

## **BAYPORT MITIGATION**

### **Fall 2019 Monitoring Report**

USACE Permit No.: SAJ-1997-07427 (SP-SWA), issued 7/9/2018

Permittee: DJFO, Inc.  
c/o: Jay Odom  
P.O. Box 1735  
Destin, FL 32540

Responsible Party for Monitoring: Northwest Florida Water Management District  
81 Water Management Drive  
Havana, FL 32333

Dates of Inspection: 9/26/2019, 10/4/2019, 10/16/2019, 10/23/2019

#### **Summary**

This project (Bayport Mitigation) compensates for impacts to 6.55 acres of jurisdictional wetlands (hydric pine flatwoods) associated with a commercial development on CR 3280 in Freeport, Florida (DJFO, Inc.). Mitigation, as authorized by SAJ-1997-07427 (SP-SWA), will restore 55.6 acres of hydric pine flatwoods / mixed forested wetlands within the Devils Swamp area of the Northwest Florida Water Management District (NFWFMD) Choctawhatchee River Water Management Area. The offsite mitigation area is located approximately six miles southeast of the impact along an unnamed dirt road east of the unincorporated community of Bunker. Prior to NFWFMD acquisition in 1992, the site had been converted to slash pine plantation.

As described in SAJ-1997-07427 (SP-SWA), the mitigation area is divided into four management polygons (A – D). The USACE permit describes Polygons A, C and D as wet prairie, and Polygon B as hydric pine flatwoods. However, the correct community composition designation is hydric pine flatwoods for Polygons A, B and D; mixed forested wetlands with hydric pine flatwood inclusions for Polygon C.

Mitigation activities implemented-to-date include 1) baseline monitoring (August 2017), 2) shrub reduction (October 2017), 3) prescribed fire (February 2018), 4) repeat panoramic photography (August 2017, March 2018, September 2018, September 2019), 5) herbicide treatments (September 2019) to reduce shrub regrowth, and 6) post-baseline quantitative vegetation monitoring (April 2018, December 2018 / January 2019, September / October 2019).

Performance standards, as specified in SAJ-1997-07427 (SP-SWA), were met as of early 2018. However, resprouting of shrubs resulted in the shrub percent cover targets (i.e., <5% cover) no

longer being met in Polygons A – D as of Fall 2019. As remediation, all mitigation polygons were treated with herbicide in September 2019 in an effort to reduce shrub cover back to the target of <5%; results were mixed. Vegetation transects monitored in September / October 2019 indicated that shrub cover in the mitigation in the mitigation polygons varied from 3% to 47%. Nonetheless, the shrubs exhibited substantial browning and dieback of leaves during the Fall 2019 monitoring. Prescribed fire is planned for 2020 and it is hoped that it will reduce shrub cover back to the performance standards specified in the permit. Additional herbicide treatments may be necessary to bring shrub cover back to within targets, or to maintain shrub cover targets. Results of the Fall 2020 monitoring will be used to determine if additional herbicide treatments are necessary.

<b>Special Condition No. 9, Performance Standards, USACE SAJ-1997-07427 SP-SWA</b>	<b>Status</b>
<p>a. Within Mitigation Area A, reduce tree density to no more than 200 trees per acre and reduce shrub coverage to less than 5% cover, by January 2019</p>	<ul style="list-style-type: none"> <li>• Tree density performance standard met.</li> <li>• Shrub cover performance standard not currently met.</li> </ul> <p>Tree cover reduced to <math>\leq 200</math>/Acre in 2017.</p> <p>Shrub cover reduced to &lt;5% in 2017/2018 in accordance with performance standards; however, shrub resprouting necessitated additional herbicide treatments in Fall 2019 with mixed results (3-7% cover as of October 2019). Shrub cover will be reduced in 2020 via prescribed fire; additional herbicide treatments will be implemented if necessary.</p>
<p>b. Within Mitigation Area B, reduce tree density to no more than 400 trees per acre and reduce shrub coverage to less than 5% cover, by January 2019.</p>	<ul style="list-style-type: none"> <li>• Tree density performance standard met.</li> <li>• Shrub cover performance standard not currently met.</li> </ul> <p>Tree cover reduced to <math>\leq 400</math>/Acre in 2017.</p> <p>Shrub cover reduced to &lt;5% in 2017/2018; however, shrub resprouting necessitated additional herbicide treatments in Fall 2019 with mixed results (17-47% cover as of October 2019). Shrub cover will be reduced in 2020 via prescribed fire; additional herbicide treatments will be implemented if necessary.</p>

<b>Special Condition No. 9, Performance Standards, USACE SAJ-1997-07427 SP-SWA</b>	<b>Status</b>
<p>c. Within Mitigation Area C, reduce tree density to no more than 200 trees per acre and reduce shrub coverage to less than 5% cover, by January 2019.</p>	<ul style="list-style-type: none"> <li>• Tree density performance standard met.</li> <li>• Shrub cover performance standard not currently met.</li> </ul> <p>Tree cover reduced to <math>\leq 200</math>/Acre in 2017.</p> <p>Shrub cover reduced to <math>&lt;5\%</math> in 2017/2018; however, shrub resprouting necessitated additional herbicide treatments in Fall 2019 with mixed results (9-10% cover as of October 2019). Shrub cover will be reduced in 2020 via prescribed fire; additional herbicide treatments will be implemented if necessary.</p>
<p>d. Within Mitigation Area D, reduce tree density to no more than 200 trees per acre and reduce shrub coverage to less than 5% cover, by January 2019.</p>	<ul style="list-style-type: none"> <li>• Tree density performance standard met.</li> <li>• Shrub cover performance standard not currently met.</li> </ul> <p>Tree cover reduced to <math>\leq 200</math>/Acre in 2017.</p> <p>Shrub cover reduced to <math>&lt;5\%</math> in 2017/2018; however, shrub resprouting necessitated additional herbicide treatments in Fall 2019 with mixed results (15-25% cover as of October 2019). Shrub cover will be reduced in 2020 via prescribed fire; additional herbicide treatments will be implemented if necessary.</p>
<p>e. Conduct prescribed burns of Mitigation Areas A, B, C, and D on 2-3 year cycles with the first burn occurring no later than March 2019.</p>	<ul style="list-style-type: none"> <li>• Prescribed fire performance standard met.</li> </ul> <p>Prescribed fire implemented in all polygons 2/22/2018; fire regime will continue on 2-3 year cycles. Next prescribed fire planned for 2020.</p>

<b>Special Condition No. 9, Performance Standards, USACE SAJ-1997-07427 SP-SWA</b>	<b>Status</b>
f. Actively manage Mitigation Areas A, C, and D as wet prairie ecosystems and actively manage Mitigation Area B as a hydric pine flatwood ecosystem.	<ul style="list-style-type: none"> <li>Active management of mitigation areas performance standard met.</li> </ul> <p>Mitigation Polygons are actively being restored to appropriate, natural wetland communities. Correct community composition designation is hydric pine flatwoods for Polygons A, B and D; mixed forested wetlands with hydric pine flatwood inclusions in Polygon C</p>
g. Conduct annual monitoring of Mitigation Areas A, B, C, and D in accordance with the Monitoring and Reporting Timeframes special condition of this authorization.	<ul style="list-style-type: none"> <li>Annual monitoring performance standard met.</li> </ul>
h. Cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at <a href="http://www.fleppc.org">http://www.fleppc.org</a> , shall total less than 1 percent.	<ul style="list-style-type: none"> <li>Category I &amp; II invasive exotic plant species cover performance standard (&lt;1%) met.</li> </ul>

### Quantitative Monitoring

Percent vegetation cover was measured in 1 m<sup>2</sup> quadrats (10-foot intervals) along eight 150-foot transects (two transects per management polygon). 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 plant species.

Shrub density was monitored within each mitigation polygon using five 1 m<sup>2</sup> quadrats established at random. Within each quadrat, the number of rooted shrub stems were counted.

**Transect A1 (Polygon A; Hydric Pine Flatwoods Restoration)**

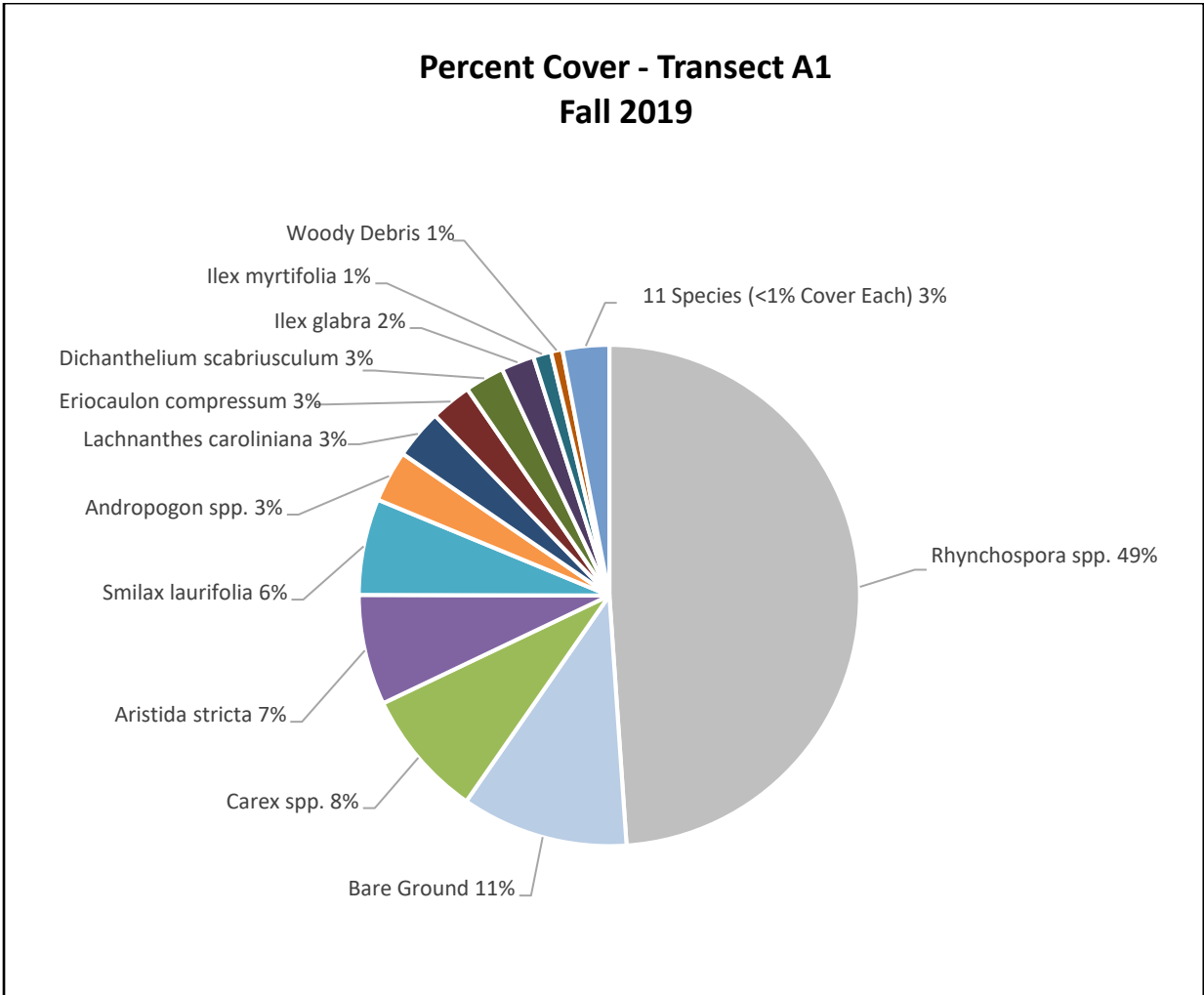


Table 1. Transect A1 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon glomeratus</i>	Bushy Bluestem	0.8
<i>Andropogon spp.</i>	Bluestem	2.5
<i>Aristida stricta</i>	Wiregrass	7.1
Bare Ground	Bare Ground	10.8
<i>Carex spp.</i>	Sedge	8.3
<i>Centella spp.</i>	Spadeleaf	0.1
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	2.6
<i>Dichanthelium spp.</i>	Witchgrass	0.7
<i>Eriocaulon compressum</i>	Flattened Pipewort	2.7
<i>Ilex glabra</i>	Gallberry	2.1
<i>Ilex myrtifolia</i>	Myrtle Dahoon	1.2
<i>Lachnanthes caroliniana</i>	Redroot	3.2
<i>Lachnocaulon anceps</i>	Whitehead Bogbutton	0.5
<i>Lophiola aurea</i>	Golden Crest	0.3
<i>Oxypolis spp.</i>	Cowbane	0.1
<i>Pinus elliotii</i>	Slash Pine	0.4
<i>Rhexia spp.</i>	Meadowbeauty	0.1
<i>Rhynchospora spp.</i>	Beaksedge	48.9
<i>Sarracenia flava</i>	Yellow Pitcherplant	0.0
<i>Sarracenia leucophylla</i>	Whitetop Pitcherplant	0.3
<i>Smilax laurifolia</i>	Laurel Greenbrier	6.2
Woody Debris	Woody Debris	0.7
Unknown	Unknown	0.3
<i>Xyris spp.</i>	Yelloweyed Grass	0.1
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.

**Transect A2 (Polygon A; Hydric Pine Flatwoods Restoration)**

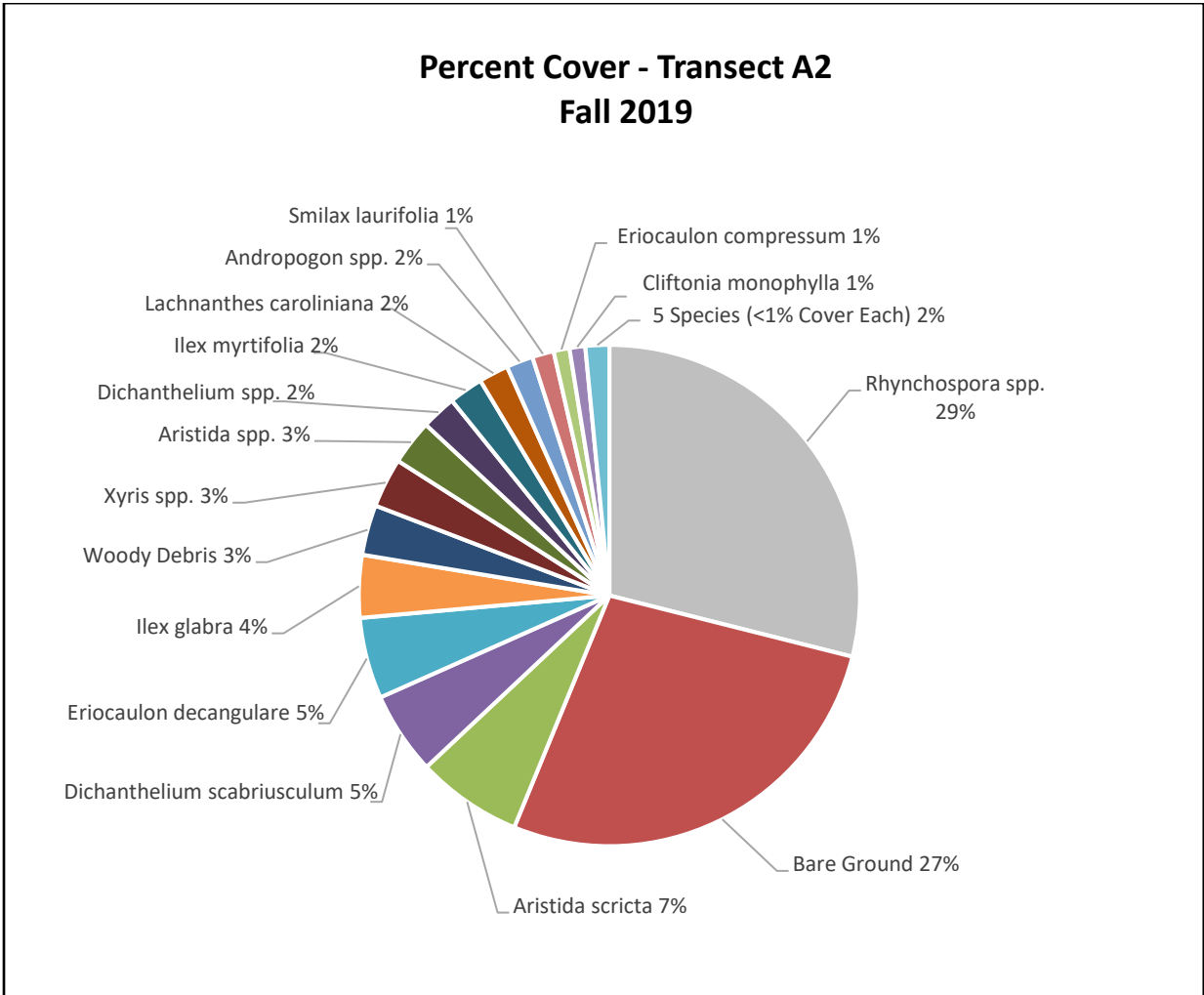


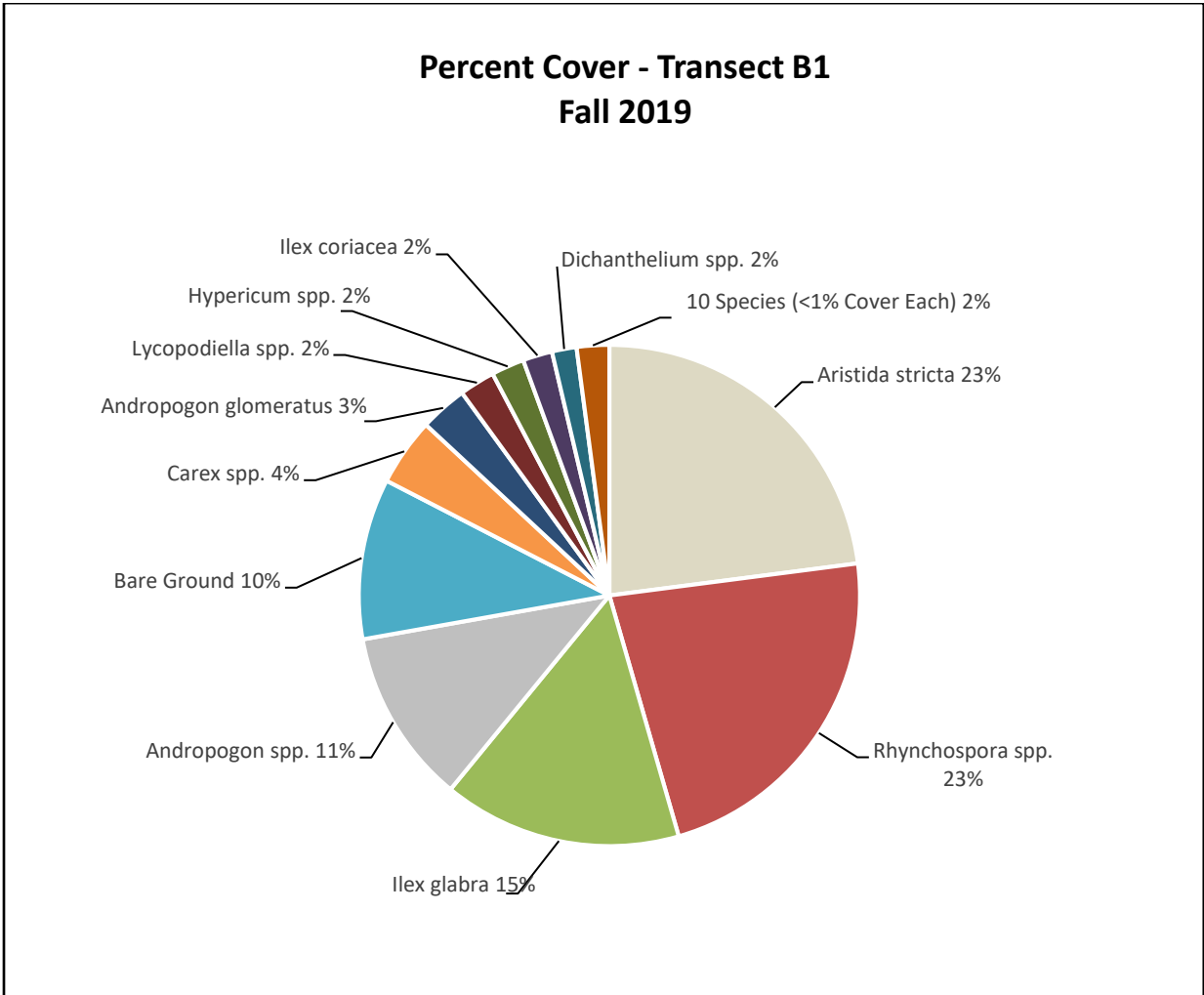
Table 2. Transect A2 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon glomeratus</i>	Bushy Bluestem	1.3
<i>Andropogon spp.</i>	Bluestem	0.4
<i>Aristida stricta</i>	Wiregrass	6.8
<i>Aristida spp.</i>	Threeawn	2.9
<i>Axonopus spp.</i>	Carpetgrass	0.4
Bare Ground	Bare Ground	27.3
<i>Carex spp.</i>	Sedge	0.7
<i>Cliftonia monophylla</i>	Titi	1.0
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	5.3
<i>Dichanthelium spp.</i>	Witchgrass	2.3
<i>Eleocharis spp.</i>	Spikerush	0.3
<i>Eriocaulon compressum</i>	Flattened Pipewort	1.0
<i>Eriocaulon decangulare</i>	TenanglePipewort	5.2
<i>Ilex glabra</i>	Gallberry	4.0
<i>Ilex myrtifolia</i>	Myrtle Dahoon	2.2
<i>Lachnanthes caroliniana</i>	Redroot	1.9
<i>Lophiola aurea</i>	Golden Crest	0.0
<i>Rhynchospora spp.</i>	Beaksedge	28.9
<i>Smilax laurifolia</i>	Laurel Green Brier	1.4
Woody Debris	Woody Debris	3.2
<i>Sphagnum spp.</i>	Sphagnum	0.1
<i>Xyris spp.</i>	Yelloweyed Grass	3.2
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.



**Transect B1 (Polygon B; Hydric Pine Flatwoods Restoration)**

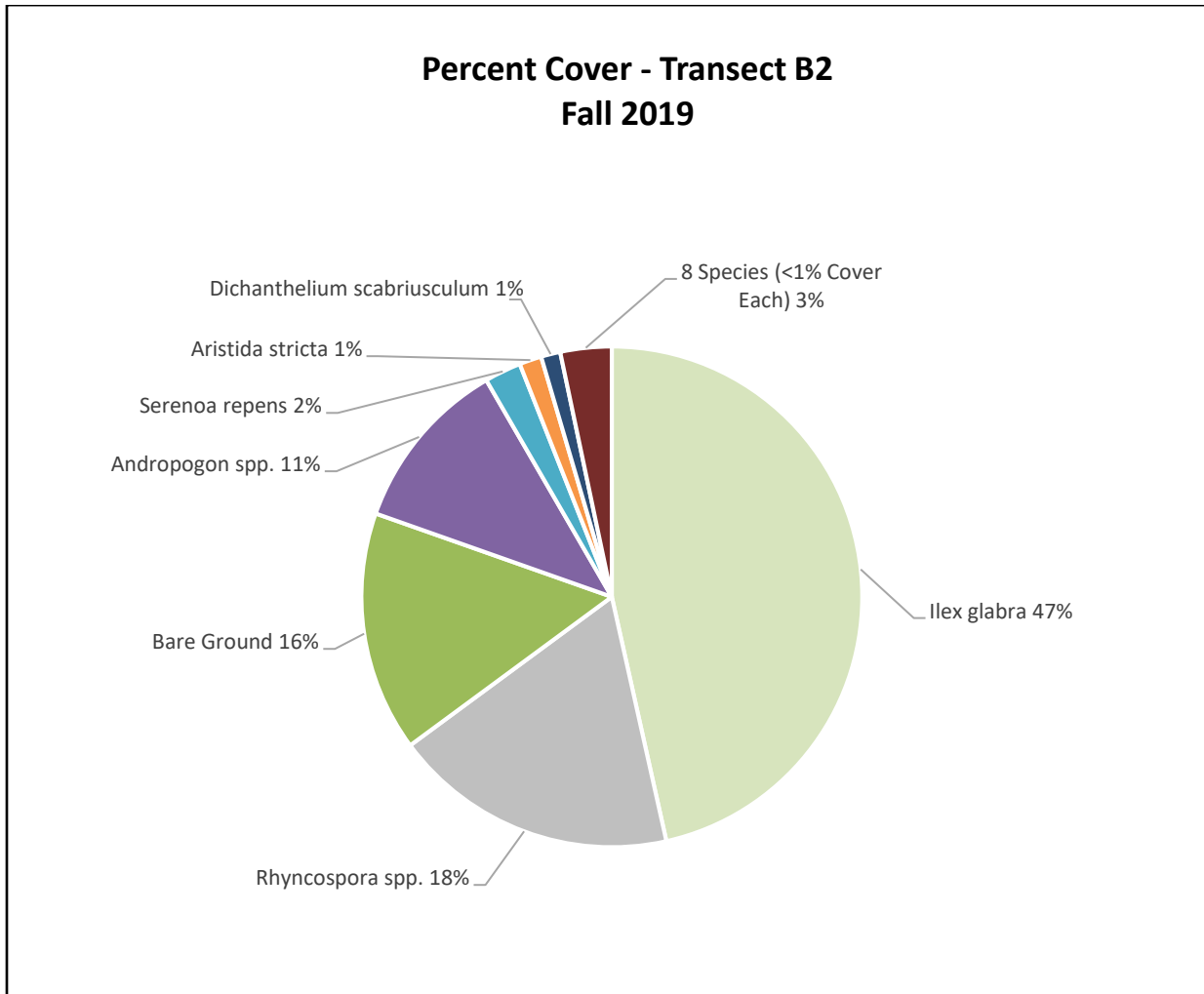


**Table 3. Transect B1 (Fall 2019)**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Percent Cover Across Transect*</b>
<i>Andropogon glomeratus</i>	Bushy Bluestem	3.1
<i>Andropogon spp.</i>	Bluestem	11.3
<i>Aristida stricta</i>	Wiregrass	23.0
<i>Aronia arbutifolia</i>	Red Chokeberry	0.1
<i>Axonopus spp.</i>	Carpetgrass	0.3
Bare Ground	Bare Ground	10.4
<i>Carex spp.</i>	Sedge	4.4
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	0.1
<i>Dichanthelium spp.</i>	Witchgrass	1.6
<i>Euthamia caroliniana</i>	Slender Flattop Goldenrod	0.0
<i>Gaylussacia dumosa</i>	Dwarf Huckleberry	0.1
<i>Hypericum spp.</i>	St. John's Wort	2.1
<i>Ilex coriacea</i>	Sweet Gallberry	1.9
<i>Ilex glabra</i>	Gallberry	15.4
<i>Lachnanthes caroliniana</i>	Redroot	0.5
<i>Lachnocaulon spp.</i>	Bogbutton	0.6
<i>Lycopodiella spp.</i>	Clubmoss	2.3
<i>Quercus pumila</i>	Running Oak	0.3
<i>Rhynchospora spp.</i>	Beaksedge	22.6
<i>Seymeria cassioides</i>	Yaupon Blacksenena	0.2
<i>Woodwardia virginica</i>	Virginia Chain Fern	0.1
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.

**Transect B2 (Polygon B; Hydric Pine Flatwoods Restoration)**



**Table 4. Transect B2 (Fall 2019)**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Percent Cover Across Transect*</b>
<i>Andropogon spp.</i>	Bluestem	11.2
<i>Aristida stricta</i>	Wiregrass	1.4
Bare Ground	Bare Ground	15.5
<i>Carex spp.</i>	Sedge	0.1
<i>Cyperus spp.</i>	Flatsedge	0.8
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	1.2
<i>Hypericum spp.</i>	St. John's Wort	0.4
<i>Ilex glabra</i>	Gallberry	46.5
<i>Lachnanthes caroliniana</i>	Redroot	0.5
<i>Lycopodiella spp.</i>	Clubmoss	0.9
<i>Panicum spp.</i>	Panicgrass	0.1
<i>Rhynchospora spp.</i>	Beaksedge	18.4
<i>Serenoa repens</i>	Saw Palmetto	2.4
<i>Smilax laurifolia</i>	Laurel Greenbrier	0.4
<i>Vaccinium darrowii</i>	Darrow's Blueberry	0.1
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.

**Transect C1 (Polygon C; Mixed Forested Wetlands w/Hydric Pine Flatwood Restoration)**

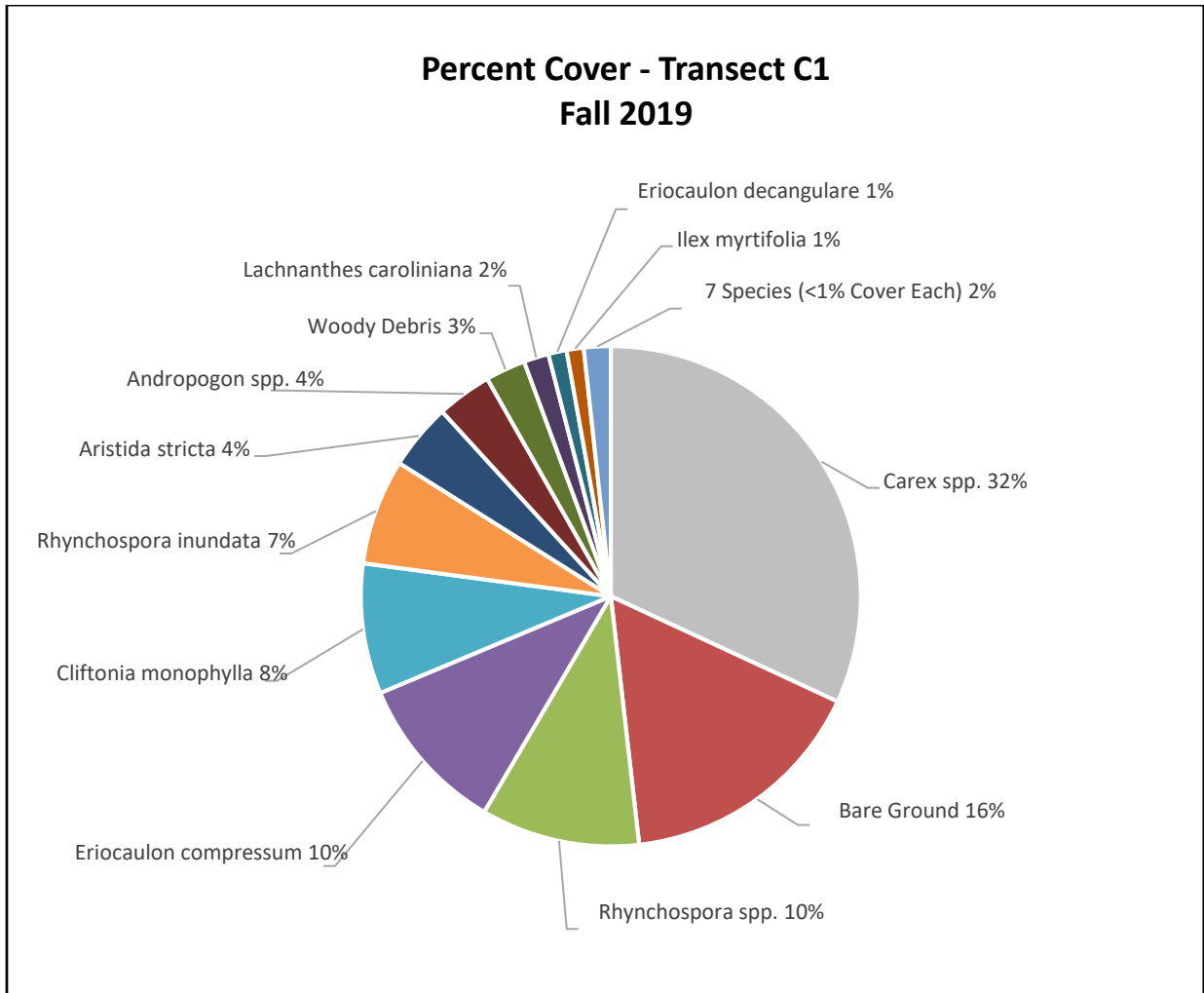


Table 5. Transect C1 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	3.6
<i>Aristida stricta</i>	Wiregrass	4.3
Bare Ground	Bare Ground	16.3
<i>Carex spp.</i>	Sedge	31.9
<i>Cliftonia monophylla</i>	Black Titi	8.4
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	0.4
<i>Dichanthelium spp.</i>	Witchgrass	0.1
<i>Eriocaulon compressum</i>	Flattened Pipewort	10.2
<i>Eriocaulon decangulare</i>	Tenangle Pipewort	1.2
<i>Hypericum spp.</i>	St. John's Wort	0.7
<i>Ilex glabra</i>	Gallberry	0.1
<i>Ilex myrtifolia</i>	Myrtle Dahoon	1.1
<i>Lachnanthes caroliniana</i>	Redroot	1.6
<i>Lycopodiella spp.</i>	Clubmoss	0.1
<i>Pinus elliotii</i>	Slash Pine	0.1
<i>Rhynchospora inundata</i>	Narrowfruit Horned Beaksedge	6.8
<i>Rhynchospora spp.</i>	Beaksedge	10.3
<i>Smilax laurifolia</i>	Laurel Greenbrier	0.2
Woody Debris	Woody Debris	2.6
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.

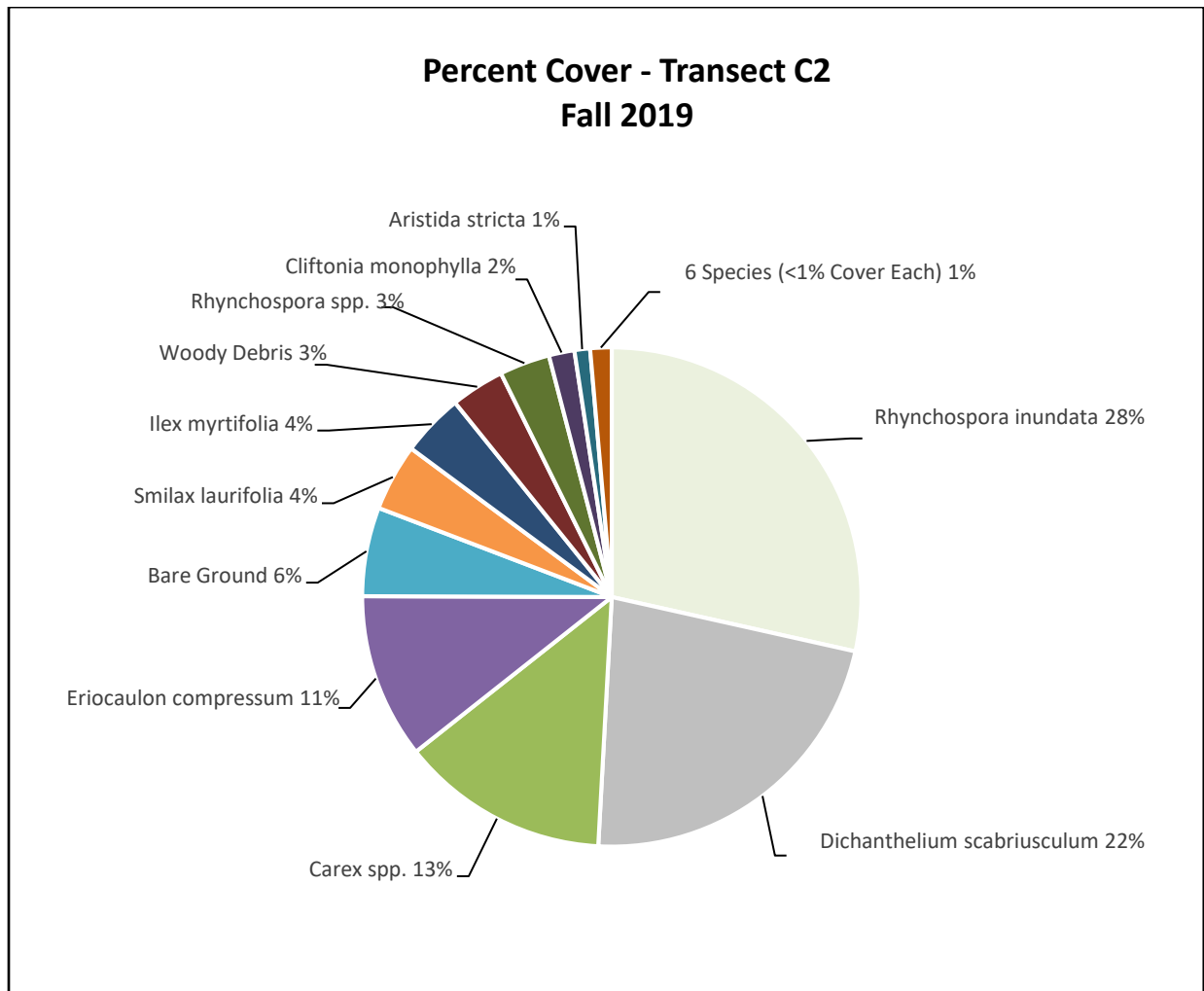
**Transect C2 (Polygon C; Mixed Forested Wetlands w/Hydric Pine Flatwood Restoration)**

Table 6. Transect C2 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	0.7
<i>Aristida stricta</i>	Wiregrass	1.0
Bare Ground	Bare Ground	5.8
<i>Carex spp.</i>	Sedge	13.5
<i>Cliftonia monophylla</i>	Black Titi	1.7
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	22.4
<i>Eriocaulon compressum</i>	Flattened Pipewort	10.7
<i>Ilex myrtifolia</i>	Myrtle Dahoon	4.1
<i>Lachnanthes caroliniana</i>	Redroot	0.1
<i>Pinus elliottii</i>	Slash Pine	0.3
<i>Proserpinaca pectinata</i>	Combleaf Mermaidweed	0.2
<i>Rhynchospora inundata</i>	Narrowfruit Horned Beaksedge	28.5
<i>Rhynchospora spp.</i>	Beaksedge	3.3
<i>Sarracenia flava</i>	Yellow Pitcherplant	0.1
<i>Smilax laurifolia</i>	Laurel Greenbrier	4.3
Unknown	Unknown	0.1
Woody Debris	Woody Debris	3.5
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.



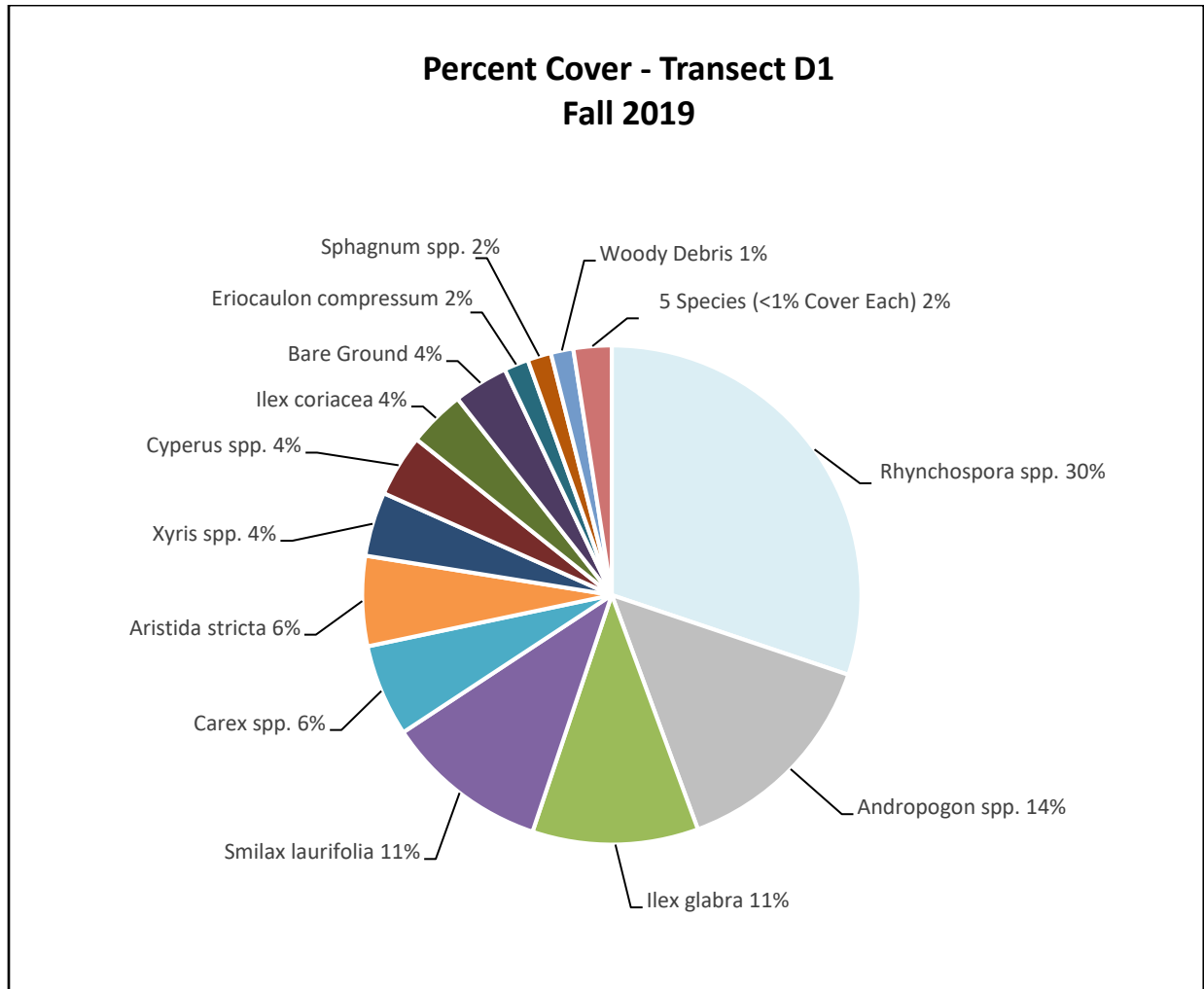
**Transect D1 (Polygon B; Hydric Pine Flatwoods Restoration)**

Table 7. Transect D1 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	14.2
<i>Aristida stricta</i>	Wiregrass	5.8
Bare Ground	Bare Ground	3.5
<i>Carex spp.</i>	Sedge	6.0
<i>Cyperus spp.</i>	Flatsedge	4.0
<i>Dichanthelium spp.</i>	Witchgrass	0.5
<i>Eriocaulon compressum</i>	Flattened Pipewort	1.6
<i>Eriocaulon decangulare</i>	Tenangle Pipewort	0.5
<i>Ilex coriacea</i>	Sweet Gallberry	3.7
<i>Ilex glabra</i>	Gallberry	10.7
<i>Lachnanthes caroliniana</i>	Redroot	0.0
<i>Pinus elliotii</i>	Slash Pine	0.7
<i>Rhynchospora spp.</i>	Beaksedge	30.2
<i>Smilax laurifolia</i>	Laurel Greenbrier	10.6
<i>Sphagnum spp.</i>	Sphagnum	1.5
Unknown	Unknown	0.6
Woody Debris	Woody Debris	1.5
<i>Xyris spp.</i>	Xyris	4.2
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.

**Transect D2 (Polygon B; Hydric Pine Flatwoods Restoration)**

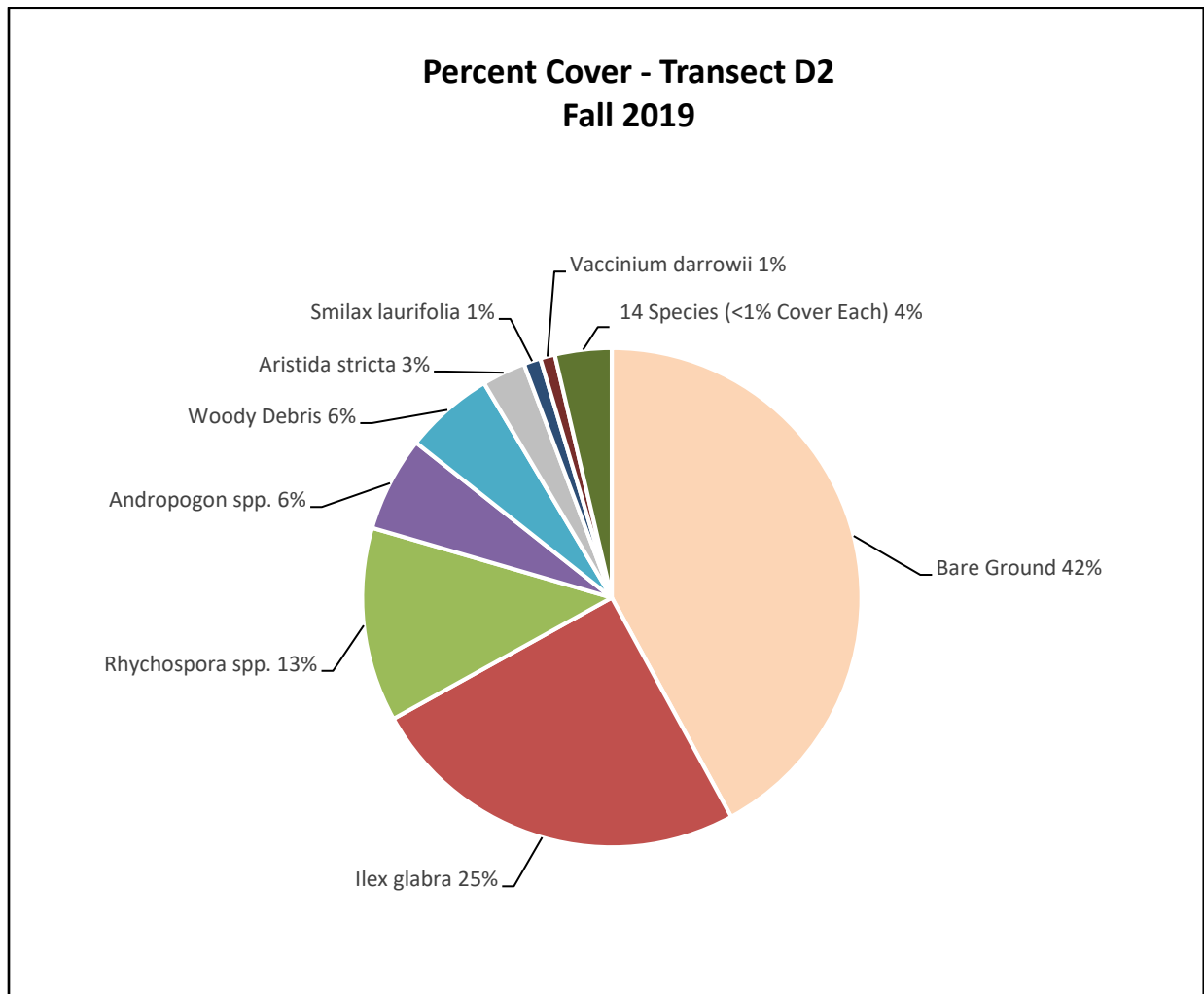
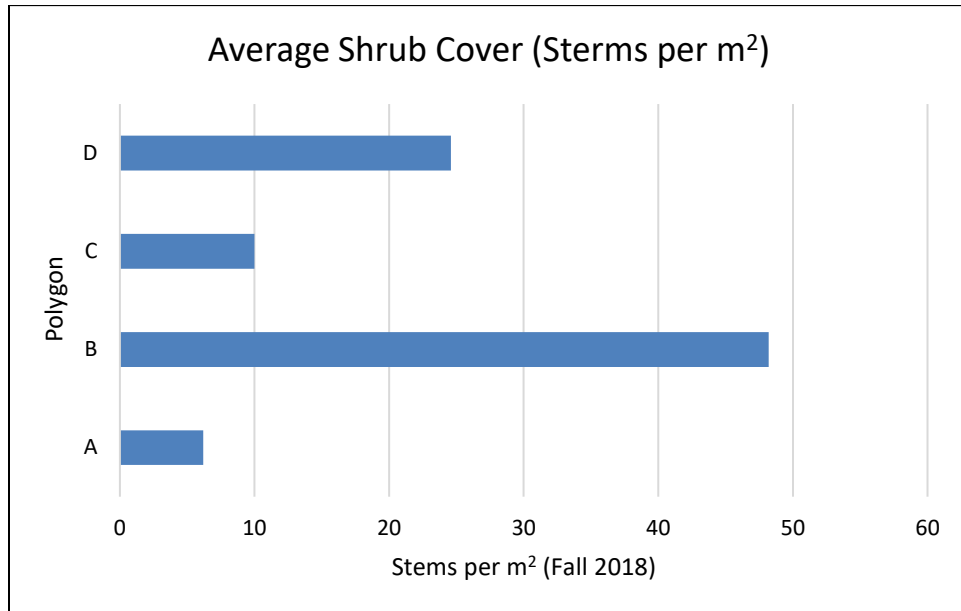


Table 8. Transect D2 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	6.2
<i>Aristida stricta</i>	Wiregrass	2.8
Bare Ground	Bare Ground	42.1
<i>Carex spp.</i>	Sedge	0.4
<i>Cliftonia monophylla</i>	Black Titi	0.1
<i>Cyperus spp.</i>	Flatsedge	0.3
<i>Dichanthelium scabriusculum</i>	Woolly Witchgrass	0.2
<i>Dichanthelium spp.</i>	Witchgrass	0.5
<i>Gaylussacia dumosa</i>	Dwarf Huckleberry	0.5
<i>Hypericum spp.</i>	St. John's Wort	0.4
<i>Ilex coriacea</i>	Sweet Gallberry	0.5
<i>Ilex glabra</i>	Gallberry	24.9
<i>Ilex myrtifolia</i>	Myrtle Dahoon	0.3
<i>Pinus elliotii</i>	Slash Pine	0.2
<i>Pteridium aquilinum</i>	Bracken Fern	0.3
<i>Quercus pumila</i>	Running Oak	0.1
<i>Rhexia spp.</i>	Meadowbeauty	0.1
<i>Rhychospora spp.</i>	Beaksedge	12.6
<i>Smilax laurifolia</i>	Laurel Greenbrier	1.1
Unknown	Unknown	0.1
<i>Vaccinium darrowii</i>	Darrow's Blueberry	1.0
Woody Debris	Woody Debris	5.8
		100.0

\*Due to rounding, percent cover may not add up to precisely 100.0%.

### Average Shrub Density by Polygon



**Figure 1. Average Shrub Stems per m<sup>2</sup>**

**Panoramic Monitoring Photos**

**Photo Point 1  
(Polygon B—Hydric Pine Flatwoods Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 2  
(Polygon B—Hydric Pine Flatwoods Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 3  
(Polygon D—Hydric Pine Flatwoods Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 4  
(Polygon D—Hydric Pine Flatwoods Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 5  
(Polygon A—Hydric Pine Flatwoods Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 6  
(Polygon A—Hydric Pine Flatwoods Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 7  
(Polygon C—Mixed Forested Wetlands w/Hydric Pine Flatwood Inclusions Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019



**Photo Point 8  
(Polygon C—Mixed Forested Wetlands w/Hydric Pine Flatwood Inclusions Restoration)**



8/28/2017 (Baseline Conditions)



3/8/2018



9/18/2018



9/26/2019

## **Conclusions**

Mitigation and monitoring are being implemented per permit conditions of SAJ-1997-07427 (SP-SWA). Performance standards for tree densities, implementation of prescribed fire, monitoring, and invasive exotic plant species cover are being met. Shrub cover targets (<5% cover per mitigation polygon) were met by Spring 2018. However, resprouting has caused the shrub cover to exceed targets. Prescribed fire, and additional herbicide treatments if necessary, will be implemented to return shrub cover to within performance standard targets.





