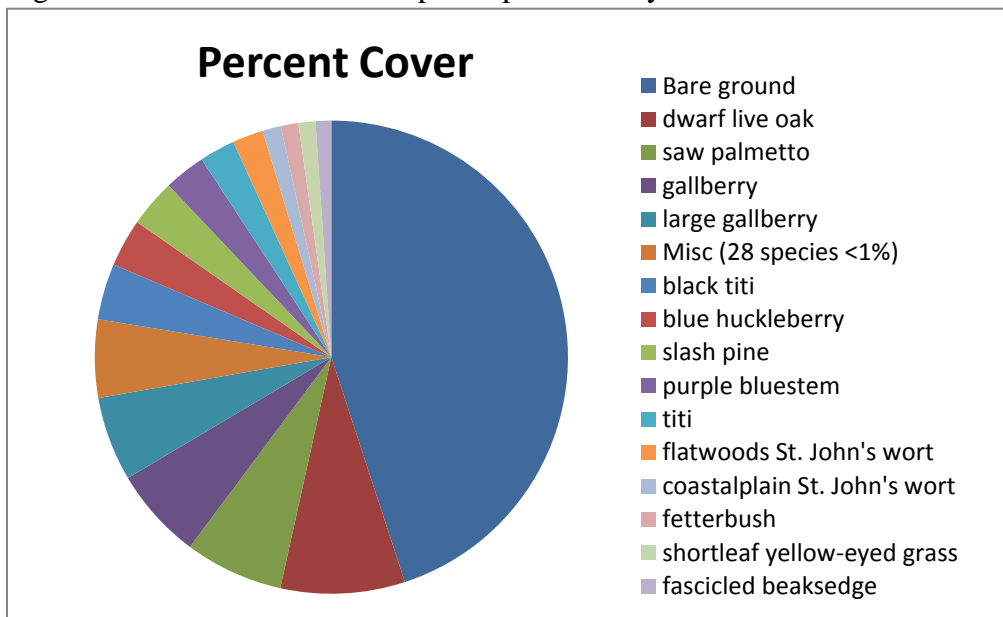


Table WC-3. Percent cover of plant species in Hydric Pine Flatwoods Transect 2 when sampled on October 26, 2016.

Scientific name	Common name	Average percent cover per quadrat
<i>Quercus minima</i>	dwarf live oak	8.50
<i>Serenoa repens</i>	saw palmetto	6.73
<i>Ilex glabra</i>	gallberry	6.27
<i>Ilex coriacea</i>	large gallberry	5.77
<i>Cliftonia monophylla</i>	black titi	3.83
<i>Gaylussacia frondosa</i> var. <i>tomentosa</i>	blue huckleberry	3.27
<i>Pinus elliotii</i>	slash pine	3.27
<i>Andropogon glomeratus</i> var. <i>glaucopsis</i>	purple bluestem	2.83
<i>Cyrilla racemiflora</i>	titi	2.43
<i>Hypericum microsepalum</i>	flatwoods St. John's wort	2.10
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort	1.27
<i>Lyonia lucida</i>	fetterbush	1.20
<i>Xyris brevifolia</i>	shortleaf yellow-eyed grass	1.17
<i>Rhynchospora fascicularis</i>	fascicled beaksedge	1.07
<i>Sphagnum</i> sp.	sphagnum moss	0.63
<i>Panicum hians</i>	gaping panicum	0.50
<i>Panicum verrucosum</i>	warty panicgrass	0.50
<i>Rhynchospora cephalantha</i>	bunched beaksedge	0.50
<i>Xyris ambigua</i>	coastalplain yellow-eyed grass	0.50
<i>Rhynchospora plumosa</i>	plumed beaksedge	0.40
<i>Dichantherium ensifolium</i>	cypress witchgrass	0.33
<i>Vaccinium myrsinites</i>	shiny blueberry	0.33
<i>Carphephorus odoratissimus</i>	vanillaleaf	0.20
<i>Lachnocaulon anceps</i>	whitehead bogbutton	0.20
unknown graminoid	unknown graminoid	0.17
<i>Vaccinium corymbosum</i>	highbush blueberry	0.13
<i>Vitis rotundifolia</i>	muscadine	0.13
<i>Andropogon virginicus</i>	broomsedge bluestem	0.10
<i>Hypericum tetrapetalum</i>	fourpetal St. John's wort	0.10
<i>Rhynchospora chalarocephala</i>	loosehead beaksedge	0.10
<i>Smilax laurifolia</i>	laurel greenbrier	0.10
<i>Dichantherium portoricense</i>	hemlock witchgrass	0.07
<i>Aristida stricta</i> var. <i>beyrichiana</i>	wiregrass	0.03
<i>Dichantherium</i> sp.	witchgrass	0.03
<i>Dichantherium strigosum</i>	roughhair witchgrass	0.03
<i>Gaylussacia dumosa</i>	dwarf huckleberry	0.03
<i>Lachnanthes caroliana</i>	Carolina redroot	0.03
<i>Photinia pyrifolia</i>	red chokeberry	0.03
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	0.03



Scientific name	Common name	Average percent cover per quadrat
<i>Smilax auriculata</i>	earleaf greenbrier	0.03
<i>Vaccinium darrowii</i>	Darrow's blueberry	0.03
<i>Xyris caroliniana</i>	Carolina yellow-eyed grass	0.03
	Bare ground	44.97

### Hydric Pine Savanna

**Qualitative sampling.** The hydric pine savanna restoration area was highly disturbed by past silviculture operations. The pines have been harvested and the vegetative cover currently consists of a dense, tall stand of purple bluestem with scattered clumps of wiregrass intermixed. Widely scattered young slash pine and pond cypress and shrub clumps of fetterbush, titi and black titi occur throughout. The soil was dry at the time of sampling except in a few lower pockets with standing water. A total of four large clumps of Curtiss' sandgrass (*Calamovilfa curtissii*), listed as threatened by the state, were found in this community at two different sites. The total number of plant species observed in this community was 76 (Table WC-1).

**Quantitative sampling.** Transect 1 (Table WC-4, Figure WC-4) had a total of 36 species and 20% bare ground. Groundcover was heavily dominated by purple bluestem, followed by the shrubs, peelbark St. John's wort, fetterbush, and black titi. Other herbs contributed small amounts of cover in the wetter portions including Elliott's yelloweyed grass, Carolina redroot, and fascicled beaksedge. Transect 2 (Table WC-5, Figure WC-5) had a total of 28 species and 31% bare ground. The vegetation was dominated by purple bluestem followed by shrubby species, primarily black titi, peelbark St. Johns wort, and fetterbush. The next most abundant herbaceous species, comprising less than two percent of the cover, were wiregrass, tenangle pipewort, and plumed beaksedge.

Figure WC-4. Percent cover of plant species in Hydric Pine Savanna Transect 1.

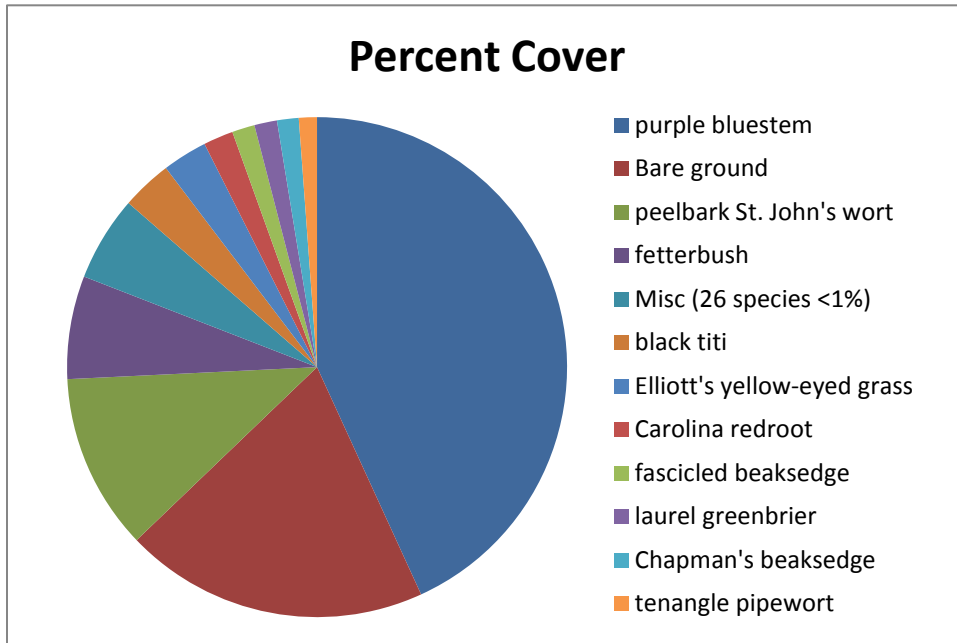


Table WC-4. Percent cover of species in Hydric Pine Savanna Transect 1 when sampled on October 24, 2016.

Scientific name	Common name	Average percent cover per quadrat
<i>Andropogon glomeratus</i> var. <i>glaucopsis</i>	purple bluestem	43.17
<i>Hypericum fasciculatum</i>	peelbark St. John's wort	11.40
<i>Lyonia lucida</i>	fetterbush	6.67
<i>Cliftonia monophylla</i>	black titi	3.27
<i>Xyris elliottii</i>	Elliott's yellow-eyed grass	2.90
<i>Lachnanthes caroliniana</i>	Carolina redroot	1.93
<i>Rhynchospora fascicularis</i>	fascicled beaksedge	1.47
<i>Smilax laurifolia</i>	laurel greenbrier	1.47
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	1.40
<i>Eriocaulon decangulare</i>	tenangle pipewort	1.17
<i>Cyrilla racemiflora</i>	titi	0.67
<i>Pinus elliottii</i>	slash pine	0.63
<i>Andropogon virginicus</i>	broomsedge bluestem	0.50
<i>Ilex coriacea</i>	large gallberry	0.50
<i>Xyris brevifolia</i>	shortleaf yellow-eyed grass	0.40
unknown graminoid	unknown graminoid	0.37
<i>Aristida stricta</i> var. <i>beyrichiana</i>	wiregrass	0.33
<i>Euthamia caroliniana</i>	slender flattop goldenrod	0.23
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort	0.23
<i>Ilex glabra</i>	gallberry	0.23
<i>Andropogon virginicus</i> var. <i>glaucus</i>	chalky bluestem	0.20

Scientific name	Common name	Average percent cover per quadrat
<i>Drosera capillaris</i>	pink sundew	0.13
<i>Rhynchospora microcephala</i>	bunched beaksedge	0.13
<i>Rhexia petiolata</i>	fringed meadowbeauty	0.20
<i>Rhynchospora corniculata</i>	shortbristle horned beaksedge	0.10
<i>Sabatia brevifolia</i>	shortleaf rosegiant	0.10
<i>Sarracenia rubra</i>	sweet pitcherplant	0.10
<i>Xyris stricta</i>	pineland yellow-eyed grass	0.10
<i>Polygala brevifolia</i>	littleleaf milkwort	0.07
<i>Rhynchospora gracilentata</i>	slender beaksedge	0.07
<i>Dichanthelium</i> sp.	witchgrass	0.03
<i>Lophiola aurea</i>	golden crest	0.03
<i>Rhynchospora compressa</i>	flatfruit beaksedge	0.03
<i>Rhynchospora</i> sp.	beaksedge	0.03
<i>Xyris ambigua</i>	coastalplain yellow-eyed grass	0.03
<i>Xyris flabelliformis</i>	savannah yellow-eyed grass	0.03
	Bare ground	19.67

Figure WC-5. Percent cover of plant species in Hydric Pine Savanna Transect 2.

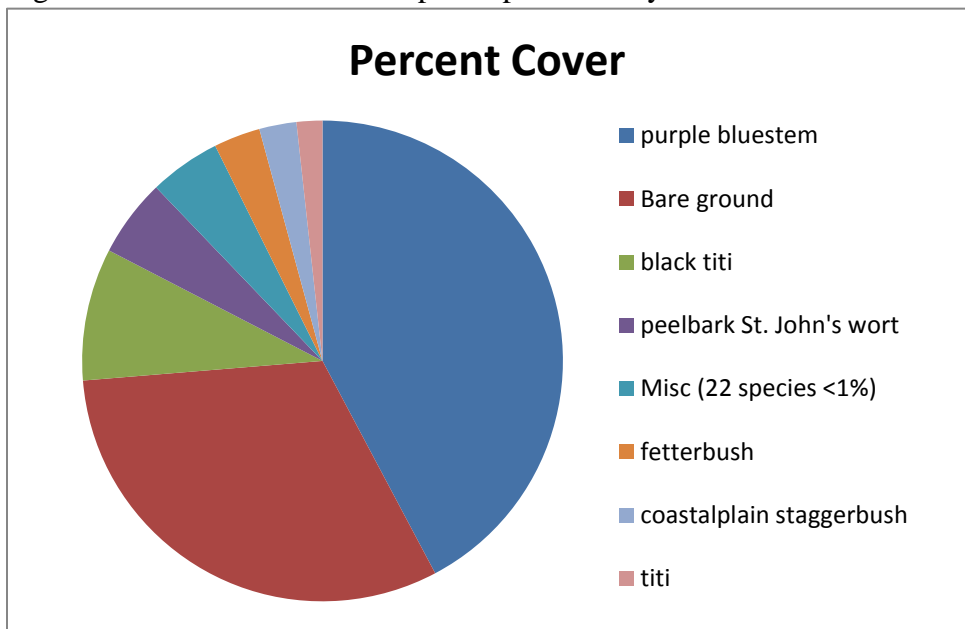


Table WC-5. Percent cover of plant species in Hydric Pine Savanna Transect 2 when sampled on October 25, 2016.

Scientific name	Common name	Average percent cover per quadrat
<i>Andropogon glomeratus</i> var. <i>glaucoptis</i>	purple bluestem	42.23
<i>Cliftonia monophylla</i>	black titi	8.90
<i>Hypericum fasciculatum</i>	peelbark St. John's wort	5.23
<i>Lyonia lucida</i>	fetterbush	3.13
<i>Lyonia fruticosa</i>	coastalplain staggerbush	2.50
<i>Cyrilla racemiflora</i>	titi	1.73
<i>Smilax laurifolia</i>	laurel greenbrier	0.63
<i>Aristida stricta</i> var. <i>beyrichiana</i>	wiregrass	0.50
<i>Eriocaulon decangulare</i>	tenangle pipewort	0.50
<i>Rhynchospora plumosa</i>	plumed beaksedge	0.50
<i>Andropogon virginicus</i>	broomsedge bluestem	0.33
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort	0.33
<i>Lachnanthes caroliniana</i>	Carolina redroot	0.27
<i>Pinus elliotii</i>	slash pine	0.27
<i>Rhynchospora chalarocephala</i>	loosehead beaksedge	0.27
<i>Ilex vomitoria</i>	yaupon	0.23
<i>Kalmia hirsuta</i>	hairy wicky	0.23
<i>Euthamia caroliniana</i>	slender flattop goldenrod	0.13
<i>Xyris ambigua</i>	coastalplain yellow-eyed grass	0.13
<i>Dichantherium</i> sp.	witchgrass	0.10
<i>Xyris elliotii</i>	Elliott's yellow-eyed grass	0.10
<i>Lycopodiella alopecuroides</i>	foxtail club-moss	0.07
<i>Lachnocaulon anceps</i>	whitehead bogbutton	0.03
<i>Pluchea foetida</i>	stinking camphorweed	0.03
<i>Pteridium aquilinum</i>	bracken fern	0.03
<i>Rhexia petiolata</i>	fringed meadowbeauty	0.03
<i>Sabatia brevifolia</i>	shortleaf rosegentian	0.03
<i>Xyris flabelliformis</i>	savannah yellow-eyed grass	0.03
	Bare ground	31.47

## Cypress

**Qualitative sampling.** The cypress areas occurred along drainage channels with a dense evergreen canopy on the edges composed of black titi and big gallberry and a canopy of taller deciduous species, mainly Ogeechee tupelo and pond cypress in the center. The sparse shrub layer under the canopy consisted of widely scattered fetterbush, titi, and evergreen bayberry. Herbs were very infrequent. At the time of 2016 sampling, the ground was dry. Total number of species observed in this community was 16 (Table WC-1).