

**BAYPORT MITIGATION
QUALITATIVE AND QUANTITATIVE MONITORING
FIRST MONITORING REPORT 2017**



The annual monitoring was conducted in accordance with the approved monitoring plan on August 18th and 23rd by David Clayton, Environmental Scientist IV for the Northwest Florida Water Management District.

Introduction

The Devils Swamp Mitigation Project compensates for the loss of wetland functions associated with hydric flatwoods within the Bayport project in Walton County, Florida (Figure 1, 2). The mitigation area of 55.6 acres is located within the Devils Swamp area of the Northwest Florida Water Management District's (NFWFMD) Choctawhatchee River Water Management Area, adjacent to unnamed road near the Community of Bunker (Figure 1). The original community designation for Polygons A and C was wet prairie; however, the community composition for Polygon A is hydric flatwoods while Polygon C is mixed forested wetland with an edge of hydric flatwoods. The correct wetland community classification for Polygon B, and D are hydric pine flatwoods. The wetland restoration will restore hydric pine flatwoods and forested wetlands from a degraded condition (Figure 2). The hydric pine flatwood communities described above had been converted to slash pine plantation in the distant past.

The baseline monitoring occurred on August 18 and 23, 2017, just before the shrub reduction was scheduled to be conducted. Mitigation activities completed onsite since baseline monitoring include extensive shrub reduction conducted October 15-31, 2017, and a site burn conducted on February 22, 2018. Quantitative and qualitative monitoring were used to document the current plant species composition and vegetation structure of these targeted communities. This is the first annual monitoring report.

Representative site 360 photography can be found at: <https://www.nwfwmdwetlands.com/Umbrella-Plan/NFWFMD-Mitigation-Sites/Choctawhatchee-Watershed-Mitigation-Sites/Devils-Swamp/Bayport-Mitigation>



Figure 1. Devils Swamp Mitigation for the Bayport Project Wetland Restoration Location Map

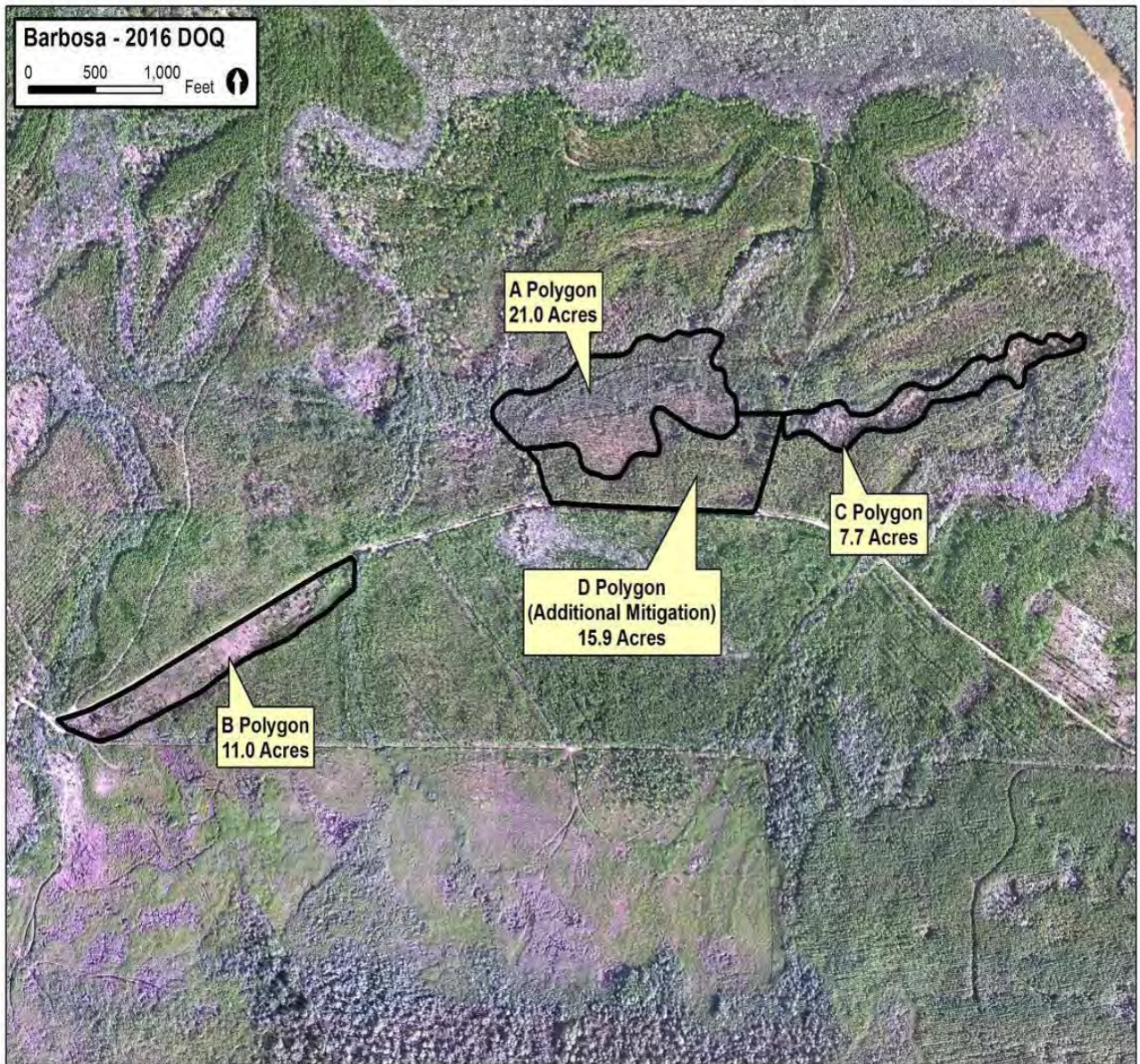


Figure 2. Devils Swamp Mitigation for the Bayport Project Wetland Restoration

Methods

Qualitative Monitoring

Qualitative vegetation monitoring includes species identification, and general habitat health. Pedestrian surveys increase site coverage and include a 20+ minute meandering walk-path. The pedestrian walk-path continued as long as species were being added; however, once additional species were not recorded for five minutes the survey was complete. Plants are listed in the data sheets in the following categories (tree, shrub, vine or herbaceous) to give a better understanding of community composition.

During the vegetation monitoring described above, wildlife observations are recorded in each community. These observations will consist of direct sightings, scat, tracks, or vocalizations.

Quantitative Monitoring

The percent vegetation cover was monitored at eight, 150-foot transects, two for each of the four polygons. Two transects were located within the forested wetland and six within the hydric pine flatwoods (Figure 1). Along each transect, one-meter square quadrats were established at 20-foot intervals. Vegetation species coverage statistics was recorded at each site. The percent coverage for each species (and bare ground or open water) was determined by adding all quadrat observations together and dividing the total coverage by the cover of each species within each transect. This represents a modified Daubenmire cover scale where vegetation species statistics are used to determine the percent cover by bare ground, water and species. These include wetland species, invasive exotic, and nuisance species present.

Shrub density was monitored using five, one-meter square quadrats, established at random within each mitigation polygon. Within each quadrat the shrubs were identified by species and counted. The number of stems per square meter were determined for the shrub species present. Representative site photos will be taken and included in the report.

Results and Discussion

Qualitative Monitoring

Hydric Pine Flatwoods (21 Acres) Polygon A

Fifty-seven species were observed along the pedestrian transect (Table 1). Species were representative of hydric flatwoods. Shrub species were dominant within the community and shaded out the understory. Dominant shrubs included gallberry, tall gallberry, high bush and Elliot’s blueberry.

Table 1. Hydric Pine Flatwoods (21 Acres) Polygon A

Date: 08/18/2017		Data Collector: David Clayton			
Location: A –21 Acres Hydric Flatwoods/Wet Prairie					
58 plant species observed					
Wildlife Observations: Towhee and blue jay					
T& E Species: None observed					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Andropogon glomeratus</i>	Busy blue stem				X
<i>Andropogon virginicus</i>	Broomsedge				X
<i>Aristida stricta</i>	Wiregrass				X
<i>Balduina uniflora</i>	Coastalplain honeycombhead				X
<i>Carphephorus odoratissimus</i>	Vanilla leaf				X
<i>Cliftonia monophylla</i>	Black titi		X		
<i>Clethra alnifolia</i>	Sweet Pepperbush		X		
<i>Cyperus sp.</i>	Cyperus				X
<i>Dichantheium scabriusculum</i>	Woolly witchgrass				X
<i>Dicantheium spp.</i>	Witch grass				X
<i>Drosera capillaris</i>	Pink sundew				X

Table 1 Continued.					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Eriocaulon compressum</i>	Flattened pipewort				X
<i>Eriocaulon decangulare</i>	Tenangle pipewort				X
<i>Euphorbia inundata</i>	Pineland spurge				X
<i>Gaylussacia dumosa</i>	Dwarf huckleberry		X		
<i>Gaylussacia frondosa</i>	Blue huckleberry		X		
<i>Gaylussacia mosieri</i>	Wooly huckleberry		X		
<i>Gelsemium sempervirens</i>	Florida jessamine			X	
<i>Geobalanus oblongifolius</i>	Gopher apple				
<i>Hieracium gronovii</i>	Hawkweed				X
<i>Hypericum crux-andreae</i>	St. Peter's wort				X
<i>Hypericum fasciculatum</i>	St. John's wort				X
<i>Ilex cassine</i>	Dahoon holly	X			
<i>Ilex coriacea</i>	Tall gallberry		X		
<i>Ilex glabra</i>	Gallberry		X		
<i>Ilex myrtifolia</i>	Myrtle-leaved holly	X			
<i>Kelochloa verrucosa</i>	Warty panic grass				X
<i>Magnolia virginiana</i>	Sweet bay	X			
<i>Lachnanthes caroliana</i>	Red root				X
<i>Lachnocaulon anceps</i>	Whitehead bogbutton				X
<i>Liatris spicata</i>	Gayfeather				X
<i>Lycopodiella alopecuroides</i>	Foxtail club moss				X
<i>Lyonia lucida</i>	Fetterbush		X		
<i>Lophiola aurea</i>	Golden crest				X
<i>Nyssa sylvatica</i>	Black gum	X			
<i>Panicum hemitomon</i>	Maidencane				X
<i>Pinus elliotii</i>	Slash pine	X			
<i>Pteridium aquilinum</i>	Bracken fern				X
<i>Quercus pumila</i>	Runner oak		X		
<i>Rhexia alifanus</i>	Meadow beauty				X
<i>Rubus pensilvanicus</i>	Sawtooth blackberry		X		
<i>Sarracenia flava</i>	Yellow pitcherplant				X
<i>Scleria sp.</i>	Scleria				X
<i>Serenoa repens</i>	Saw palmetto		X		
<i>Smilax glabra</i>	Catbriar			X	
<i>Smilax laurifolia</i>	Greenbriar			X	
<i>Taxodium ascendens</i>	Pond-cypress	X			
<i>Vaccinium corymbosum</i>	High bush blueberry		X		
<i>Vaccinium darrowii</i>	Darrow's blueberry		X		
<i>Vaccinium elliotii</i>	Elliot's blueberry		X		
<i>Vaccinium myrsinites</i>	Shiny blue berry		X		
<i>Viola lanceolata</i>	Bog white violet				X
<i>Vitis rotundifolia</i>	Muscadine			X	
<i>Woodwardia virginica</i>	Virginia chain fern				X
<i>Xyris caroliniana</i>	Yellow-eyed grass				X

Hydric Pine Flatwoods (11 Acres) Polygon B

Forty-eight species were observed along the pedestrian transect (Table 2). Species were representative of hydric flatwoods. Shrub species were dominant within the community and shaded out the understory. Dominant shrubs included gallberry, tall gallberry, black and red titi and sweet pepper bush.

Table 2. Hydric Pine Flatwoods (11 Acres) Polygon B

Date: 08/23/2017					
Data Collector: David Clayton					
Polygon B 11 Acres Hydric Pine Flatwoods					
Wildlife Observations: Towhee					
T& E Species: Yellow butterwort, <i>Pinguicula lutea</i> – State Threatened					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Acer rubrum</i>	Red maple	X			
<i>Aletris lutea</i>	Yellow colic root				X
<i>Andropogon glomeratus</i>	Busy blue stem				X
<i>Aristida stricta</i>	Wiregrass				X
<i>Balduina uniflora</i>	Coastalplain honeycombhead				X
<i>Bigelovia nudata</i>	Rayless goldenrod				X
<i>Carphephorus odoratissimus</i>	Vanilla leaf				X
<i>Clethra alnifolia</i>	Sweet pepper bush		X		
<i>Cliftonia monophylla</i>	Black titi		X		
<i>Cyrilla racemiflora</i>	Red titi		X		
<i>Dicanthelium spp.</i>	Witch grass				X
<i>Drosera capillaris</i>	Pink sundew				X
<i>Erigeron vernus</i>	Early white fleabane				X
<i>Eriocaulon decangulare</i>	Tenangle pipewort				X
<i>Euphorbia inundata</i>	Florida pineland spurge				X
<i>Eurybia eryngiifolia</i>	Coyote-thistle aster				X
<i>Gaylussacia frondosa</i>	Blue huckleberry		X		
<i>Geobalanus oblongifolius</i>	Gopher apple			X	
<i>Hypericum crux-andreae</i>	St. Peter's wort				X
<i>Hypericum fasciculatum</i>	St. John's wort				X
<i>Ilex coriacea</i>	Tall gallberry		X		
<i>Ilex glabra</i>	Gallberry		X		
<i>Ilex myrtifolia</i>	Myrtle-leaved holly	X			
<i>Kelochloa verrucosa</i>	Warty panic grass				X
<i>Lachnanthes caroliana</i>	Red root				X
<i>Lachnocaulon anceps</i>	Whitehead bogbutton				X
<i>Liquidambar styraciflua</i>	Sweet gum	X			
<i>Lycopodiella alopecuroides</i>	Foxtail club-moss				X
<i>Lycopodiella appressa</i>	Southern club-moss				X
<i>Lophiola aurea</i>	Golden crest				X
<i>Morella inodora</i>	Odorless bayberry		X		
<i>Persea palustris</i>	Swamp bay	X			
<i>Pinguicula lutea*</i>	Yellow butterwort				X
<i>Pinus elliotii</i>	Slash pine	X			

Table 2 Continued.					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Polygala lutea</i>	Orange milkwort				X
<i>Quercus elliotii</i>	Runner oak		X		
<i>Rhexia alifanus</i>	Meadow beauty				X
<i>Rhynchospora sp.</i>	Rhynchospora				X
<i>Scleria sp.</i>	Scleria				X
<i>Serenoa repens</i>	Saw palmetto		X		
<i>Seymeria cassioides</i>	Senna seymaria				X
<i>Smilax glauca</i>	Catbriar			X	
<i>Smilax laurifolia</i>	Greenbriar			X	
<i>Vaccinium darrowii</i>	Darrow's blueberry		X		
<i>Vaccinium elliotii</i>	Elliot's blueberry		X		
<i>Viola lanceolata</i>	Bog white violet				X
<i>Xyris caroliniana</i>	Yellow-eyed grass				X
<i>Xyris sp.</i>	Yellow-eyed grass				X

*State Threatened

Forested wetland slough with hydric pine flatwoods inclusions (7.7 Acres) Polygon C

A total of 46 species were observed along the pedestrian transect. Species were representative of Forested wetland sloughs. Shrub species were dominant within much of the community and shaded out the understory. The dominant shrub species was black titi. Within the drier portions of the polygon, hydric pine flatwoods replaced the forested wetland vegetation.

Table 3. Forested Wetland (7.7 Acres) Polygon C (Qualitative Field Assessment Form)

Date: 08/18/2017					
Data Collector: David Clayton					
Location: C -7.7 Forested Wetland Slough with hydric flatwood					
46 plant species observed					
Wildlife Observations: Towhee, cricket frog					
T& E Species: None observed					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Andropogon glomeratus</i>	Busy blue stem				X
<i>Aristida stricta var. beyrichiana</i>	Wiregrass				X
<i>Carex glaucescens</i>	Clustered sedge				X
<i>Clethra alnifolia</i>	Clethra		X		
<i>Cliftonia monophylla</i>	Black titi		X		
<i>Cyperus sp.</i>	Cyperus				X
<i>Dichanthelium scabriusculum</i>	Woolly witchgrass				X
<i>Dicanthelium spp.</i>	Witch grass				X
<i>Drosera capillaris</i>	Pink sundew				X
<i>Table 3. Continued</i>					
<i>Eriocaulon compressum</i>	Flattened pipewort				X
<i>Eriocaulon decangulare</i>	Tenangle pipewort				X
<i>Gaylussacia frondosa</i>	Blue huckleberry		X		
<i>Hypericum crux-andreae</i>	St. Peter's wort				X
<i>Hypericum fasciculatum</i>	St. John's wort				X

Table 3. Continued.					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Ilex cassine</i>	Dahoon holly	X			
<i>Ilex coriacea</i>	Tall gallberry		X		
<i>Ilex glabra</i>	Gallberry		X		
<i>Ilex myrtifolia</i>	Myrtle-leaved holly	X			
<i>Kelochloa verrucosa</i>	Warty panic grass				X
<i>Magnolia virginiana</i>	Sweet bay	X			
<i>Morella cerifera</i>	Wax myrtle		X		
<i>Morella inodorata</i>	Odorless bayberry		X		
<i>Lachnanthes caroliana</i>	Red root				X
<i>Lachnocaulon anceps</i>	Whitehead bogbutton				X
<i>Lycopodiella alopecuroides</i>	Foxtail club moss				X
<i>Lyonia lucida</i>	Fetterbush		X		
<i>Lophiola aurea</i>	Golden crest				X
<i>Nyssa sylvatica</i>	Black gum	X			
<i>Panicum hemitomom</i>	Maidencane				X
<i>Pinus elliotii</i>	Slash pine	X			
<i>Proserpinaca palustris</i>	Marsh mermaidweed				X
<i>Rhexia alifanus</i>	Meadow beauty				X
<i>Rhynchospora inundata</i>	Horned beaksedge				X
<i>Rhynchospora microcarpa</i>	Southern beaksedge				X
<i>Rhynchospora plumosa</i>	Plumed beaksedge				X
<i>Saccharum giganteum</i>	Giant sugarcane plumegrass				X
<i>Sarracenia flava</i>	Yellow pitcherplant				X
<i>Serenoa repens</i>	Saw palmetto		X		
<i>Smilax laurifolia</i>	Greenbriar			X	
<i>Taxodium ascendens</i>	Pond-cypress	X			
<i>Vaccinium corymbosum</i>	High bush blueberry		X		
<i>Viola lanceolata</i>	Bog white violet				X
<i>Woodwardia virginica</i>	Virginia chain fern				X
<i>Xyris caroliniana</i>	Yellow-eyed grass				X
<i>Xyris sp.</i>	Yellow-eyed grass				X

Hydric Pine Flatwoods Mitigation (15.9 Acres) Polygon D

A total of 49 species were observed along the pedestrian transect (Table 4). Species were representative of hydric pine flatwoods. Shrub species were dominant within much of the community and shaded most of the understory. The dominant shrub species were gallberry, tall gallberry and high bush blueberry.

Table 4. Hydric Pine Flatwoods (15.9 Acres) Polygon D

(Qualitative Field Assessment Form) Date: 08/23/2017		Data Collector: David Clayton			
Location: D – 15.9 Acres Hydric Pine Flatwoods 49 plant species observed					
Wildlife Observations: Towhee, cardinal, titmouse, blue jay					
T& E Species: None observed					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Andropogon glomeratus</i>	Busy blue stem				X
<i>Andropogon virginicus</i>	Broomsedge				X
<i>Aristida stricta</i> var. <i>beyrichiana</i>	Wiregrass				X
<i>Balduina uniflora</i>	Coastalplain honeycombhead				X
<i>Carphephorus odoratissimus</i>	Vanilla leaf				X
<i>Cliftonia monophylla</i>	Black titi		X		
<i>Dicanthelium</i> spp.	Witch grass				X
<i>Drosera capillaris</i>	Pink sundew				X
<i>Eriocaulon compressum</i>	Flattened pipewort				X
<i>Eriocaulon decangulare</i>	Tenangle pipewort				X
<i>Eupatorium hyssopifolium</i> var. <i>laciniatum</i>	Hyssop leaf thoroughwort				X
<i>Euphorbia inundata</i>	Florida pineland spurge				X
<i>Gaylussacia frondosa</i>	Blue huckleberry		X		
<i>Gaylussacia mosieri</i>	Wooly huckleberry		X		
<i>Hieracium gronovii</i>	Hawkweed				X
<i>Hypericum crux-andreae</i>	St. Peter's wort				X
<i>Hypericum fasciculatum</i>	St. John's wort				X
<i>Ilex coriacea</i>	Tall gallberry		X		
<i>Ilex glabra</i>	Gallberry		X		
<i>Ilex myrtifolia</i>	Myrtle-leaved holly	X			
<i>Kellochloa verrucosa</i>	Warty panic grass				X
<i>Lachnanthes caroliana</i>	Red root				X
<i>Lachnocaulon anceps</i>	Whitehead bogbutton				X
<i>Lycopodiella alopecuroides</i>	Foxtail club moss				X
<i>Lyonia lucida</i>	Fetterbush		X		
<i>Lophiola aurea</i>	Golden crest				X
<i>Nyssa sylvatica</i>	Black gum	X			
<i>Panicum hemitomom</i>	Maidencane				X
<i>Pinus elliotii</i>	Slash pine	X			
<i>Pteridium aquilinum</i>	Bracken fern				X
<i>Quercus elliotii</i>	Runner oak		X		
<i>Rhexia alifanus</i>	Meadow beauty				X
<i>Rubus pensilvanicus</i>	Sawtooth blackberry		X		
<i>Sarracenia flava</i>	Yellow pitcherplant				X
<i>Scleria</i> sp.	Scleria				X
<i>Serenoa repens</i>	Saw palmetto		X		
<i>Smilax glauca</i>	Catbriar			X	

Table 4. Continued.					
<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Smilax laurifolia</i>	Greenbriar			X	
<i>Vaccinium corymbosum</i>	High bush blueberry		X		
<i>Vaccinium darrowii</i>	Darrow's blueberry		X		
<i>Vaccinium elliotii</i>	Elliot's blueberry		X		
<i>Vaccinium myrsinites</i>	Shiny blue berry		X		
<i>Viola lanceolata</i>	Bog white violet				X
<i>Vitis rotundifolia</i>	Muscadine			X	
<i>Woodwardia virginica</i>	Virginia chain fern				X
<i>Xyris caroliniana</i>	Yellow-eyed grass				X
<i>Xyris sp.</i>	Yellow-eyed grass				X

Quantitative Sampling

Shrub Density

Baseline shrub density within the hydric pine flatwoods averaged 34 stems per meter squared within Polygon A, 42, stems per meter square within Polygon B, 35.5 within Polygon C and 51.5 along transect D. The dominant shrub species were gallberry, tall gallberry, black titi and Elliot's blueberry (Figure 3).

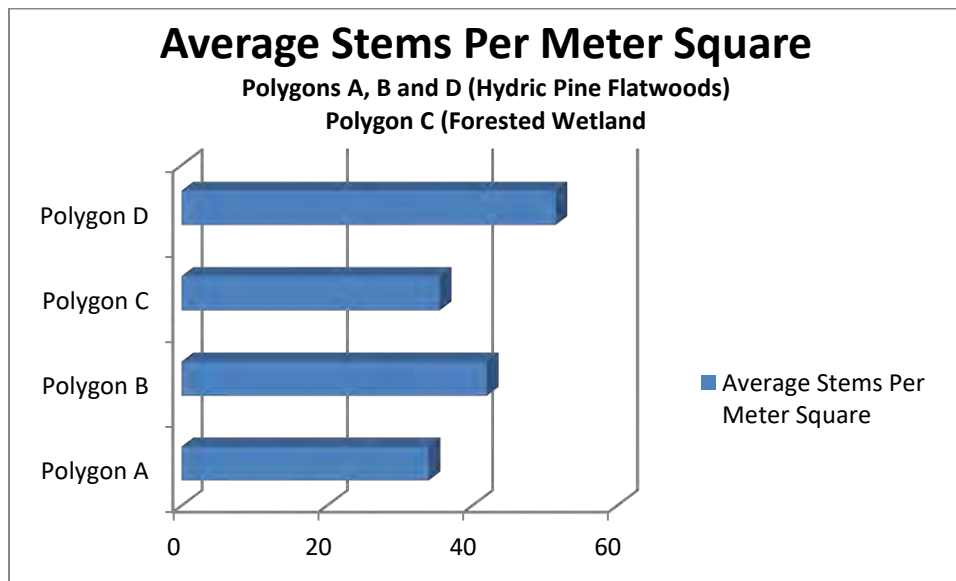


Figure 3. Baseline Stems per Meter Square within the Mitigation Polygons

Transect Sampling

Polygon A (21 Acres) Hydric Pine Flatwoods

Fifteen species were observed along Transect one (Table 5, Figure 4). A total of 18.7 percent of the transect cover consisted of bare ground. Shrub coverage was 69.4% and consisted primarily of gallberry, Elliot's blueberry and sweet pepperbush (Figure 4). Wiregrass coverage was 1%. Twenty-two species were observed along Transect 2 (Table 6, Figure 5). A total of 34.7 percent of the transect cover consisted of bare ground. Shrub coverage was 69.4% and dominated by gallberry and high bush

blueberry. Wiregrass coverage was 4%. Species were typical of those found within a fire suppressed, shrub dominated hydric flatwood. Shrub removal and a fire interval of two years should greatly increase the dominance of grasses and forbes.

Table 5. Polygon A (21 Acres) Transect 1 Hydric Pine Flatwoods

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
<i>Ilex glabra</i>	Gallberry	45.7
<i>Vaccinium elliotii</i>	Elliot's blueberry	20
	Bare ground	18.7
<i>Clethra alnifolia</i>	Sweet Pepperbush	3.7
<i>Andropogon glomeratus</i>	Bushy bluestem	2.8
<i>Geobalanus oblongifolius</i>	Gopher apple	2
<i>Quercus pumila</i>	Running oak	2
<i>Aristida stricta</i>	Wiregrass	1
<i>Ilex coriacea</i>	Tall gallberry	1
<i>Gelsemium sempervirens</i>	Yellow jessamine	1
<i>Smilax glabra</i>	Catbriar	0.7
<i>Rubus pensilvanicus</i>	Sawtooth blackberry	0.33
<i>Vaccinium corymbosum</i>	Highbush blueberry	0.33
<i>Woodwardia virginica</i>	Virginia chain fern	0.33
<i>Xyris caroliniana</i>	Yelloweyed grass	0.33
<i>Pinus elliotii</i>	Slash pine	0.3

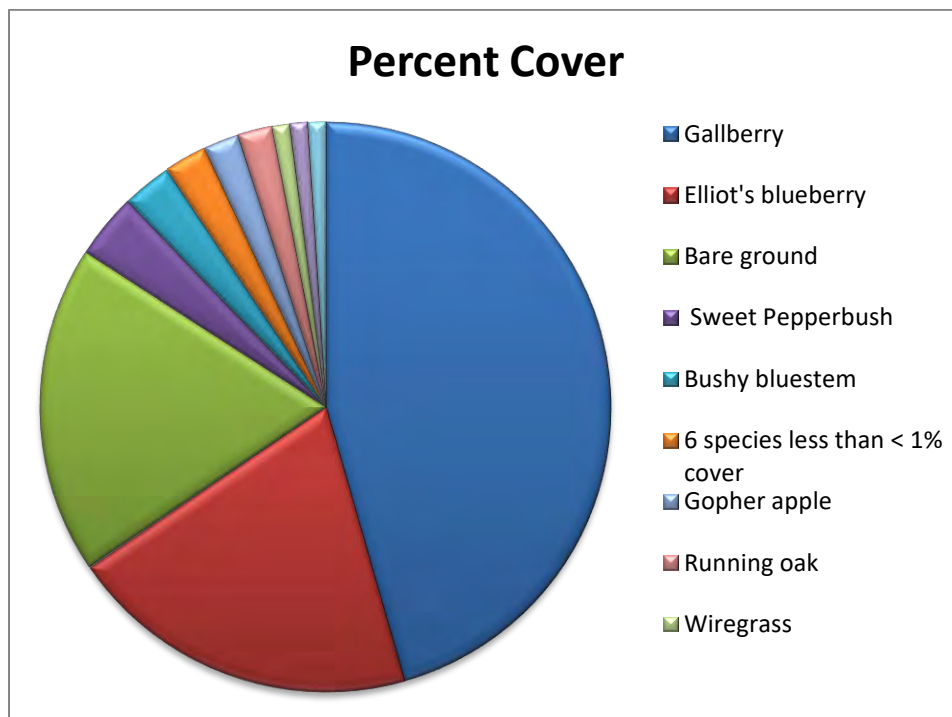


Figure 4. Transect 1, Polygon A, Hydric Pine Flatwoods

Table 6. Transect 2, Hydric Pine Flatwoods

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
	Bare ground	34.7
<i>Ilex glabra</i>	Gallberry	34.3
<i>Gelsemium sempervirens</i>	Yellow jessamine	8.7
<i>Vaccinium corymbosum</i>	Highbush blueberry	4.7
<i>Aristida stricta</i>	Wiregrass	4
<i>Lachnocaulon anceps</i>	Whitetopped bog button	1.7
<i>Quercus pumila</i>	Running oak	1.7
<i>Dichanthelium aciculare</i>	Needleleaf witch grass	1.3
<i>Smilax laurifolia</i>	Laurel leaf catbriar	1.3
<i>Andropogon glomeratus</i>	Bushy bluestem	1
<i>Gaylussacia frondosa</i>	Blue huckleberry	1
<i>Geobalanus oblongifolius</i>	Gopher apple	1
<i>Diospyros virginiana</i>	Persimmon	0.6
<i>Hypericum crux-andreae</i>	St. Peter's Wort	0.6
<i>Smilax glabra</i>	Catbriar	0.6
<i>Vaccinium mysinites</i>	Shinny blueberry	0.6
<i>Vitis rotundifolia</i>	Muscadine	0.6
<i>Carphephorus odoratissimus</i>	Vanillaleaf	0.3
<i>Eriocaulon decangulare</i>	Tenangle pipewort	0.3
<i>Euthamia caroliniana</i>	Flatop goldenrod	0.3
<i>Ilex myrtifolia</i>	Myrtle leaved holly	0.3
<i>Pityopsis graminifolia</i>	Narrowleaf silkgrass	0.3
<i>Rhexia alifanus</i>	Savannah meadow beauty	0.3
<i>Rhexia mariana</i>	Pale meadow beauty	0.3

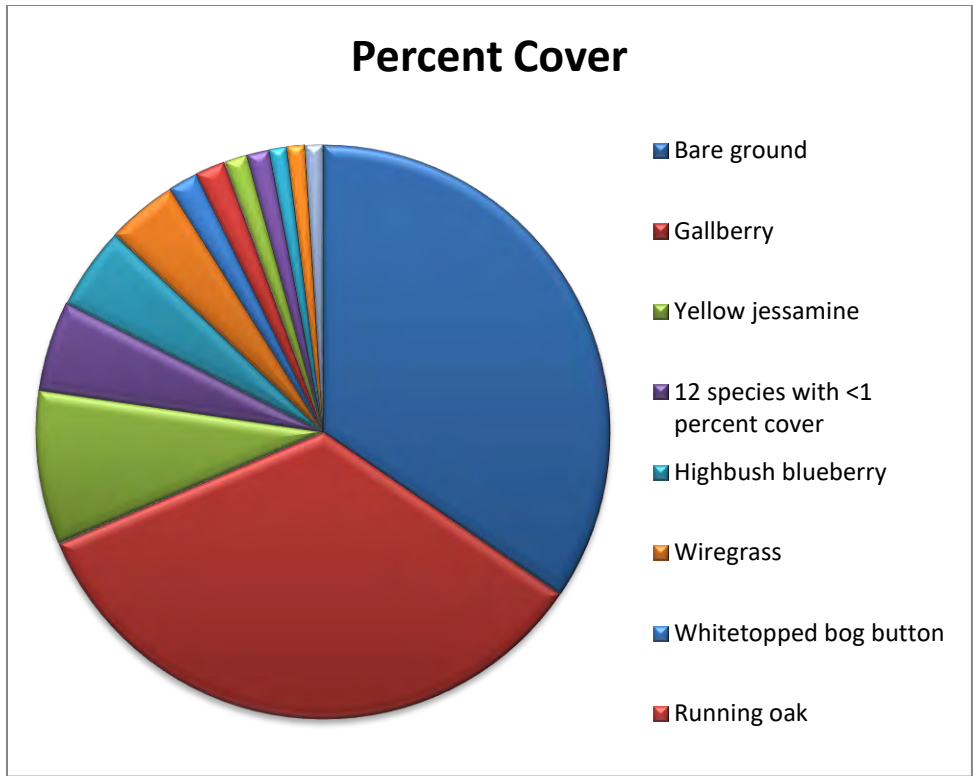


Figure 5. Transect 2, Polygon A, Hydric Pine Flatwoods

Quantitative sampling

Polygon B (11 Acres) Hydric Pine Flatwoods

While both transects for this area were sampled. The data sheet for transect two was damaged by water and could not be read. Eighteen species were observed along Transect one (Table 7, Figure 6). A total of 19.4 percent of the transect’s cover consisted of bare ground. Shrub coverage was 39% and consisted primarily of gallberry, Elliot’s blueberry and yaupon (Figure 6). Wiregrass coverage was 16.3%%.

Table 7. Hydric Pine Flatwoods, Polygon B

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
<i>Ilex glabra</i>	Gallberry	33.7
	Bare ground	19.45
<i>Aristida stricta</i>	Wiregrass	16.3
<i>Xyris caroliniana</i>	Yelloweyed grass	4.3
<i>Sereno repens</i>	Saw palmetto	3.7
<i>Lachnanthes caroliana</i>	Red root	3.6
<i>Andropogon glomeratus</i>	Bushy bluestem	3.3
<i>Hypericum fasciculatum</i>	St. John's wort	3.3
<i>Ilex coriacea</i>	Tall gallberry	3.3
<i>Ilex vomitoria</i>	Yaupon	2
<i>Pteridium aquilinum</i>	Brachen fern	2

Table 7. Continued.		
<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
<i>Hypericum crux-andreae</i>	St. Peter's wort	1.7
<i>Pinus elliottii</i>	Slash pine	1
Table 7. Continued.		
<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
<i>Rhexia alifanus</i>	Savanna meadow beauty	0.7
<i>Andropogon virginicus</i>	Broom grass	0.33
<i>Dichanthelium aciculare</i>	Needleleaf witchgrass	0.33
<i>Quercus pumila</i>	Running oak	0.33
<i>Smilax laurifolia</i>	Laurel leaved catbriar	0.33
<i>Vaccinium elliottii</i>	Elliot's blueberry	0.33

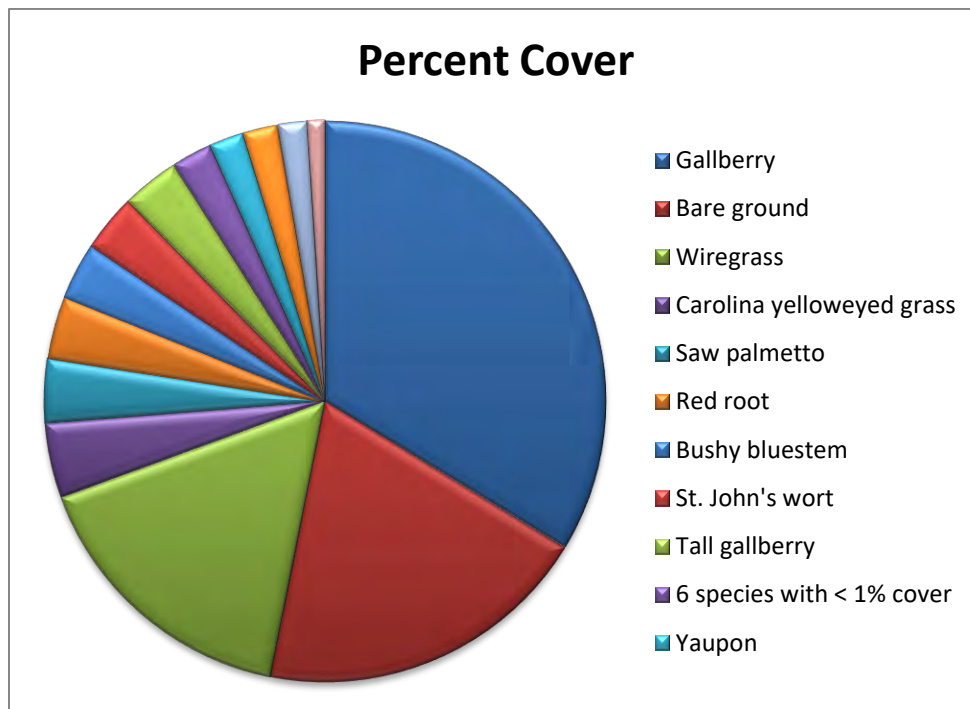


Figure 6. Transect 2, Polygon B, Hydric Pine Flatwoods

Quantitative sampling

Polygon C (7.7 Acres) Forested Wetland

Thirteen species were observed along Transect one (Table 8, Figure 7). A total of 56.7 percent of the transect cover consisted of bare ground. Shrub coverage was 6.7% and consisted primarily of black titi (Figure 7). Wiregrass coverage was 1.7%. Fourteen species were observed along Transect 2 (Table 9, Figure 8). A total of 33 percent of the transect cover consisted of bare ground. Shrub coverage was 46.9% and dominated by gallberry, black titi and myrtle-leaved holly. Wiregrass coverage was 5%. Species were typical of those found within a forested wetland and fire suppressed, shrub dominated

hydric flatwood. Shrub removal and a fire interval of two years should greatly increase the dominance of grasses and forbes.

Table 8. Forested Wetland, Polygon C, Transect 1

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
	Bare ground	56.7
<i>Carex glaucescens</i>	Cluster sedge	19
<i>Rhynchospora inundata</i>	Horned beaksedge	6
<i>Cliftonia monophylla</i>	Black titi	4.7
<i>Clethra alnifolia</i>	Sweet Pepperbush	2
<i>Hypericum fasciculatum</i>	St. Peter's Wort	2
<i>Sphagnum sp.</i>	Sphagnum	2
<i>Aristida stricta</i>	Wiregrass	1.7
<i>Rhynchospora megalocarpa</i>	Sandyfield beaksedge	1.6
<i>Xyris sp.</i>	Yelloweyed grass	1.6
<i>Lachnanthes caroliniana</i>	Red root	1
<i>Dichanthelium scabriusculum</i>	Wooly witchgrass	0.67
<i>Sarracenia flava</i>	Yellow pitcher plant	0.33
<i>Woodwardia virginica</i>	Virginia chain fern	0.33

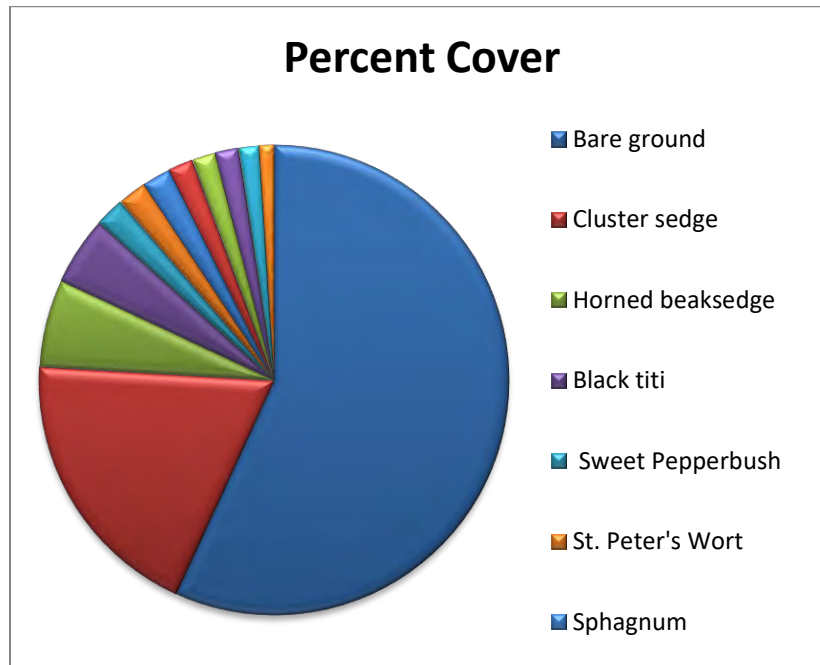


Figure 7. Forested Wetland, Polygon C, Transect 1

Table 9. Forested Wetland, Polygon C, Transect 2

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
<i>Cliftonia monophylla</i>	Black titi	42
	Bare ground	33
<i>Rhynchospora inundata</i>	Horned beaksedge	7.3
<i>Aristida stricta</i>	Wiregrass	5
<i>Ilex myrtifolia</i>	Myrtle-leaved holly	2.6
<i>Eriocaulon compressum</i>	Flattened pipewort	2
<i>Lachnanthes caroliniana</i>	Red root	1.6
<i>Carex glaucescens</i>	Cluster sedge	1.3
<i>Ilex glabra</i>	Gall berry	1.3
<i>Rhynchospora plumosa</i>	Plumed beaksedge	1.3
<i>Clethra alnifolia</i>	Sweet Pepperbush	1
<i>Lycopodiella alopecuroides</i>	Foxtail club-moss	0.66
<i>Hypericum fasciculatum</i>	St. Peter's Wort	0.33
<i>Smilax laurifolia</i>	Laurel-leaved catbriar	0.33
<i>Xyris sp.</i>	Yelloweyed grass	0.33

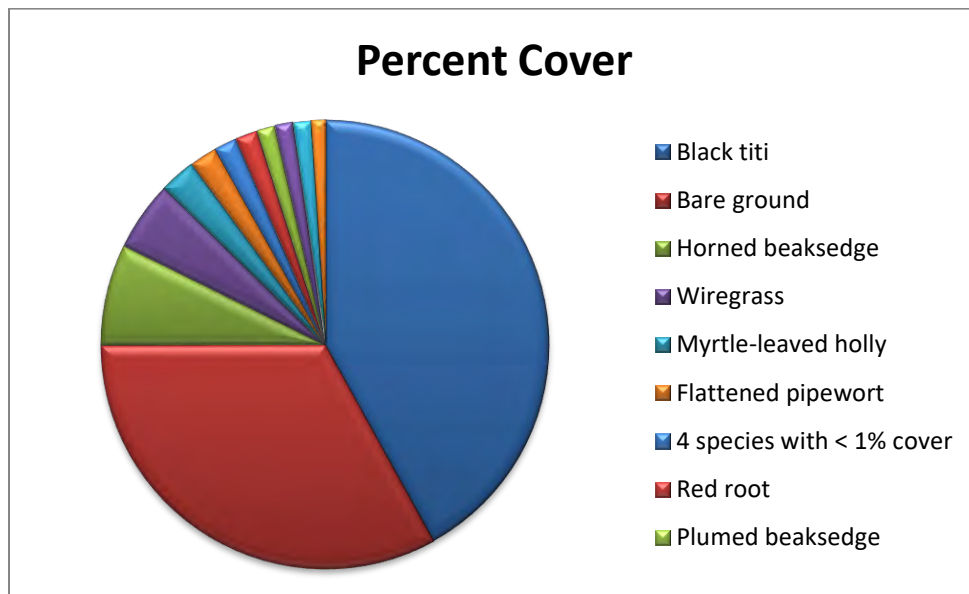


Figure 8. Forested Wetland, Polygon C, Transect 2

Quantitative sampling

Polygon D (15.9 Acres) Hydric Pine Flatwoods

Twelve species were observed along Transect one (Table 10, Figure 9). A total of 11 percent of the transect cover consisted of bare ground. Shrub coverage was 70% and consisted primarily of gallberry, and Elliot’s blueberry (Figure 9). Wiregrass coverage was 4%. Seventeen species were observed along Transect 2 (Table 11, Figure 10). A total of 36.3 percent of the transect cover consisted of bare ground. Shrub coverage was 69.4% and dominated by gallberry, and sweet pepperbush. Wiregrass was not

observed within this transect. Species were typical of those found within a fire suppressed, shrub dominated hydric flatwood. Shrub removal and a fire interval of two years should greatly increase the dominance of grasses and forbes.

Table 10. Hydric Pine Flatwoods, Polygon D, Transect 1

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
<i>Ilex glabra</i>	Gallberry	68.7
	Bare ground	11
<i>Andropogon glomeratus</i>	Bushy bluestem	5.7
<i>Aristida stricta</i>	Wiregrass	4
<i>Vitis rotundifolia</i>	Muscadine	4
<i>Smilax glauca</i>	Catbriar	1.6
<i>Vaccinium elliotii</i>	Elliot's blueberry	1.3
<i>Smilax laurifolia</i>	Laurel leaved catbriar	1
<i>Dichantherium aciculare</i>	Needleleaf witchgrass	0.7
<i>Ilex coriacea</i>	Tall gallberry	0.7
<i>Rhexia nuttallii</i>	Nuttall's meadow beauty	0.7
<i>Hypericum crux-andreae</i>	St. Peter's wort	0.3
<i>Lycopodiella alopecuroides</i>	Foxtail club-moss	0.3

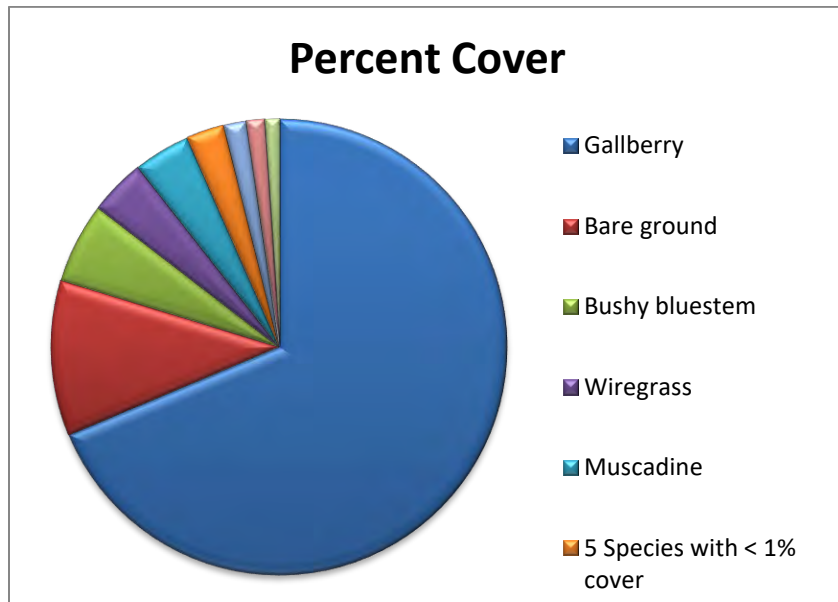


Figure 9. Hydric Pine Flatwoods, Polygon D, Transect 1

Table 11. Hydric Pine Flatwoods, Polygon D, Transect 2

<u>Scientific Name</u>	<u>Species</u>	<u>Percent Cover</u>
	Bare ground	36.3
<i>Ilex glabra</i>	Gallberry	30.3
<i>Dichanthelium aciculare</i>	Needleleaf witchgrass	7.3
<i>Quercus pumila</i>	Running oak	5.7
<i>Ilex vomitoria</i>	Yaupon	5.3
<i>Clethra alnifolia</i>	Sweet Pepperbush	4
<i>Xyris sp.</i>	Yelloweyed grass	2.3
<i>Pteridium aquilinum</i>	Brachen fern	1.3
<i>Vitis rotundifolia</i>	Muscadine	1.3
<i>Xyris caroliniana</i>	Carolina yelloweyed grass	1
<i>Smilax laurifolia</i>	Laurel leaved catbriar	0.67
<i>Andropogon glomeratus</i>	Bushy bluestem	0.66
<i>Andropogon virginica</i>	Broom grass	0.66
<i>Carphephorus odoratissimus</i>	Vanilla leaf	0.66
<i>Magnolia virginiana</i>	Silverbay	0.66
<i>Rhynchospora sp.</i>	Beaksedge	0.66
<i>Hypericum fasciculatum</i>	St. John's wort	0.33
<i>Panicum hemitomom</i>	Maidencane	0.33
<i>Vaccinium myrsenites</i>	Shiny blueberry	0.33

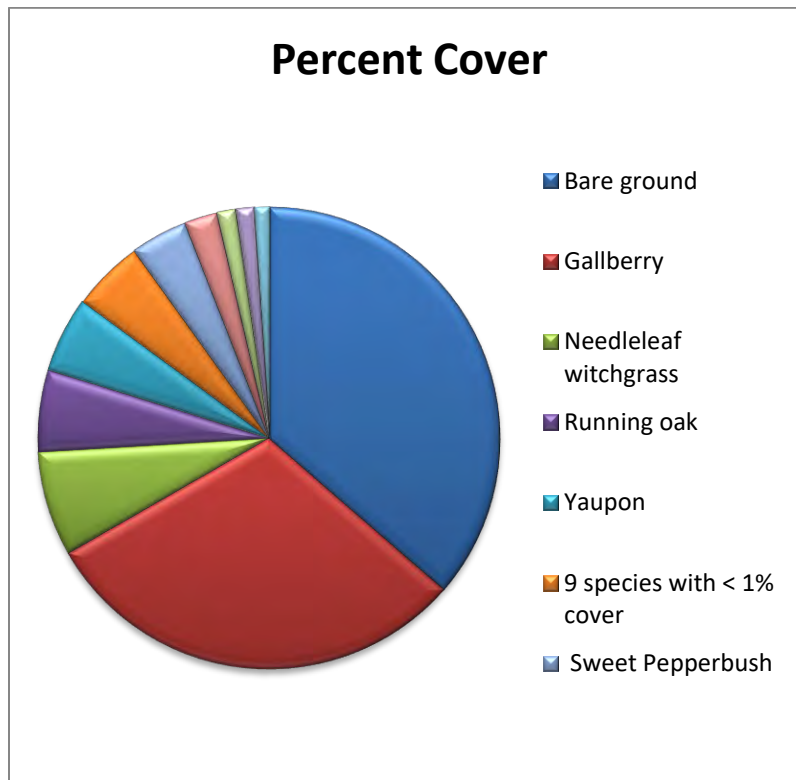


Figure 10. Hydric Pine Flatwoods, Polygon D, Transect 2