

**Vegetation Monitoring at Dutex West  
Northwest Florida Water Management District  
Mitigation Site**

Fall 2025

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Dutex West Restoration Site  
Qualitative and Quantitative Monitoring  
December 2025

**INTRODUCTION**

The Dutex Restoration Site consists of 2 tracts totaling 820 acres in Escambia County managed by the Northwest Florida Water Management District (

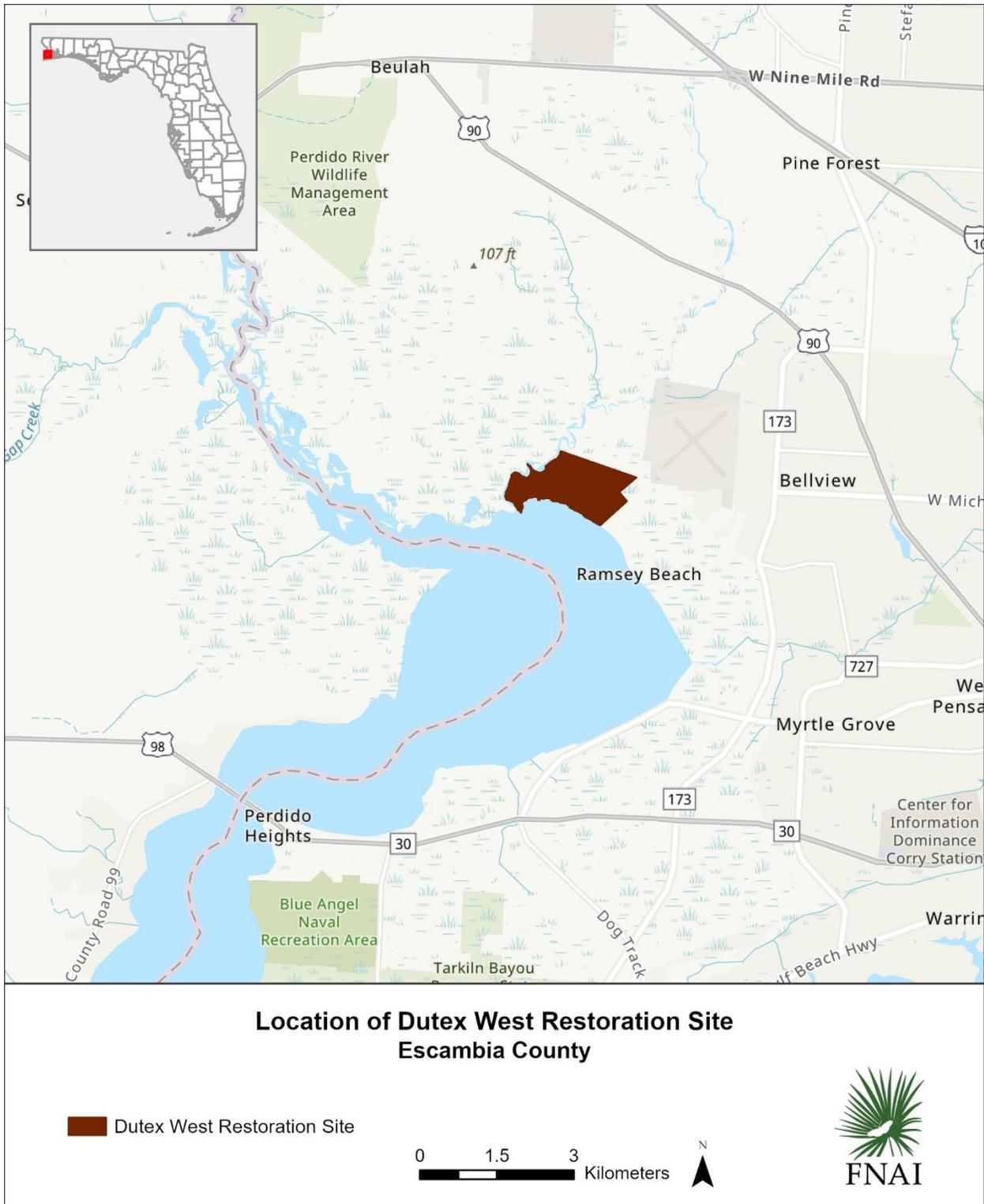


Figure 1). It is located on Perdido Bay, just to the southwest of Saufley Field. This site mitigates current and future Florida Department of Transportation (FDOT) wetland impacts. Only the western tract has been monitored by FNAI from 2018-2023. This tract is accessed by taking Saufley Pines Road west from North Blue Angel Parkway and then turning south onto Wyndotte Road.

The NFWMD goal is to return the Dutex Restoration Site to pre-disturbance conditions. Target communities include Hydric Pine Flatwoods (HPF), Hydric Pine Savanna (HPS), Bay Swamp (BS), Mesic Flatwoods (MF), Freshwater Marsh (FM), and Salt Marsh (Figure 2). FNAI conducted quantitative and qualitative monitoring to document the current plant species composition and vegetation structure of these targeted communities. FNAI began annual monitoring in October 2018. Prior to 2018, the site vegetation was monitored by Ecological Resource Consultants, Inc. (ERC).

## METHODS

We conducted quantitative monitoring utilizing 300-foot-long permanent transect lines established and marked during previous surveys conducted by ERC. Two transects were located in the Hydric Pine Flatwoods target community and two in Hydric Pine Savanna (Figure 2). In 2018 during the first year of monitoring by FNAI, only the northern post was relocated for the HPS Transect 3, so the southern point was re-established and marked with a metal T-post. FNAI also re-established and marked the north and south ends of the HPS Transect 2, although the transect line did intersect the center marking post established by ERC. We placed fifteen 1m x 1m quadrats along the left side of each transect line, beginning at 0 and then spaced every 20 feet, ending at 280 feet.

In each quadrat, we visually estimated the percent cover of each plant species, including individuals rooted in the quadrat as well as overhanging. Canopy over 2 m in height was excluded from cover estimates. Only the lower 2 m portions of larger individuals were counted as cover, including the lower portions of tree trunks rooted in quadrats. We converted plant cover estimates to mid-point values and averaged them across each transect. We also calculated relative cover (in which all plant cover and open ground is given as a proportion of the total plant cover); this is reported in separate pie charts.

In addition to cover by species, cover was also estimated as a whole number for all plants, all herbs, and all shrubs. Relative covers for each plant species were calculated as a portion of the total plant cover.

For each quad, the height of shrubs was recorded in centimeters. The observer used a measuring pole marked in decimeters and estimated the average height over the quad. Woody vines and tree species were omitted from this measurement.

We conducted qualitative monitoring by walking meandering transects through each of the two target communities plus Bay Swamp, Mesic Flatwoods, Freshwater Marsh, and Salt Marsh. We recorded all species observed on each transect and noted observations of vegetation structure. FNAI botanists Kelly Anderson Jenna Annis, Amy Jenkins, and Ethan Hughes conducted field surveys on December 2-3, 2025.

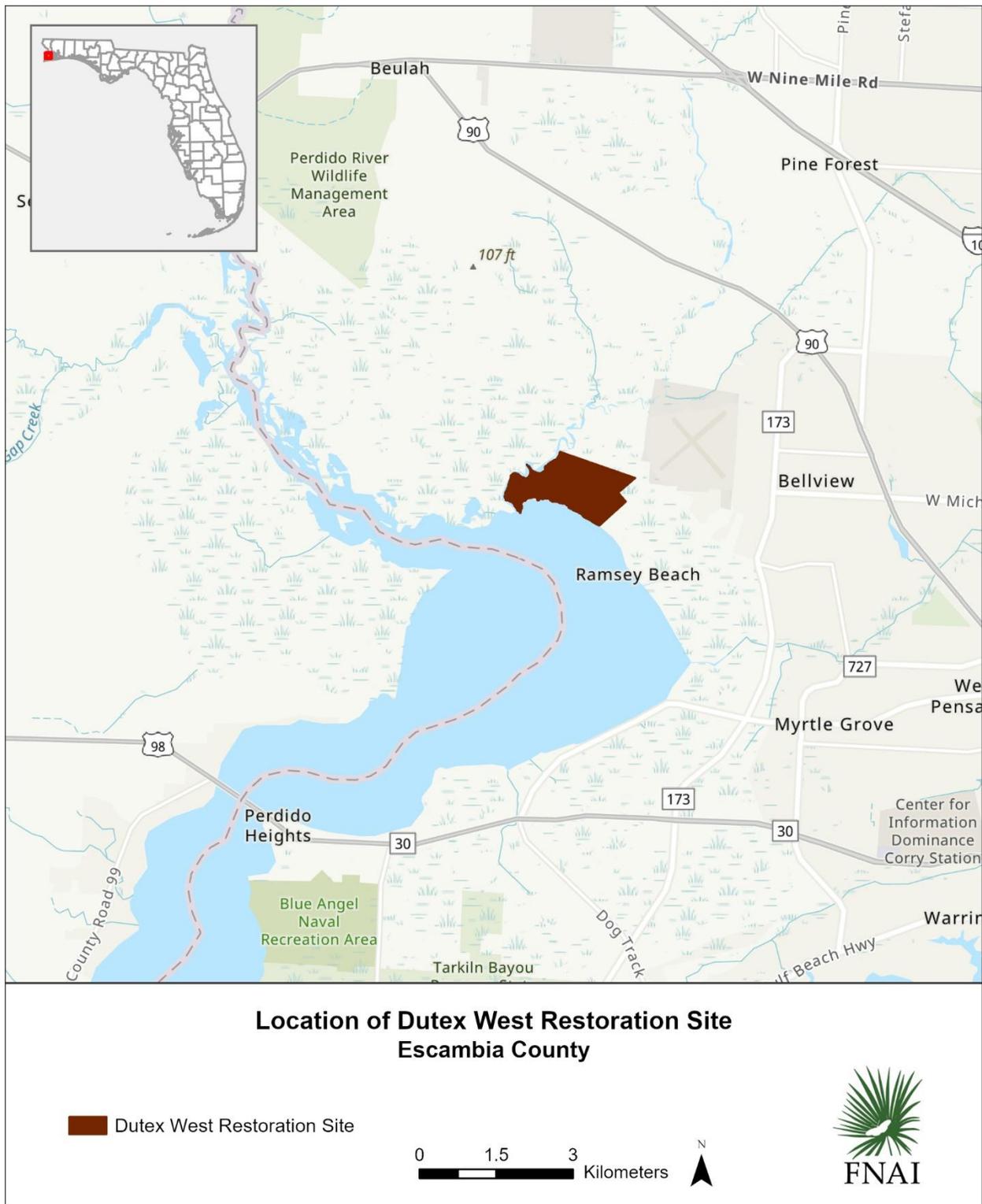


Figure 1. Location map of Dutex West Restoration Site.



Figure 2. Location of permanent transects at Dutex Restoration Site – West Tract. HPF=Hydric Pine Flatwoods, HPS=Hydric Pine Savanna, MF=Mesic Flatwoods, BS=Bay Swamp, FM=Freshwater Marsh, SM=Salt Marsh.

## RESULTS AND DISCUSSION

We recorded 212 plant taxa during the 2025 monitoring period in the target communities at Dutex West (Table 1). Twelve new species were found during the 2025 monitoring. Taxonomy follows Weakley, A.S., and Southeastern Flora Team. 2023. Flora of the southeastern United States: Florida. University of North Carolina Herbarium, North Carolina Botanical Garden, Chapel Hill, U.S.A.

Table 1. Plant species observed in the target communities at Dutex West Mitigation Site on December 2-3, 2025. (bold name = new species; bold X = new observation in community type; \* = threatened or endangered; † = non-native invasive)

Scientific Name	Common Name	Hydric Pine Flatwoods	Hydric Pine Savanna	Bay Swamp	Mesic Flatwoods	Freshwater Marsh	Salt Marsh	Grand Total
<i>Acalypha gracilens</i>	slender threeseed mercury					X	—	1
<i>Acer rubrum</i> var. <i>trilobum</i>	Carolina red maple	X	X	X				3
<i>Amphicarpum muehlenbergianum</i>	blue maidencane	X	X					2
<i>Anchistea virginica</i>	Virginia chain fern	X	X	X				3
* <i>Andropogon arctatus</i>	pinewoods bluestem		X		X			2
<i>Andropogon campbellii</i>	deceptive bluestem				X			1
<i>Andropogon cretaceus</i>	purple bluestem	X	X	X	X			4
<i>Andropogon dealbatus</i>	wetland white bluestem	X						1
<i>Andropogon glomeratus</i>	bushy bluestem	X	X					2
<i>Andropogon perangustatus</i>	narrowleaf bluestem		X					1
<i>Andropogon tenuispathes</i>	maritime bushy bluestem	<b>X</b>						1
<i>Andropogon virginicus</i> var. <i>virginicus</i>	broomsedge bluestem	X	X		X			3
<i>Anthenantia rufa</i>	purple silkyscale		X					1
<i>Aristida beyrichiana</i>	Southern wiregrass	X	X		X			3
<i>Aristida palustris</i>	longleaf threeawn		X					1
<i>Aristida spiciformis</i> var. <i>spiciformis</i>	bottlebrush threeawn				X			1
<i>Aristida virgata</i>	arrowfeather threeawn				X			1
<i>Aronia arbutifolia</i>	red chokeberry	X	X		X			3
<i>Arundinaria tecta</i>	small cane		X	X				2
<i>Baccharis halimifolia</i>	groundsel tree	X	X			X		3
<i>Bacopa monnieri</i>	herb-of-grace					X		1
<i>Balduina uniflora</i>	oneflower honeycomb-head				X			1
<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	twining screwstem			<b>X</b>				1
<i>Bidens mitis</i>	smallfruit beggarticks		X				X	2
<i>Bigelovia nudata</i>	pineland rayless goldenrod	X						1
<b><i>Bignonia capreolata</i></b>	<b>crossvine</b>					<b>X</b>		1
<i>Bolboschoenus robustus</i>	saltmarsh bulrush					X		1
† <i>Camphora officinarum</i>	camphor tree				<b>X</b>			1
<b><i>Carex elliotii</i></b>	<b>Elliott's sedge</b>			<b>X</b>				1
<i>Carex glaucescens</i>	clustered sedge	X	X	X				3
<i>Carex longii</i>	Long's sedge		X					1

Scientific Name	Common Name	Hydric Pine Flatwoods	Hydric Pine Savanna	Bay Swamp	Mesic Flatwoods	Freshwater Marsh	Salt Marsh	Grand Total
<i>Centella erecta</i>	spadeleaf	X		X		X	X	4
<i>Chamaecyparis thuyoides</i>	Atlantic white cedar		X					1
<i>Chasmanthium laxum</i>	slender woodoats	X						1
<b><i>Chasmanthium ornithorhynchum</i></b>	<b>birdbill woodoats</b>	<b>X</b>						1
<i>Cladium jamaicense</i>	sawgrass	X				X	X	3
<i>Clethra tomentosa</i>	downy sweet pepperbush		X	X				2
<i>Cliftonia monophylla</i>	black titi	X	X	X				3
<i>Coleataenia longifolia</i>	ciliate redtop panicum	X	X					2
<i>Conradina canescens</i>	false rosemary				X			1
<i>Crinum americanum</i> var. <i>americanum</i>	string lily			X				1
<i>Ctenium aromaticum</i>	toothache grass		X		X			2
<b><i>Cyperus lecontei</i></b>	<b>Le Conte's flatsedge</b>					X		1
<i>Cyperus</i> sp.	flatsedge	<b>X</b>						1
<i>Cyrilla racemiflora</i>	titi		X	X				2
<i>Dichantherium aciculare</i>	needleleaf witchgrass					X		1
<i>Dichantherium chamaelonche</i>	carpet witchgrass				X			1
<i>Dichantherium dichotomum</i> var. <i>nitidum</i>	shining witchgrass						X	1
<i>Dichantherium ensifolium</i>	small-leaved witchgrass	X	X					2
<i>Dichantherium leucothrix</i>	rough witchgrass		X					1
<i>Dichantherium longiligulatum</i>	long-ligule witchgrass	X	X					2
<i>Dichantherium portoricense</i>	Puerto Rican witchgrass		X		X			2
<i>Dichantherium scabriusculum</i>	woolly witchgrass	X	X	X				3
<i>Dichantherium strigosum</i> var. <i>leucoblepharis</i>	roughhair witchgrass	<b>X</b>			X			2
<i>Dichantherium tenue</i>	white-edged witchgrass	<b>X</b>			X			2
<i>Drosera capillaris</i>	pink sundew	X	X					2
<i>Echinodorus</i> sp.	burrhead			X				1
<i>Edrastrima uniflora</i>	oldenlandia	X	X					2
<i>Eleocharis</i> sp.	spikerush					X		1
<i>Eleocharis tuberculosa</i>	conecup spikerush		X					1
<b><i>Eragrostis spectabilis</i></b>	<b>purple lovegrass</b>				X			1
<i>Erigeron vernus</i>	early whitetop fleabane	X						1
<i>Eriocaulon decangulare</i>	tenangle pipewort	X	X		X			3
<i>Eupatorium anomalum</i>	anomalous thoroughwort	X			X			2
<i>Eupatorium capillifolium</i>	dogfennel				X			1
<i>Eupatorium mohrii</i>	Mohr's thoroughwort				X			1
<i>Eupatorium rotundifolium</i>	roundleaf thoroughwort		X		X			2
<i>Eupatorium serotinum</i>	lateflowering thoroughwort					X		1
<i>Eupatorium x pinnatifidum</i>	thoroughwort				X			1
<i>Euthamia caroliniana</i>	slender flattop goldenrod	X	X					2
<i>Euthamia scabra</i>	Gulf Coast goldenrod					X	X	2
<i>Euthamia weakleyi</i>		<b>X</b>	<b>X</b>					2

Scientific Name	Common Name	Hydric Pine Flatwoods	Hydric Pine Savanna	Bay Swamp	Mesic Flatwoods	Freshwater Marsh	Salt Marsh	Grand Total
<i>Fuirena scirpoidea</i>	Southern umbrellasedge		X					1
<i>Gaylussacia dumosa</i>	dwarf huckleberry				X			1
<i>Gaylussacia mosieri</i>	woolly huckleberry	X	X	X	X			4
<i>Gaylussacia tomentosa</i>	blue huckleberry				X			1
<i>Gelsemium rankinii</i>	swamp jessamine			X				1
<i>Gelsemium sempervirens</i>	yellow jessamine	X			X			2
<i>Helianthus angustifolius</i>	narrowleaf sunflower			X				1
<i>Hymenachne hemitoma</i>	maidencane			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	X	X			4
<i>Hypericum crux-andreae</i>	St. Peter's wort		X	X	X			3
<i>Hypericum myrtifolium</i>	myrtleleaf St. John's wort		X					1
<i>Hyptis alata</i> var. <i>alata</i>	clustered bushmint			X				1
<i>Ilex cassine</i>	dahoon		X	X				2
<i>Ilex coriacea</i>	large gallberry	X	X	X	X			4
<i>Ilex glabra</i>	gallberry	X	X		X			3
<i>Ilex myrtifolia</i>	myrtle-leaved holly	X	X	X				3
<i>Ilex vomitoria</i>	yaupon	X		X		X	X	4
† <i>Imperata cylindrica</i>	cogon grass				X			1
<i>Itea virginica</i>	Virginia willow			X				1
<b><i>Iva frutescens</i> var. <i>frutescens</i></b>	<b>marshelder</b>					X		1
<i>Juncus pelocarpus</i>	annual rush		X					1
<i>Juncus roemerianus</i>	needle rush	X				X	X	3
<i>Juncus trigonocarpus</i>	redpod rush		X					1
<i>Juniperus silicicola</i>	Southern red cedar	X						1
<i>Kalmia hirsuta</i>	hairy wicky				X			1
<i>Kellogglocha verrucosa</i>	warty panicgrass	X	X					2
<i>Kosteletzkya pentacarpos</i>	Virginia saltmarsh mallow					X		1
<i>Lachnanthes caroliniana</i>	Carolina redroot	X	X					2
<i>Lachnocaulon anceps</i>	whitehead bogbutton				X			1
<b><i>Liatris</i> sp.</b>	<b>blazing star</b>				X			1
* <i>Lilium iridollae</i>	Panhandle lily			X				1
<i>Lobelia brevifolia</i>	shortleaf lobelia		X					1
<i>Lophiola aurea</i>	golden crest		X					1
<i>Lorinseria areolata</i>	netted chain fern	X	X	X				3
<i>Ludwigia pilosa</i>	hairy primrosewillow		X					1
<i>Lycopodiella alopecuroides</i>	foxtail club-moss	X	X					2
<i>Lycopodiella appressa</i>	Southern club-moss		X					1
<i>Lycopus rubellus</i>	taperleaf waterhorehound		X					1
† <i>Lygodium japonicum</i>	Japanese climbing fern	X						1
<i>Lyonia lucida</i>	fetterbush	X	X	X	X			4
<i>Magnolia grandiflora</i>	Southern magnolia	X			X			2

Scientific Name	Common Name	Hydric Pine Flatwoods	Hydric Pine Savanna	Bay Swamp	Mesic Flatwoods	Freshwater Marsh	Salt Marsh	Grand Total
<i>Magnolia virginiana</i> var. <i>australis</i>	sweetbay	X	X	X	X		X	5
<i>Mikania scandens</i>	climbing hempvine		X			X		2
<i>Mitchella repens</i>	partridgeberry				X			1
<i>Morella caroliniensis</i>	evergreen bayberry	X		X				2
<i>Morella cerifera</i>	Southern bayberry	X	X	X		X	X	5
<i>Muscadinia rotundifolia</i>	muscadine	X		X	X			3
<i>Nymphaea odorata</i> ssp. <i>odorata</i>	white waterlily			X				1
<i>Nyssa biflora</i>	swamp tupelo	X	X	X			X	4
<i>Osmunda spectabilis</i>	royal fern	X	X	X		X	X	5
<i>Osmundastrum cinnamomeum</i>	cinnamon fern	X	X	X				3
† <i>Panicum repens</i>	torpedo grass					X		1
<i>Panicum virgatum</i>	switchgrass	X	X			X	X	4
<i>Paspalum vaginatum</i>	seashore paspalum					X		1
<i>Peltandra sagittifolia</i>	spoon-flower			X				1
<i>Phragmites karka</i>	tropical reed					X		1
<i>Pinus elliottii</i>	slash pine	X	X	X	X	X	X	6
<i>Pinus palustris</i>	longleaf pine				X			1
<i>Pluchea</i> sp.	camphorweed		X					1
<i>Polygala lutea</i>	orange milkwort		X					1
<i>Polypremum procumbens</i>	rustweed					X		1
<i>Pseudolycopodiella caroliniana</i>	slender club-moss		X					1
<i>Pteridium pseudocaudatum</i>	tailed bracken	X	X		X	X		4
<i>Quercus geminata</i>	sand live oak				X			1
<i>Quercus hemisphaerica</i>	laurel oak				X			1
<i>Quercus virginiana</i>	live oak				X			1
<i>Rhexia petiolata</i>	fringed meadowbeauty		X					1
<i>Rhexia virginica</i>	handsome harry		X					1
<i>Rhus copallinum</i> var. <i>copallinum</i>	winged sumac				X			1
<i>Rhynchospora baldwinii</i>	Baldwin's beaksedge		X		X			2
<b><i>Rhynchospora careyana</i></b>	<b>Cary's horned beaksedge</b>		X					1
<i>Rhynchospora cephalantha</i> var. <i>cephalantha</i>	bunched beaksedge	X	X	X				3
<i>Rhynchospora chalarocephala</i>	loosehead beaksedge		X					1
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	X	X					2
<i>Rhynchospora ciliaris</i>	fringed beaksedge		X					1
<i>Rhynchospora compressa</i>	flatfruit beaksedge	X						1
<i>Rhynchospora fascicularis</i>	fascicled beaksedge	X	X		X			3
<i>Rhynchospora gracilentia</i>	slender beaksedge	X	X	X				3
<i>Rhynchospora plumosa</i>	plumed beaksedge		X		X			2
<i>Rhynchospora rariflora</i>	fewflower beaksedge		X					1
<i>Rubus cuneifolius</i>	sand blackberry				X			1
<i>Rubus pensilvanicus</i>	sawtooth blackberry	X	X	X	X	X	X	6

Scientific Name	Common Name	Hydric Pine Flatwoods	Hydric Pine Savanna	Bay Swamp	Mesic Flatwoods	Freshwater Marsh	Salt Marsh	Grand Total
<i>Rubus trivialis</i>	Southern dewberry	X			X	X	X	4
<i>Rumex verticillatus</i>	swamp dock					X		1
<i>Sabal minor</i>	bluestem palmetto					X	X	2
<i>Sagittaria lancifolia</i>	bulltongue arrowhead			X		X		2
<b><i>Samolus parviflorus</i></b>	<b>pineland pimpernel</b>					<b>X</b>		1
* <i>Sarracenia leucophylla</i>	white-top pitcherplant		X					1
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	little bluestem	<b>X</b>						1
<i>Schizachyrium stoloniferum</i>	creeping little bluestem				X			1
<i>Scleria ciliata</i> var. <i>ciliata</i>	hairy nutrush		X		<b>X</b>			2
<i>Scleria</i> sp.	nutrush		X					1
<i>Scleria triglomerata</i>	whip nutrush	X						1
<i>Scutellaria</i> sp.	skullcap	X	X					2
<i>Serenoa repens</i>	saw palmetto	X	X		X			3
<i>Sericocarpus tortifolius</i>	whitetop aster	X						1
† <i>Sesbania punicea</i>	purple sesban					X	X	2
<b><i>Sesbania vesicaria</i></b>	<b>bladderpod</b>					<b>X</b>		1
<i>Smilax auriculata</i>	earleaf greenbriar				X			1
<i>Smilax bona-nox</i>	saw greenbriar					X		1
<i>Smilax glauca</i>	cat greenbriar		X		X			2
<i>Smilax laurifolia</i>	laurel greenbriar	X	X	X				3
<i>Smilax pumila</i>	sarsaparilla vine				X			1
<i>Smilax walteri</i>	coral greenbriar			X				1
<i>Solidago altissima</i> var. <i>pluricephala</i>	Canada goldenrod				X			1
<i>Solidago fistulosa</i>	pinebarren goldenrod		X		X			2
<i>Solidago mexicana</i>	Southern seaside goldenrod					X	X	2
<i>Sophronanthe pilosa</i>	shaggy hedgehyssop		X					1
<i>Spartina patens</i>	saltmeadow cordgrass	X				X	X	3
<i>Sphagnum</i> sp.	sphagnum moss	X	X	X				3
<i>Sporobolus junceus</i>	pineywoods dropseed		X		X			2
<i>Styrax americanus</i> var. <i>pulverulentus</i>	downy American snowbell		X					1
<i>Symphotrichum dumosum</i> var. <i>dumosum</i>	long-stalked aster	X				X		2
<i>Symphotrichum tenuifolium</i>	perennial saltmarsh aster					X		1
<i>Tamala palustris</i>	swamp bay	X	X	X	X	X	X	6
<i>Taxodium ascendens</i>	pond cypress	X	X	X			X	4
<i>Tiedemannia filiformis</i> ssp. <i>filiformis</i>	water cowbane		X					1
<i>Toxicodendron radicans</i> var. <i>radicans</i>	Eastern poison ivy	X		X				2
<i>Triadenum virginicum</i>	Virginia marsh St. John's wort		<b>X</b>					1
† <i>Triadica sebifera</i>	Chinese tallow tree					X		1
<i>Trilisa odoratissima</i>	vanillaleaf				X			1
<i>Tripsacum dactyloides</i> var. <i>dactyloides</i>	Eastern gamagrass					X		1
<i>Typha latifolia</i>	broadleaf cattail					X		1
<i>Vaccinium arboreum</i>	sparkleberry				X			1

Scientific Name	Common Name	Hydric Pine Flatwoods	Hydric Pine Savanna	Bay Swamp	Mesic Flatwoods	Freshwater Marsh	Salt Marsh	Grand Total
<i>Vaccinium darrowii</i>	Darrow's blueberry				X			1
<i>Vaccinium elliotii</i>	Elliott's blueberry		X		X			2
<i>Vaccinium fuscatum</i>	hairy highbush blueberry	X	X	X	X			4
<i>Vaccinium myrsinites</i>	shiny blueberry				X			1
<i>Viburnum nudum</i>	possumhaw			X				1
<i>Viola primulifolia</i>	primroseleaf violet	X			X		X	3
<i>Viola</i> sp.	violet		X					1
<b><i>Viola vittata</i></b>	<b>Southern water violet</b>		<b>X</b>					1
<i>Xyris ambigua</i>	coastalplain yellow-eyed grass	X	X		X			3
<i>Xyris baldwiniana</i>	Baldwin's yellow-eyed grass		X					1
<i>Xyris caroliniana</i>	Carolina yellow-eyed grass				X			1
<i>Xyris fimbriata</i>	fringed yellow-eyed grass	X		X				2
<i>Xyris floridana</i>	Florida yellow-eyed grass		X					1
<b><i>Xyris iridifolia</i></b>	<b>irisleaf yellow-eyed grass</b>	<b>X</b>						1
<i>Xyris stricta</i>	pineland yellow-eyed grass	X	X					2
<b>Total number of taxa: 212</b>		84	106	52	72	43	22	

## Hydric Pine Flatwoods

**Qualitative sampling.** We accessed the Hydric Pine Flatwoods in the vicinities of Transect 1 (eastern) and Transect 4 (western) to create a species list (Figure 2). The eastern area had an open canopy of mature slash pines. The ground layer was mainly herbaceous, although short shrubs and sprawling laurel greenbrier vines were dense in many areas. Purple bluestem and Carolina redroot were the dominant herbs, along with a mix of other, mostly weedy species. Shrubs were mostly black titi, but also included large gallberry, coastalplain St. John's wort, sweetbay, and highbush blueberry. The non-native invasive Japanese climbing fern was detected in this community for the first time this year. Chinese tallow tree, seen in prior years near the road, was not recorded in 2025. The western flatwoods was only accessible by traversing a large bay swamp and is not currently actively managed. The canopy was denser and groundcover sparser than the eastern area. We observed a total of 84 plant taxa in Hydric Pine Flatwoods this year (Table 1).

**Quantitative sampling.** The eastern Transect 1 (Table 2, Figure 3) had a total of 26 species and 66% total plant cover. Although cover is reduced somewhat this year compared to 2024, composition is similar with black titi, laurel greenbrier, and purple bluestem dominant. However, coastalplain St. John's wort and bunched beaksedge are reduced. Shrub cover was 52% and herbs averaged 21%.

The western Transect 4 (Table 3, Figure 4) had a total of 30 species and 54% total plant cover, similar to last year. Sawgrass, swamp bay, blue maidencane, and yaupon contributed the most cover, with sawgrass apparently increased in cover compared to last year. Shrub cover was 19% and herbs averaged 37%.

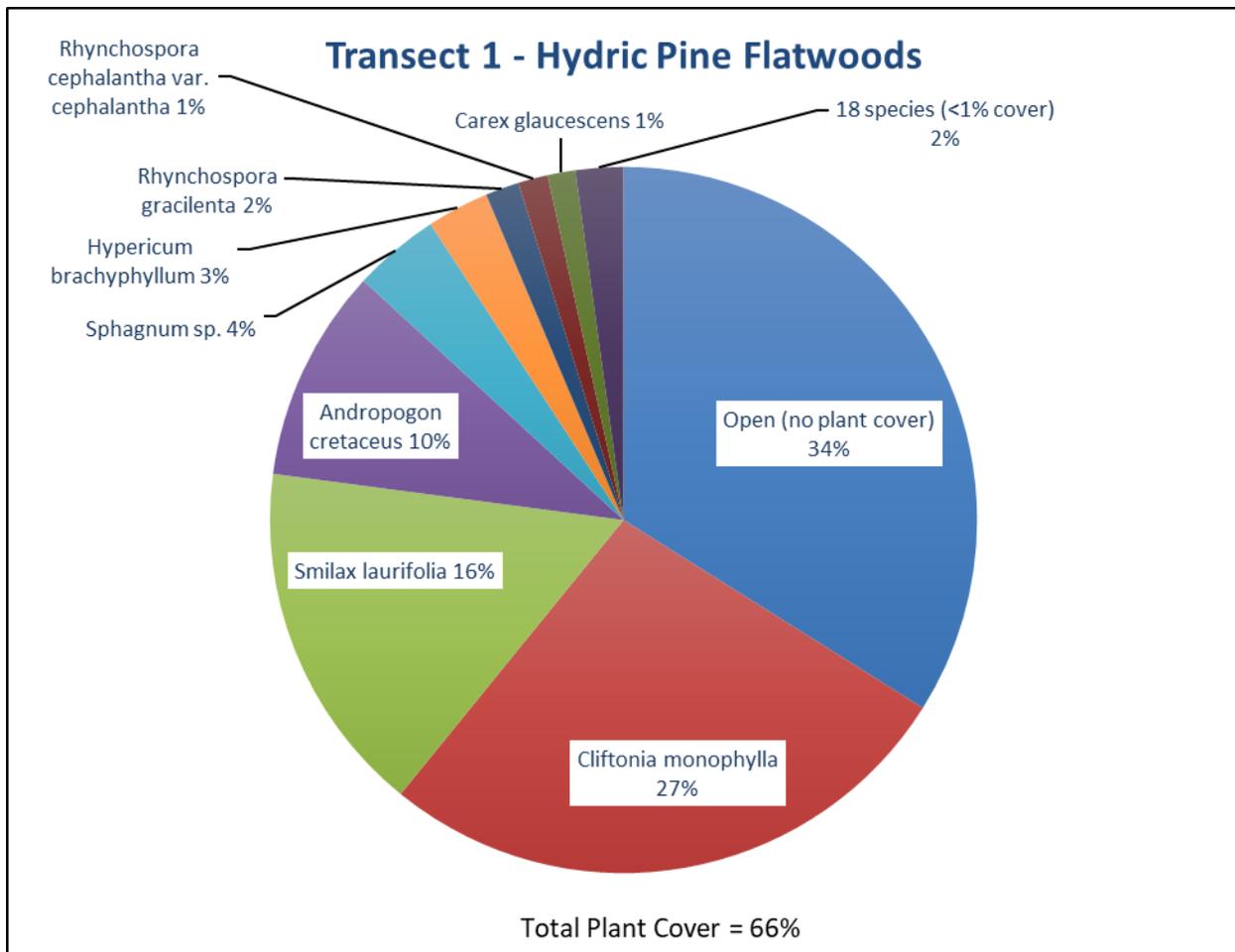


Figure 3. Percent cover of plant species in Hydric Pine Flatwoods Transect 1.

Table 2. Percent cover of plant species in Hydric Pine Flatwoods Transect 1 sampled on December 2, 2025.

Scientific name	Common name	Average percent cover per quadrat
<i>Anchistea virginica</i>	Virginia chain fern	0.27
<i>Andropogon cretaceus</i>	purple bluestem	10.77
<i>Andropogon</i> sp.	bluestem	0.13
<i>Andropogon virginicus</i> var. <i>virginicus</i>	broomsedge bluestem	0.03
<i>Carex glaucescens</i>	clustered sedge	1.40
<i>Cliftonia monophylla</i>	black titi	29.70
<i>Dichantherium ensifolium</i>	small-leaved witchgrass	0.23
<i>Dichantherium scabriusculum</i>	woolly witchgrass	0.03
<i>Drosera capillaris</i>	pink sundew	0.03
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort	3.13
<i>Hypericum cistifolium</i>	roundpod St. John's wort	0.17
<i>Ilex coriacea</i>	large gallberry	0.23
<i>Lyonia lucida</i>	fetterbush	0.47
<i>Pinus elliotii</i>	slash pine	0.17

Scientific name	Common name	Average percent cover per quadrat
<i>Pinus</i> sp.	pine	0.03
<i>Rhynchospora cephalantha</i> var. <i>cephalantha</i>	bunched beaksedge	1.50
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	0.13
<i>Rhynchospora fascicularis</i>	fascicled beaksedge	0.10
<i>Rhynchospora gracilentia</i>	slender beaksedge	1.70
<i>Rhynchospora</i> sp.	beaksedge	0.03
<i>Rubus pensilvanicus</i>	sawtooth blackberry	0.03
<i>Sericocarpus tortifolius</i>	whitetop aster	0.03
<i>Smilax laurifolia</i>	laurel greenbriar	17.90
<i>Sphagnum</i> sp.	sphagnum moss	4.37
<i>Xyris ambigua</i>	coastalplain yellow-eyed grass	0.10
<i>Xyris</i> sp.	yellow-eyed grass	0.17
Open (no plant cover)		33.93

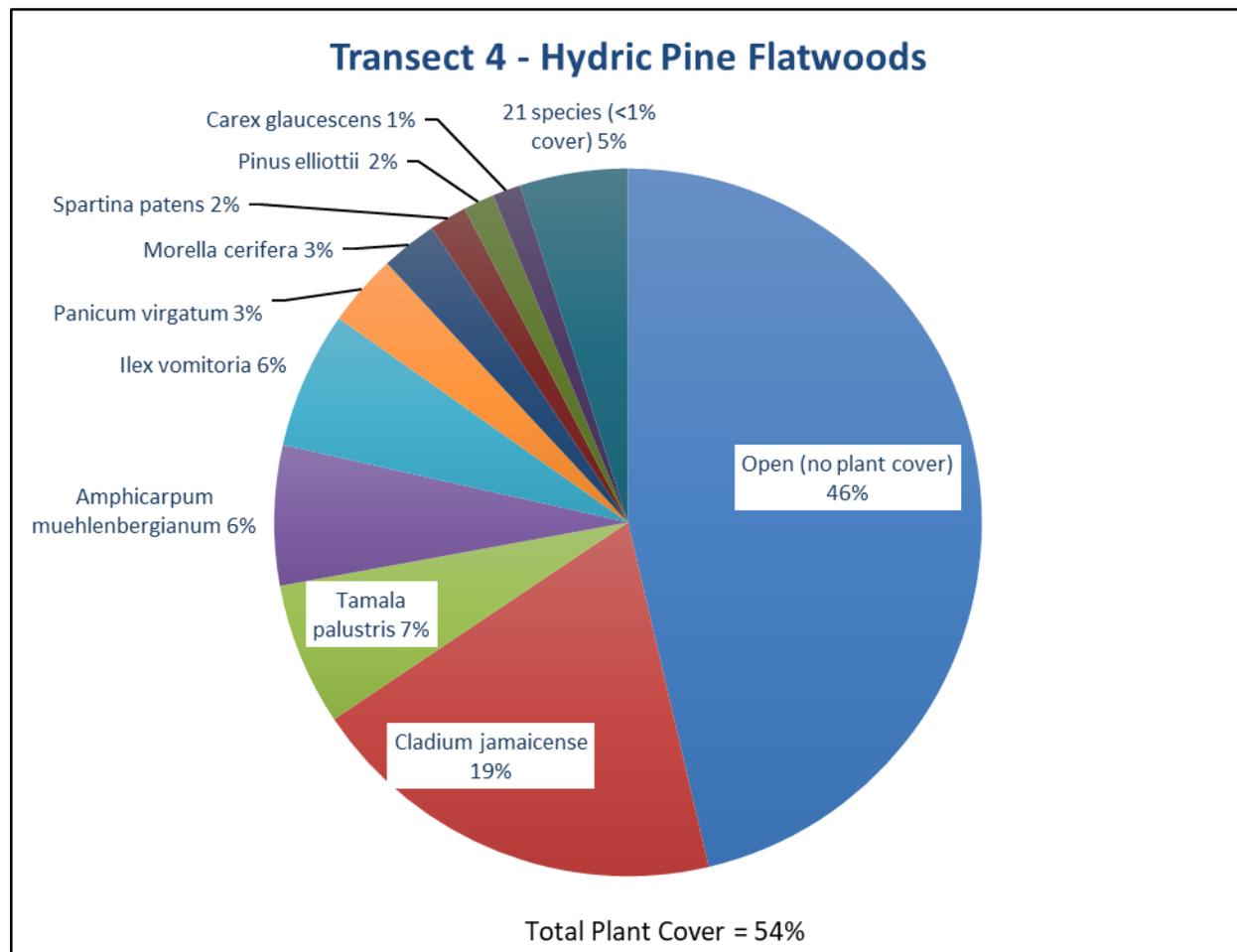


Figure 4. Percent cover of plant species in Hydric Pine Flatwoods Transect 4.

Table 3. Percent cover of plant species in Hydric Pine Flatwoods Transect 4 sampled on December 3, 2025.

Scientific name	Common name	Average percent cover per quadrat
<i>Acer rubrum</i>	red maple	0.13
<i>Amphicarpum muehlenbergianum</i>	blue maidencane	6.47
<i>Anchistea virginica</i>	Virginia chain fern	0.23
<i>Andropogon cretaceus</i>	purple bluestem	0.63
<i>Andropogon dealbatus</i>	wetland white bluestem	0.20
<i>Andropogon virginicus</i> var. <i>virginicus</i>	broomsedge bluestem	0.20
<i>Baccharis halimifolia</i>	groundsel tree	0.10
<i>Carex glaucescens</i>	clustered sedge	1.30
<i>Centella erecta</i>	spadeleaf	0.27
<i>Cladium jamaicense</i>	sawgrass	19.50
<i>Cyperus</i> sp.	flatsedge	0.07
<i>Dichanthelium scabriusculum</i>	woolly witchgrass	0.23
<i>Eupatorium anomalum</i>	anomalous thoroughwort	0.20
<i>Hypericum cistifolium</i>	roundpod St. John's wort	0.03
<i>Ilex vomitoria</i>	yaupon	6.33
<i>Juncus roemerianus</i>	needle rush	0.10
<i>Magnolia virginiana</i> var. <i>australis</i>	sweetbay	0.23
<i>Morella cerifera</i>	Southern bayberry	2.60
<i>Nyssa biflora</i>	swamp tupelo	0.57
<i>Osmunda spectabilis</i>	royal fern	0.13
<i>Panicum virgatum</i>	switchgrass	3.33
<i>Pinus elliotii</i>	slash pine	1.43
<i>Rubus pensilvanicus</i>	sawtooth blackberry	0.10
<i>Rubus trivialis</i>	Southern dewberry	0.10
<i>Schizachyrium scoparium</i>	little bluestem	0.43
<i>Scutellaria</i> sp.	skullcap	0.03
<i>Spartina patens</i>	saltmeadow cordgrass	1.73
<i>Tamala palustris</i>	swamp bay	6.60
<i>Taxodium ascendens</i>	pond cypress	0.60
<i>Toxicodendron radicans</i> var. <i>radicans</i>	Eastern poison ivy	0.40
Open (no plant cover)		46.33

## Hydric Pine Savanna

**Qualitative sampling.** We accessed the Hydric Pine Savanna between Transects 2 and 3 to create a species list (Figure 2). This area had an open canopy of mature slash pines. The ground layer has become dominated by woody species, including dense patches of sprawling laurel greenbrier which have increased over the past several years. Shrubs included coastalplain St. John's wort, titi, and large gallberry. Herbs were mostly hairy primrosewillow along with a mix of other species including various beaksedges, tenangle pipewort, yellow-eyed grass, slender flattop goldenrod, and occasional wiregrass. The savanna in the vicinity of Transect 2 has been mechanically and chemically treated to produce dramatic shrub reduction since 2017. This area was much more heavily dominated by weedy purple bluestem. The state-listed endangered whitetop pitcherplant is known from Transect 3 and was

observed this year. The state-listed threatened pinewoods bluestem was also observed during qualitative sampling. The non-native invasives Chinese tallow tree and camphor tree were not found this year. We observed a total of 106 plant taxa in this community (Table 1).

**Quantitative sampling.** The southern Transect 2 (Table 4, Figure 5) had a total of 51 species and 58% total plant cover. Until 2019, Transect 2 was dominated by a thicket of tall, woody species. The area was mechanically treated to reduce shrubs, and the 2019 monitoring transect recorded the very open habitat that resulted from this treatment. All shrubs had been mowed to the ground which was covered in the resulting mulch. Herb cover has been increasing since that treatment, and woody cover was likewise increasing. In 2021, woody species were further treated, resulting in reductions in titi, black titi, and gallberry cover in Fall 2022. Shrubs made up about 24% average cover per quadrat in Fall 2025, a small increase from last year, and shrub heights along the transect averaged around 1 meter. The overall plant cover decrease may be attributable to the late sampling time in December.

The northern Transect 3 (Table 5, Figure 6) had a total of 54 species and 63% total plant cover. Laurel greenbrier, coastalplain St. John's wort, titi, and hairy primrosewillow contributed the most cover, similar to last year. Laurel greenbrier was stable in cover compared to last year, but plants are now growing above the 2-meter cutoff for inclusion in the data as the site becomes more overgrown. Shrub heights are now an average of 1.27 meters. Shrub cover was 42%, and herbs averaged 24% cover. The state listed endangered whitetop pitcherplant was seen again this year along Transect 3. The overall plant cover decrease may be attributable to the late sampling time in December.

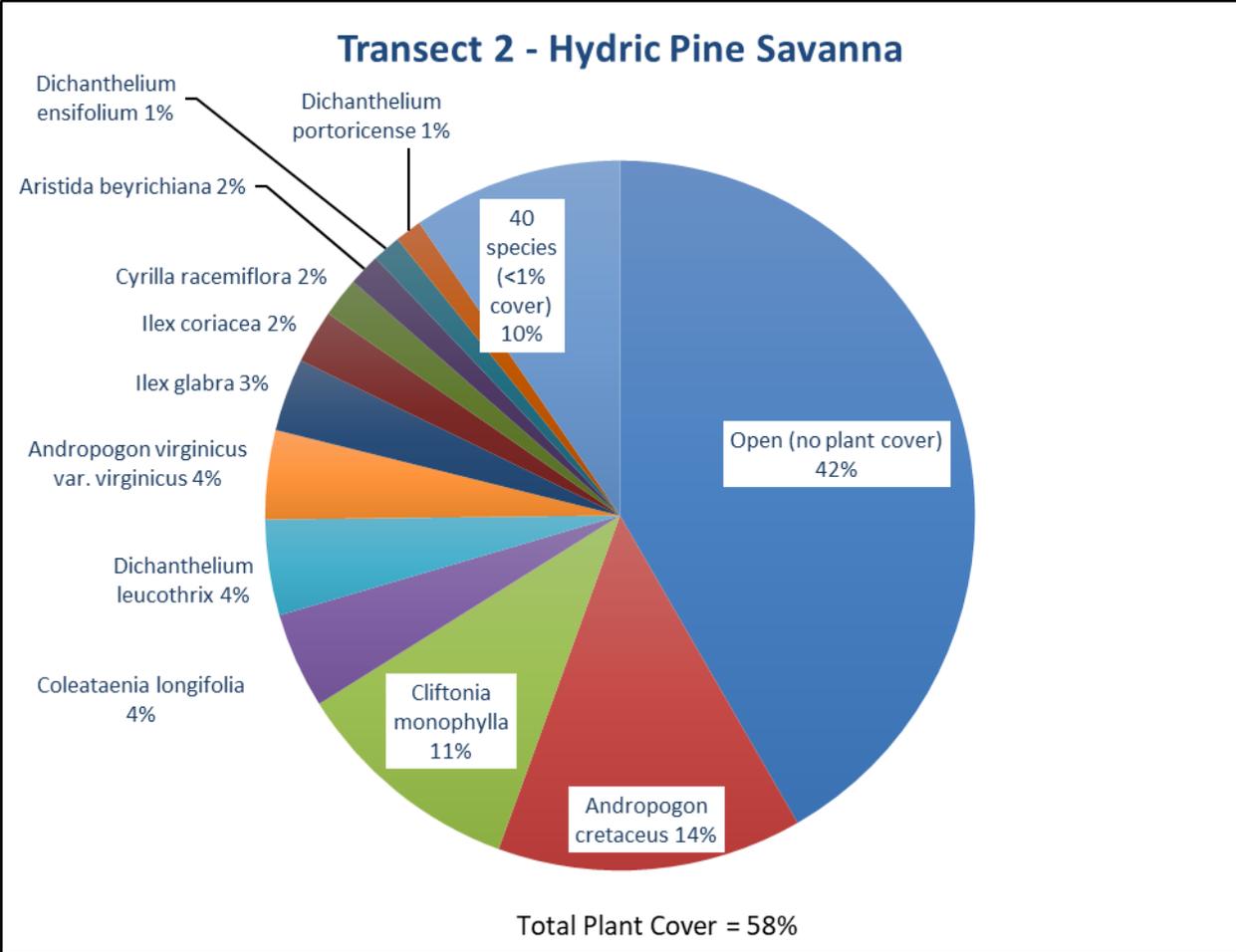


Figure 5. Percent cover of plant species in Hydric Pine Savanna Transect 2.

Table 4. Percent cover of species in Hydric Pine Savanna Transect 2 sampled on December 2, 2025.

Scientific name	Common name	Average percent cover per quadrat
<i>Acer rubrum</i>	red maple	0.13
<i>Anchistea virginica</i>	Virginia chain fern	0.03
<i>Andropogon arctatus</i>	pinewoods bluestem	0.50
<i>Andropogon cretaceus</i>	purple bluestem	13.27
<i>Andropogon sp.</i>	bluestem	0.10
<i>Andropogon virginicus var. virginicus</i>	broomsedge bluestem	3.87
<i>Aristida beyrichiana</i>	Southern wiregrass	1.40
<i>Aronia arbutifolia</i>	red chokeberry	0.03
<i>Carex glaucescens</i>	clustered sedge	0.23
<i>Carex longii</i>	Long's sedge	0.13
<i>Cliftonia monophylla</i>	black titi	10.07
<i>Coleataenia longifolia</i>	ciliate redtop panicum	4.17
<i>Cyrilla racemiflora</i>	titi	1.73

Scientific name	Common name	Average percent cover per quadrat
<i>Dichanthelium ensifolium</i>	small-leaved witchgrass	1.23
<i>Dichanthelium leucothrix</i>	rough witchgrass	4.17
<i>Dichanthelium portoricense</i>	Puerto Rican witchgrass	1.17
<i>Dichanthelium</i> sp.	witchgrass	0.10
<i>Drosera capillaris</i>	pink sundew	0.03
<i>Edrastima uniflora</i>	oldenlandia	0.10
<i>Eriocaulon decangulare</i>	tenangle pipewort	0.20
<i>Eupatorium rotundifolium</i>	roundleaf thoroughwort	0.03
<i>Euthamia caroliniana</i>	slender flattop goldenrod	0.17
<i>Gaylussacia mosieri</i>	woolly huckleberry	0.27
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort	0.50
<i>Hypericum cistifolium</i>	roundpod St. John's wort	0.27
<i>Hypericum crux-andreae</i>	St. Peter's wort	0.03
<i>Ilex cassine</i>	dahoon	0.10
<i>Ilex coriacea</i>	large gallberry	2.33
<i>Ilex glabra</i>	gallberry	3.17
<i>Lachnanthes caroliniana</i>	Carolina redroot	0.23
<i>Lycopodiella</i> sp.	club-moss	0.10
<i>Magnolia virginiana</i> var. <i>australis</i>	sweetbay	0.10
<i>Pinus elliotii</i>	slash pine	0.27
<i>Polygala lutea</i>	orange milkwort	0.07
<i>Rhexia petiolata</i>	fringed meadowbeauty	0.03
<i>Rhexia</i> sp.	meadowbeauty	0.07
<i>Rhynchospora cephalantha</i> var. <i>cephalantha</i>	bunched beaksedge	0.60
<i>Rhynchospora chapmanii</i>	Chapman's beaksedge	0.23
<i>Rhynchospora gracilentia</i>	slender beaksedge	0.40
<i>Rhynchospora</i> sp.	beaksedge	0.13
<i>Rubus pensilvanicus</i>	sawtooth blackberry	0.70
<i>Scleria ciliata</i>	fringed nutrush	0.23
<i>Scleria</i> sp.	nutrush	0.03
<i>Scutellaria</i> sp.	skullcap	0.03
<i>Smilax glauca</i>	cat greenbriar	0.53
<i>Smilax laurifolia</i>	laurel greenbriar	0.37
<i>Sphagnum</i> sp.	sphagnum moss	0.50
<i>Tamala palustris</i>	swamp bay	0.93
<i>Viola</i> sp.	violet	0.10
<i>Xyris floridana</i>	Florida yellow-eyed grass	0.23
<i>Xyris</i> sp.	yellow-eyed grass	0.27
Open (no plant cover)		41.67

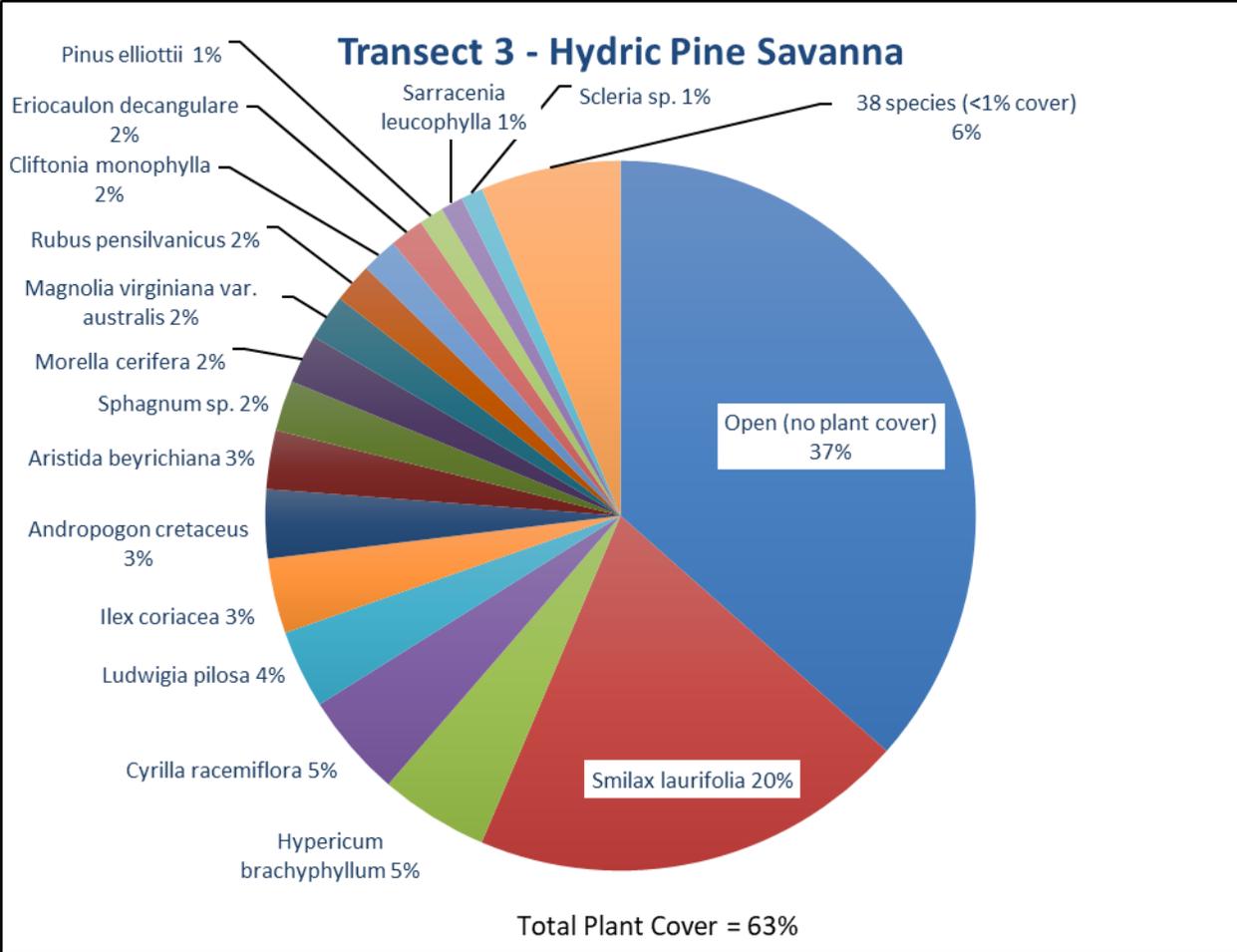


Figure 6. Percent cover of plant species in Hydric Pine Savanna Transect 3.

Table 5. Percent cover of plant species in Hydric Pine Savanna Transect 3 sampled on December 2, 2025.

Scientific name	Common name	Average percent cover per quadrat
<i>Acer rubrum</i>	red maple	0.03
<i>Andropogon cretaceus</i>	purple bluestem	3.63
<i>Andropogon glomeratus</i>	bushy bluestem	0.27
<i>Aristida beyrichiana</i>	Southern wiregrass	3.10
<i>Aristida palustris</i>	longleaf threeawn	0.23
<i>Aristida sp.</i>	threeawn	0.10
<i>Aronia arbutifolia</i>	red chokeberry	0.17
<i>Baccharis halimifolia</i>	groundsel tree	0.03
<i>Bidens mitis</i>	smallfruit beggarticks	0.40
<i>Carex glaucescens</i>	clustered sedge	0.57
<i>Cliftonia monophylla</i>	black titi	1.90
<i>Cyrilla racemiflora</i>	titi	5.50
<i>Dichanthelium ensifolium</i>	small-leaved witchgrass	0.23
<i>Dichanthelium leucothrix</i>	rough witchgrass	0.10

Scientific name	Common name	Average percent cover per quadrat
<i>Dichanthelium scabriusculum</i>	woolly witchgrass	1.03
<i>Eleocharis tuberculosa</i>	conecup spikerush	0.03
<i>Eriocaulon decangulare</i>	tenangle pipewort	1.80
<i>Euthamia caroliniana</i>	slender flattop goldenrod	0.27
<i>Fuirena scirpoidea</i>	Southern umbrellasedge	0.03
<i>Gaylussacia mosieri</i>	woolly huckleberry	0.10
<i>Hypericum brachyphyllum</i>	coastalplain St. John's wort	5.73
<i>Ilex coriacea</i>	large gallberry	3.97
<i>Ilex glabra</i>	gallberry	0.10
<i>Ilex myrtifolia</i>	myrtle-leaved holly	0.60
<i>Kelloggloa verrucosa</i>	warty panicgrass	0.03
<i>Lachnanthes caroliniana</i>	Carolina redroot	0.23
<i>Lorinseria areolata</i>	netted chain fern	0.23
<i>Ludwigia pilosa</i>	hairy primrosewillow	4.13
<i>Lycopus rubellus</i>	taperleaf waterhorehound	0.53
<i>Lyonia lucida</i>	fetterbush	0.10
<i>Magnolia virginiana</i> var. <i>australis</i>	sweetbay	2.40
<i>Mikania scandens</i>	climbing hempvine	0.03
<i>Morella cerifera</i>	Southern bayberry	2.60
<i>Nyssa biflora</i>	swamp tupelo	0.30
<i>Osmunda spectabilis</i>	royal fern	0.23
<i>Pinus elliotii</i>	slash pine	1.30
<i>Pinus</i> sp.	pine	0.03
<i>Pluchea</i> sp.	camphorweed	0.03
<i>Rhynchospora chalarocephala</i>	loosehead beaksedge	0.03
<i>Rhynchospora fascicularis</i>	fascicled beaksedge	0.03
<i>Rhynchospora rariflora</i>	fewflower beaksedge	0.03
<i>Rhynchospora</i> sp.	beaksedge	0.33
<i>Rubus pensilvanicus</i>	sawtooth blackberry	2.10
<i>Sarracenia leucophylla</i>	white-top pitcherplant	1.17
<i>Scleria</i> sp.	nutrush	1.17
<i>Smilax glauca</i>	cat greenbriar	0.10
<i>Smilax laurifolia</i>	laurel greenbriar	23.03
<i>Solidago fistulosa</i>	pinebarren goldenrod	0.10
<i>Sphagnum</i> sp.	sphagnum moss	2.67
<i>Tamala palustris</i>	swamp bay	0.10
<i>Taxodium ascendens</i>	pond cypress	0.10
Unknown Herb		0.03
Unknown Woody		0.03
<i>Xyris</i> sp.	yellow-eyed grass	0.43
Open (no plant cover)		36.53

## Bay Swamp

**Qualitative sampling.** We sampled an area of Bay Swamp south of the Hydric Pine Savanna Transect 2 in Fall 2025. This community is more similar to a freshwater tidal swamp or basin marsh than a typical bay swamp. Following large scale titi reductions in the savannas and flatwoods adjacent to the bay swamp in

the vicinity of Hydric Pine Savanna Transect 2, the Perdido River can now be seen through the open canopy. There is a seepy ecotone from the Hydric Pine Savanna to the swamp. The majority of the community was a mix of trees and shrubs with patches of herbs typical of marshes. The ground was mucky with pools of ankle-deep water, large patches of sphagnum moss, and numerous hummocks. In the southern bay swamp, the canopy was more stunted and composed of slash pine, pond cypress, and swamp tupelo to about 45 feet tall. A subcanopy and tall shrub layer was composed of the canopy species plus red maple, sweetbay, southern bayberry, and swamp bay. The short shrub (under 6 feet tall) layer was composed of black titi, southern bayberry, and swamp bay. The patchy herbaceous layer consisted mostly of sawgrass, cinnamon fern, and clustered sedge. Species were also noted while walking across the restored bay swamp that separates the two main areas of pine flatwoods (Figure 2). The state-listed endangered Panhandle lily is known from the western bay swamp along the former road that was removed for hydrology restoration. In Fall 2025, we found Panhandle lily plants in this same area. The non-native invasive Chinese tallow tree found last year was not observed this year. We recorded a total of 52 plant taxa in this community during the Fall 2025 site visit (Table 1).

### Mesic Flatwoods

**Qualitative sampling.** We sampled 2 areas of Mesic Flatwoods, one on the eastern side of the property between Hydric Pine Flatwoods Transect 1 and the main road through the Dutex West property, and the other southwest of Hydric Pine Savanna Transect 3 (Figure 2). The eastern area had a canopy of mature slash pine and an open layer of shrubs intermixed with patches of herbaceous species and open ground. Shrubs were mainly saw palmetto, shiny blueberry, and dwarf huckleberry with a diversity of other species present. Wiregrass was common, along with weedy species, such as purple bluestem, and typical flatwoods species. Shrub reduction efforts throughout this area in recent years have greatly increased bluestem cover and decreased saw palmetto and other flatwoods shrubs. The state-listed threatened pinewoods bluestem was observed, as well as the non-native invasives camphor tree and cogon grass. Japanese climbing fern, seen last year, was not re-located. We observed a total of 72 plant taxa in this community (Table 1).

### Freshwater Marsh

**Qualitative sampling.** We accessed the Freshwater Marsh target community along the Perdido River southwest of the Hydric Pine Flatwoods 1 Transect (Figure 2). The community was mostly an open, solid stand of sawgrass with patches of other herbs. Shrubs were mainly tall individuals of swamp bay, southern bayberry, yaupon, and groundsel tree. The non-native invasive species Chinese tallow tree, torpedo grass, and purple sesban were seen again in Fall 2025. We observed a total of 43 plant taxa in this community (Table 1).

### Salt Marsh

**Qualitative sampling.** We accessed the Salt Marsh target community by walking south from the Hydric Pine Flatwoods Transect 4 (Figure 2). The community was largely herbaceous, dominated by sawgrass with patches of needle rush. Small patches of shrubs consisted of dahoon and swamp bay. The non-native invasive Japanese climbing fern, Chinese tallow tree, torpedo grass, and purple sesban have been

observed in prior years invading in the ecotone between the hydric pine flatwoods and the salt marsh, but only purple sesban has been found in recent years (2023 to 2025). We observed a total of 22 plant taxa in this community (Table 1).