

BAYPORT MITIGATION

Fall 2020 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
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Responsible Party for Monitoring: Northwest Florida Water Management District
81 Water Management Drive
Havana, FL 32333

Dates of Inspection: 10/30/2020; 11/4/2020; 11/10/2020

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 at Devils Swamp, an area that is owned and managed for ecological integrity by the Northwest Florida Water Management District (NFWFMD) and is part of the 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 (Figure 1). 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 and tree density reduction (October 2017); 3) prescribed fire (February 2018); 4) repeat panoramic photography (August 2017, March 2018, September 2018, September 2019, October 2020); 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, October / November 2020).

Performance standards, as specified in SAJ-1997-07427 (SP-SWA), were met as of early 2018. However, resprouting resulted in shrub cover targets exceeding performance standards (<5% cover) by Fall 2019. As remediation, all mitigation polygons were treated with herbicide in September 2019 to reduce shrub cover back to the target of <5%; results were mixed. Vegetation transects monitored in October 2020 indicated that shrub cover in the mitigation polygons varied from 3% to 23%, with an average shrub cover of approximately 9%. Although prescribed fire, rescheduled for 2021, will help reduce shrub cover, additional herbicide treatments will be necessary to bring shrub cover back to within the targeted range.

Special Condition No. 9, Performance Standards, USACE SAJ-1997-07427 SP-SWA	Status
<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"> • Tree density performance standard met. • Shrub cover performance standard met. <p>Tree cover reduced to ≤ 200/Acre in 2017.</p> <p>Shrub cover reduced to <5% in 2017/2018 in accordance with performance standards. Shrub resprouting necessitated additional herbicide treatments in Fall 2019. Shrub cover in Polygon “A” varied from 3.1% to 4.9% (4% average) in Fall 2020; target performance standard met.</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"> • Tree density performance standard met. • Shrub cover performance standard not met. <p>Tree cover reduced to ≤ 400/Acre in 2017.</p> <p>Shrub cover reduced to <5% in 2017/2018 in accordance with performance standards. Shrub resprouting necessitated additional herbicide treatments in Fall 2019. Shrub cover in Polygon “B” varied from 8.6% to 15.5% (12% average) in Fall 2020 and did not meet the target performance standard. Additional herbicide treatments will be necessary to reduce shrub cover back to within the target performance standard.</p>

Special Condition No. 9, Performance Standards, USACE SAJ-1997-07427 SP-SWA	Status
<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"> • Tree density performance standard met. • Shrub cover performance standard met. <p>Tree cover reduced to ≤ 200/Acre in 2017.</p> <p>Shrub cover reduced to <5% in 2017/2018 in accordance with performance standards. Shrub resprouting necessitated additional herbicide treatments in Fall 2019. Shrub cover in Polygon “C” varied from 0.2% to 5.7% (2.9% average) in Fall 2020; target performance standard met. However, additional herbicide treatments are expected to be necessary to maintain shrub cover to within the target performance standard.</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"> • Tree density performance standard met. • Shrub cover performance standard not currently met. <p>Tree cover reduced to ≤ 200/Acre in 2017.</p> <p>Shrub cover reduced to <5% in 2017/2018 in accordance with performance standards. Shrub resprouting necessitated additional herbicide treatments in Fall 2019. Shrub cover in Polygon “D” varied from 12.4% to 22.7% (17.6% average) in Fall 2020 and did not meet the target performance standard. Additional herbicide treatments will be necessary to reduce shrub cover back to within the target performance standard.</p>

Special Condition No. 9, Performance Standards, USACE SAJ-1997-07427 SP-SWA	Status
<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"> • Prescribed fire performance standard met. <p>Prescribed fire implemented in all polygons 2/22/2018; fire regime will continue on 2-3 year cycles. Next prescribed fire planned for 2021.</p>
<p>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.</p>	<ul style="list-style-type: none"> • Active management of mitigation areas performance standard met. <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>
<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.</p>	<ul style="list-style-type: none"> • Annual monitoring performance standard met.
<p>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 http://www.fleppc.org, shall total less than 1 percent.</p>	<ul style="list-style-type: none"> • Category I & II invasive exotic plant species cover performance standard (<1%) met.

Quantitative Monitoring Methodology

Percent vegetation cover was measured in 1 m² quadrats (10-foot intervals) along eight 150-foot transects in November 2020 (Figure 2). The percent coverage for each species 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.

Rooted shrub stem density was monitored within each mitigation polygon using five 1 m² quadrats established at random (Figure 3).

Transect A1 (Polygon A; Hydric Pine Flatwoods Restoration)

**Percent Cover - Transect A1
Fall 2020**

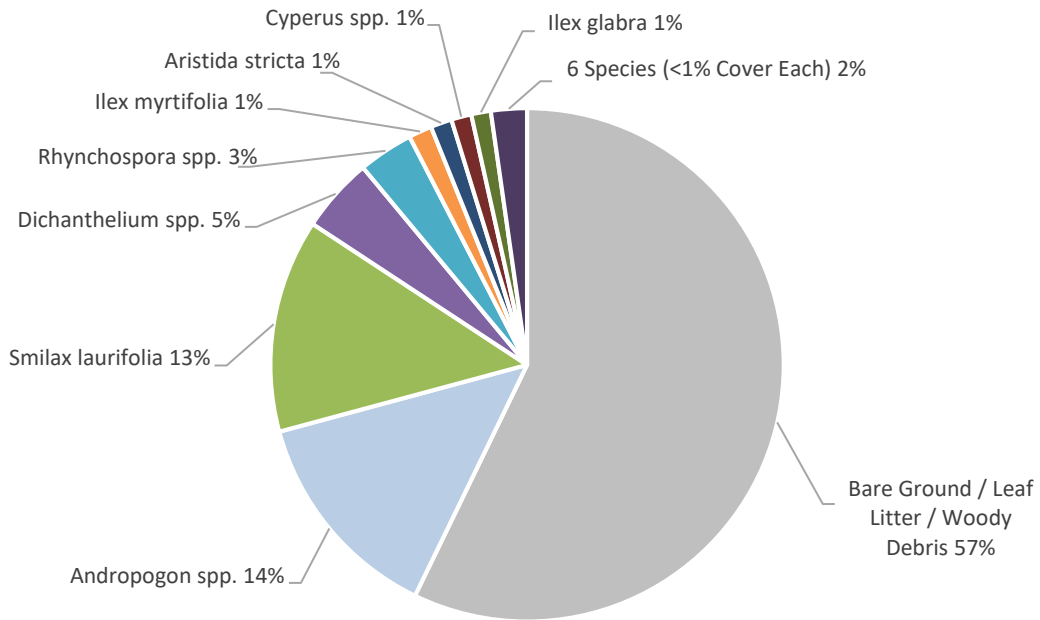


Table 1. Transect A1 (Fall 2020)

Scientific Name	Common Name	Relative Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	13.6
<i>Aristida stricta</i>	Wiregrass	1.3
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	57.2
<i>Cliftonia monophylla</i>	Black titi	0.4
<i>Cyperus spp.</i>	Flatsedge	1.3
<i>Dichanthelium spp.</i>	Witchgrass	4.7
<i>Ilex glabra</i>	Gallberry	1.2
<i>Ilex myrtifolia</i>	Myrtle dahoon	1.5
<i>Lachnanthes caroliniana</i>	Carolina redroot	0.3
<i>Lachnocaulon spp.</i>	Bogbutton	0.1
<i>Liatris spicata</i>	Dense gayfeather	0.1
<i>Rhynchospora plumosa</i>	Plumed beaksedge	2.8
<i>Rhynchospora spp.</i>	Beaksedge	0.7
<i>Smilax laurifolia</i>	Laurel greenbrier	13.4
Unknown	Unknown	0.4
<i>Xyris spp.</i>	Yelloweyed grass	1.0
		100.0

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

Transect A2 (Polygon A; Hydric Pine Flatwoods Restoration)

**Percent Cover - Transect A2
Fall 2020**

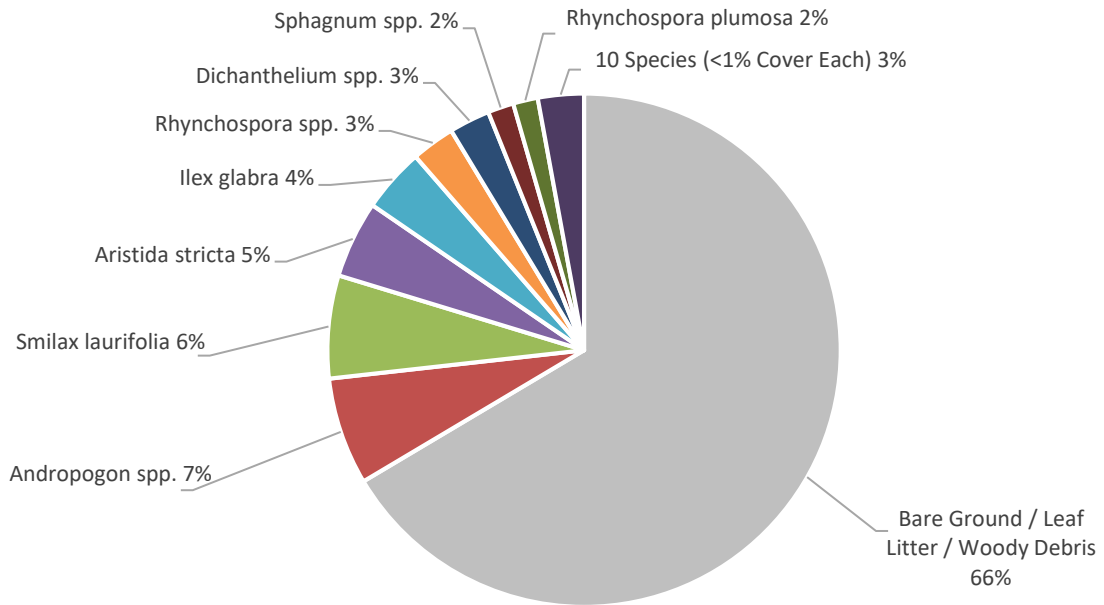


Table 2. Transect A2 (Fall 2020)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	6.8
<i>Aristida stricta</i>	Wiregrass	4.9
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	66.5
<i>Cliftonia monophylla</i>	Black titi	0.7
<i>Dichanthelium spp.</i>	Witchgrass	2.6
<i>Ilex coriacea</i>	Sweet gallberry	0.1
<i>Ilex glabra</i>	Gallberry	4.0
<i>Ilex myrtifolia</i>	Myrtle dahoon	0.1
<i>Liatris spicata</i>	Dense gayfeather	0.1
<i>Lycopodiella spp.</i>	Clubmoss	0.6
<i>Pinus elliotii</i>	Slash pine	0.2
<i>Proserpinaca spp.</i>	Mermaidweed	0.1
<i>Rhynchospora plumosa</i>	Plumed beaksedge	1.6
<i>Rhynchospora spp.</i>	Beaksedge	2.7
<i>Smilax laurifolia</i>	Laurel greenbrier	6.5
<i>Sphagnum spp.</i>	Sphagnum	1.6
Unknown	Unknown	0.8
<i>Viola lanceolata</i>	Bog white violet	0.1
<i>Xyris spp.</i>	Yelloweyed grass	0.1
		100.0

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

Transect B1 (Polygon B; Hydric Pine Flatwoods Restoration)

**Percent Cover - Transect B1
Fall 2020**

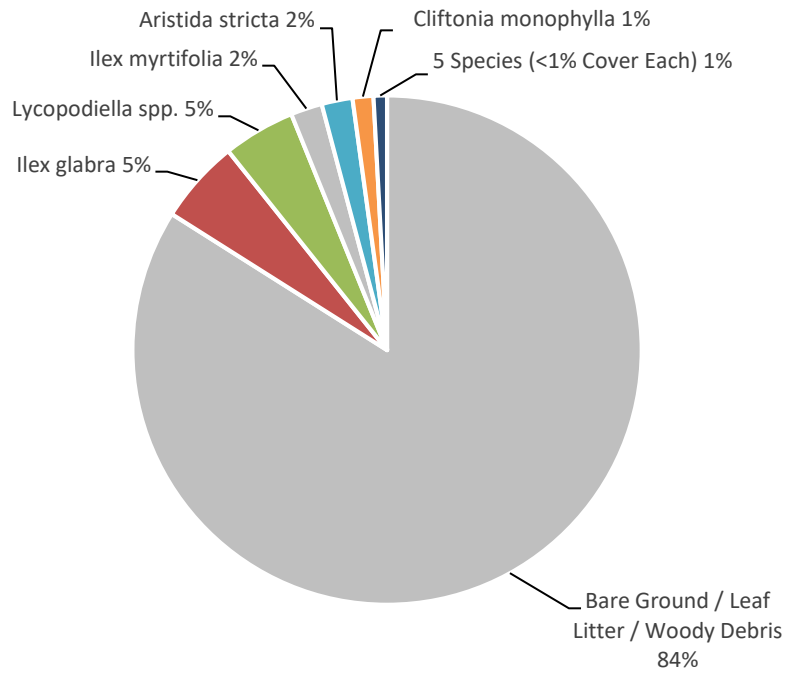


Table 3. Transect B1 (Fall 2020)

Scientific Name	Common Name	Percent Cover Across Transect*
Aristida stricta	Wiregrass	2.0
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	84.0
Cliftonia monophylla	Black titi	1.3
Dichanthelium spp.	Witchgrass	0.1
Ilex glabra	Gallberry	5.3
Ilex myrtifolia	Myrtle dahoon	2.0
Lycopodiella spp.	Clubmoss	4.6
Quercus pumila	Running oak	0.3
Quercus spp.	Oak	0.1
Smilax laurifolia	Laurel greenbrier	0.3
Unknown	Unknown	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)

**Percent Cover - Transect B2
Fall 2020**

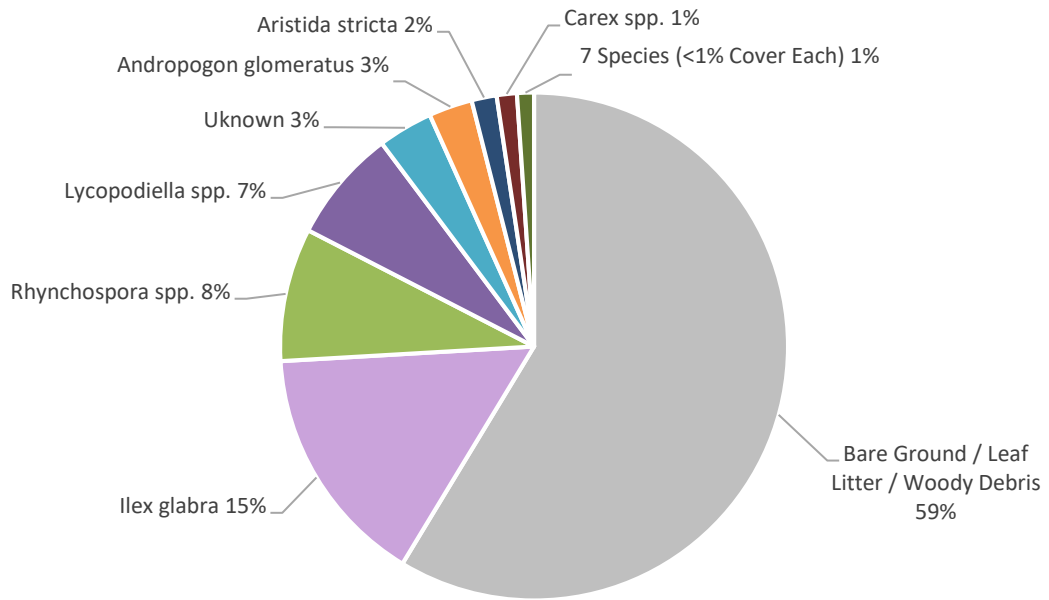


Table 4. Transect B2 (Fall 2020)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon glomeratus</i>	Bushy bluestem	2.8
<i>Aristida stricta</i>	Wiregrass	1.6
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	58.7
<i>Carex spp.</i>	Sedge	1.3
<i>Cliftonia monophylla</i>	Black titi	0.1
<i>Dichanthelium spp.</i>	Witchgrass	0.2
<i>Hypericum spp.</i>	St. John's wort	0.1
<i>Ilex glabra</i>	Gallberry	15.4
<i>Lycopodiella spp.</i>	Clubmoss	7.2
<i>Rhexia spp.</i>	Meadowbeauty	0.1
<i>Rhynchospora plumosa</i>	Plumed beaksedge	5.8
<i>Rhynchospora spp.</i>	Beaksedge	2.6
<i>Serenoa repens</i>	Saw palmetto	0.3
<i>Smilax laurifolia</i>	Laurel Greenbrier	0.3
Unknown	Unknown	3.5
<i>Xyris spp.</i>	Yelloweyed grass	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)

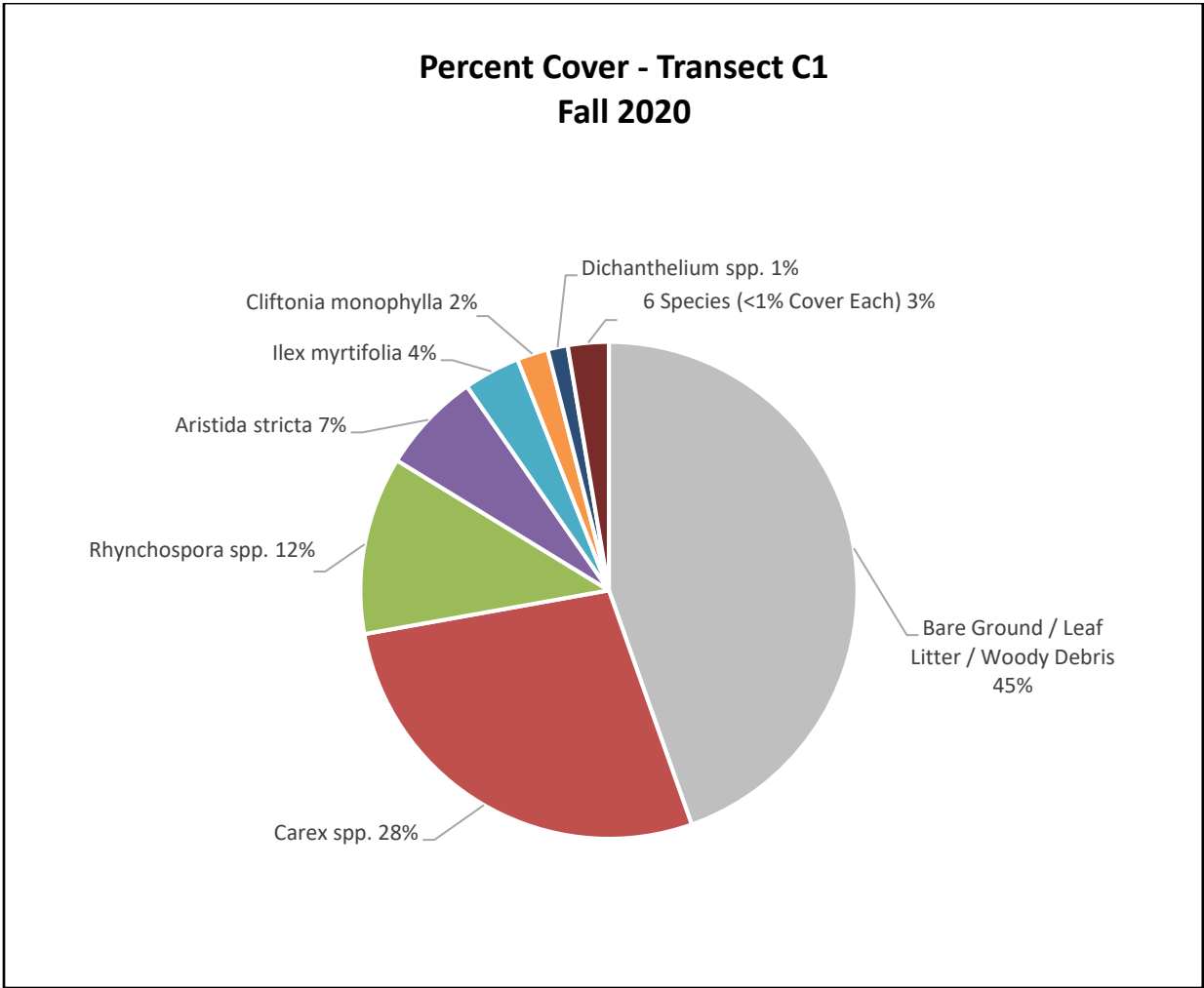


Table 5. Transect C1 (Fall 2020)

Scientific Name	Common Name	Percent Cover Across Transect*
Andropogon glomeratus	Bushy bluestem	0.6
Aristida stricta	Wiregrass	6.6
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	44.6
Carex spp.	Sedge	27.6
Cliftonia monophylla	Black titi	2.0
Dichanthelium spp.	Witchgrass	1.3
Eriocaulon compressum	Flattened pipewort	0.3
Ilex myrtifolia	Myrtle Dahoon	3.7
Panicum spp.	Panicgrass	0.1
Rhynchospora plumosa	Plumed beaksedge	0.6
Rhynchospora spp.	Beaksedge	10.9
Taxodium spp.	Cypress	0.7
Unknown	Unknown	0.3
Xyris spp.	Yelloweyed grass	0.7
		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)

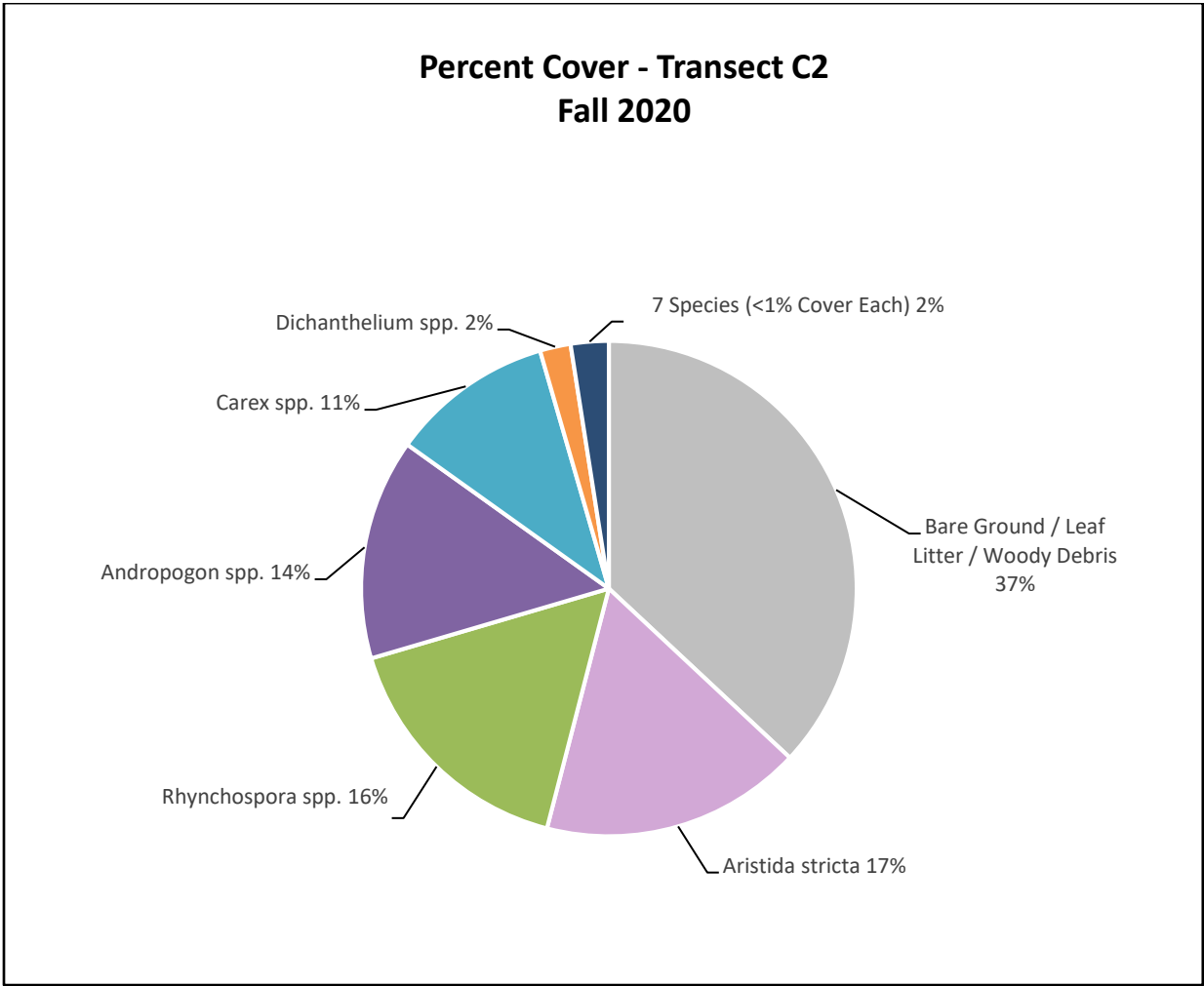


Table 6. Transect C2 (Fall 2020)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon glomeratus</i>	Bushy bluestem	8.8
<i>Andropogon spp.</i>	Bluestem	5.7
<i>Aristida stricta</i>	Wiregrass	17.1
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	37.0
<i>Carex spp.</i>	Sedge	10.6
<i>Cliftonia monophylla</i>	Black titi	0.1
<i>Dichanthelium spp.</i>	Witchgrass	2.0
<i>Ilex glabra</i>	Gallberry	0.1
<i>Ilex myrtifolia</i>	Myrtle dahoon	0.7
<i>Lycopodiella</i>	Clubmoss	0.5
<i>Rhynchospora spp.</i>	Beaksedge	16.4
<i>Saccharum spp.</i>	Plumegrass	0.3
<i>Smilax laurifolia</i>	Laurel Greenbrier	0.5
Unknown	Unknown	0.4
		100.0

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

Transect D1 (Polygon B; Hydric Pine Flatwoods Restoration)

**Percent Cover - Transect D1
Fall 2020**

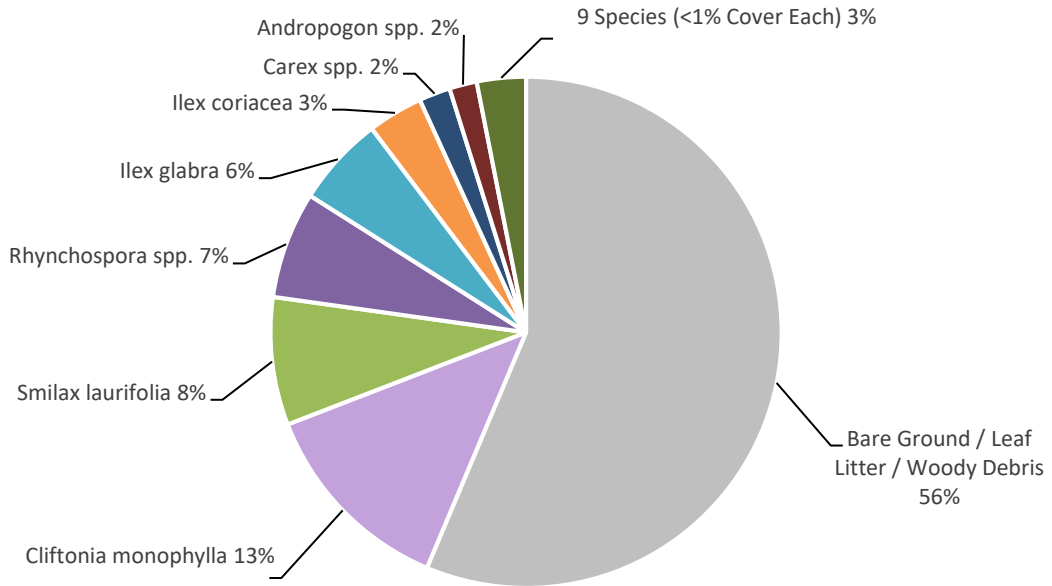


Table 7. Transect D1 (Fall 2020)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon spp.</i>	Bluestem	1.7
<i>Aronia arbutifolia</i>	Red chokeberry	0.1
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	56.3
<i>Carex spp.</i>	Sedge	2.0
<i>Cliftonia monophylla</i>	Black titi	12.8
<i>Dichanthelium spp.</i>	Witchgrass	0.6
<i>Eleocharis spp.</i>	Spikerush	0.4
<i>Gaylussacia spp.</i>	Huckleberry	0.3
<i>Ilex coriacea</i>	Sweet gallberry	3.5
<i>Ilex glabra</i>	Gallberry	5.7
<i>Ilex myrtifolia</i>	Myrtle Dahoon	0.7
<i>Lycopodiella spp.</i>	Clubmoss	0.2
<i>Panicum spp.</i>	Panicgrass	0.1
<i>Rhynchospora plumosa</i>	Plumed beaksedge	6.2
<i>Rhynchospora spp.</i>	Beaksedge	0.5
<i>Smilax laurifolia</i>	Laurel Greenbrier	8.1
Unknown	Unknown	0.5
<i>Xyris spp.</i>	Yelloweyed grass	0.1
		100.0

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

Transect D2 (Polygon B; Hydric Pine Flatwoods Restoration)

**Percent Cover - Transect D2
Fall 2020**

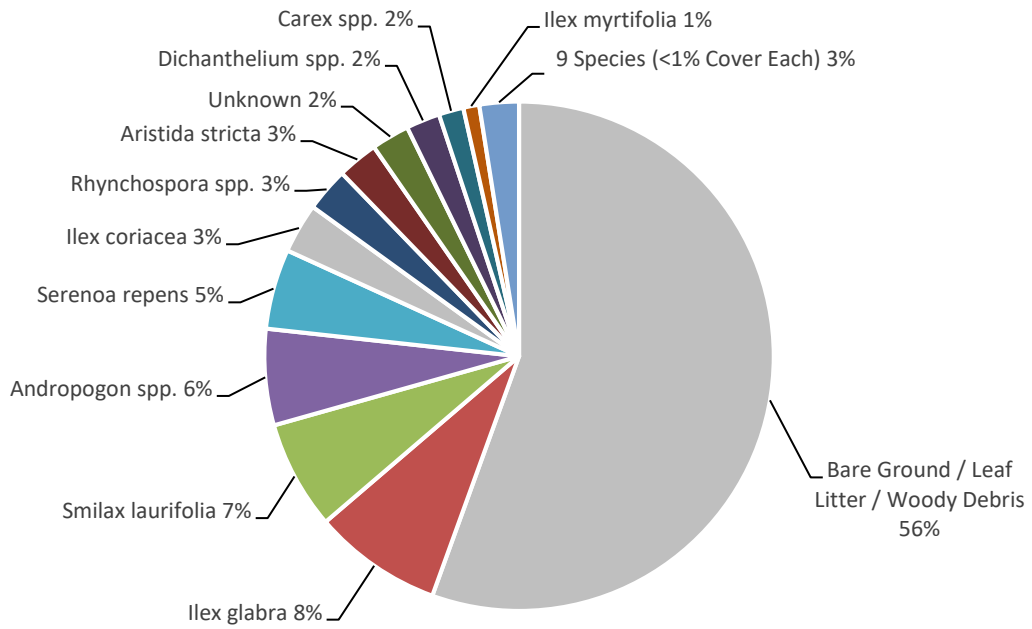


Table 8. Transect D2 (Fall 2019)

Scientific Name	Common Name	Percent Cover Across Transect*
<i>Andropogon glomeratus</i>	Bushy bluestem	0.6
<i>Andropogon spp.</i>	Bluestem	5.5
<i>Aristida stricta</i>	Wiregrass	2.6
Bare Ground / Leaf Litter / Woody Debris	Bare Ground / Leaf Litter / Woody Debris	55.5
<i>Carex spp.</i>	Sedge	1.6
<i>Dichanthelium spp.</i>	Witchgrass	2.1
<i>Eleocharis spp.</i>	Spikerush	0.4
<i>Hypericum spp.</i>	St. John's wort	0.3
<i>Ilex coriacea</i>	Sweet gallberry	3.2
<i>Ilex glabra</i>	Gallberry	8.2
<i>Ilex myrtifolia</i>	Myrtle Dahoon	1.0
<i>Panicum spp.</i>	Panicgrass	0.2
<i>Pinus elliotii</i>	Slash pine	0.6
<i>Pteridium aquilinum</i>	Bracken fern	0.4
<i>Quercus pumila</i>	Running oak	0.1
<i>Rhexia spp.</i>	Meadowbeauty	0.1
<i>Rhynchospora plumosa</i>	Plumed beaksedge	0.3
<i>Rhynchospora spp.</i>	Beaksedge	2.5
<i>Serenoa repens</i>	Saw palmetto	5.1
<i>Smilax laurifolia</i>	Laurel Greenbrier	6.9
Unknown	Unknown	2.4
<i>Vaccinium darrowii</i>	Darrow's blueberry	0.4
<i>Woodwardia virginica</i>	Virginia chain fern	0.1
		100.0

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

Panoramic Monitoring Photos

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 1)



3/8/2018 (Bayport Mitigation, Photo Point 1)



9/18/2018 (Bayport Mitigation, Photo Point 1)



9/26/2019 (Bayport Mitigation, Photo Point 1)



10/30/2020 (Bayport Mitigation, Photo Point 1)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 2)



3/8/2018 (Bayport Mitigation, Photo Point 2)



9/18/2018 (Bayport Mitigation, Photo Point 2)



9/26/2019 (Bayport Mitigation, Photo Point 2)



10/30/2020 (Bayport Mitigation, Photo Point 2)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 3)



3/8/2018 (Bayport Mitigation, Photo Point 3)



9/18/2018 (Bayport Mitigation, Photo Point 3)



9/26/2019 (Bayport Mitigation, Photo Point 3)



10/30/2020 (Bayport Mitigation, Photo Point 3)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 4)



3/8/2018 (Bayport Mitigation, Photo Point 4)



9/18/2018 (Bayport Mitigation, Photo Point 4)



9/26/2019 (Bayport Mitigation, Photo Point 4)



10/30/2020 (Bayport Mitigation, Photo Point 4)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 5)



3/8/2018 (Bayport Mitigation, Photo Point 5)



9/18/2018 (Bayport Mitigation, Photo Point 5)



9/26/2019 (Bayport Mitigation, Photo Point 5)



10/30/2020 (Bayport Mitigation, Photo Point 5)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 6)



3/8/2018 (Bayport Mitigation, Photo Point 6)



9/18/2018 (Bayport Mitigation, Photo Point 6)



9/26/2019 (Bayport Mitigation, Photo Point 6)



10/30/2020 (Bayport Mitigation, Photo Point 6)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 7)



3/8/2018 (Bayport Mitigation, Photo Point 7)



9/18/2018 (Bayport Mitigation, Photo Point 7)



9/26/2019 (Bayport Mitigation, Photo Point 7)



10/30/2020 (Bayport Mitigation, Photo Point 7)

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



8/28/2017 (Bayport Mitigation, Baseline Conditions, Photo Point 8)



3/8/2018 (Bayport Mitigation, Photo Point 8)



9/18/2018 (Bayport Mitigation, Photo Point 8)



9/26/2019 (Bayport Mitigation, Photo Point 8)



10/30/2020 (Bayport Mitigation, Photo Point 8)

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.

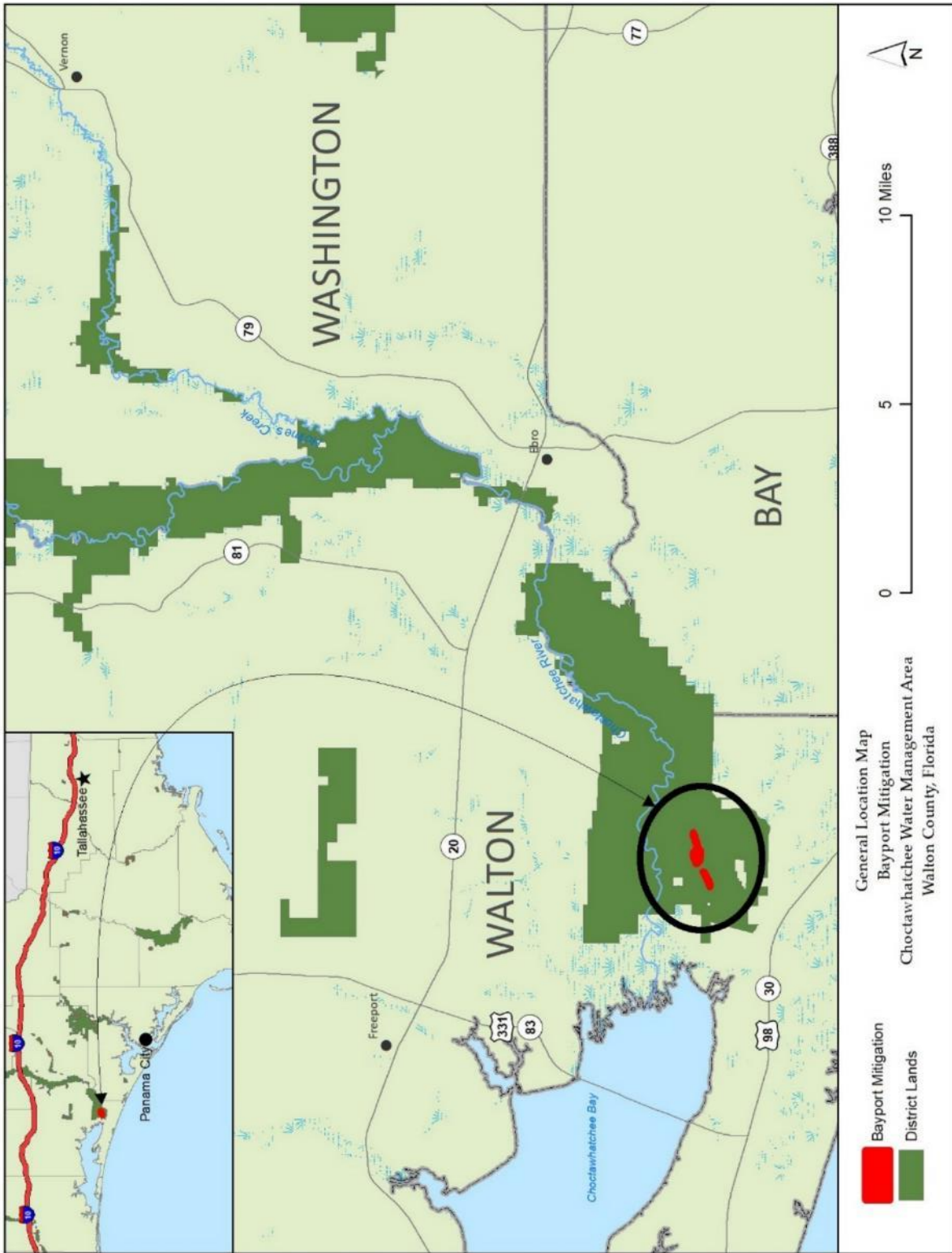


Figure 1. Location Map of Mitigation Area

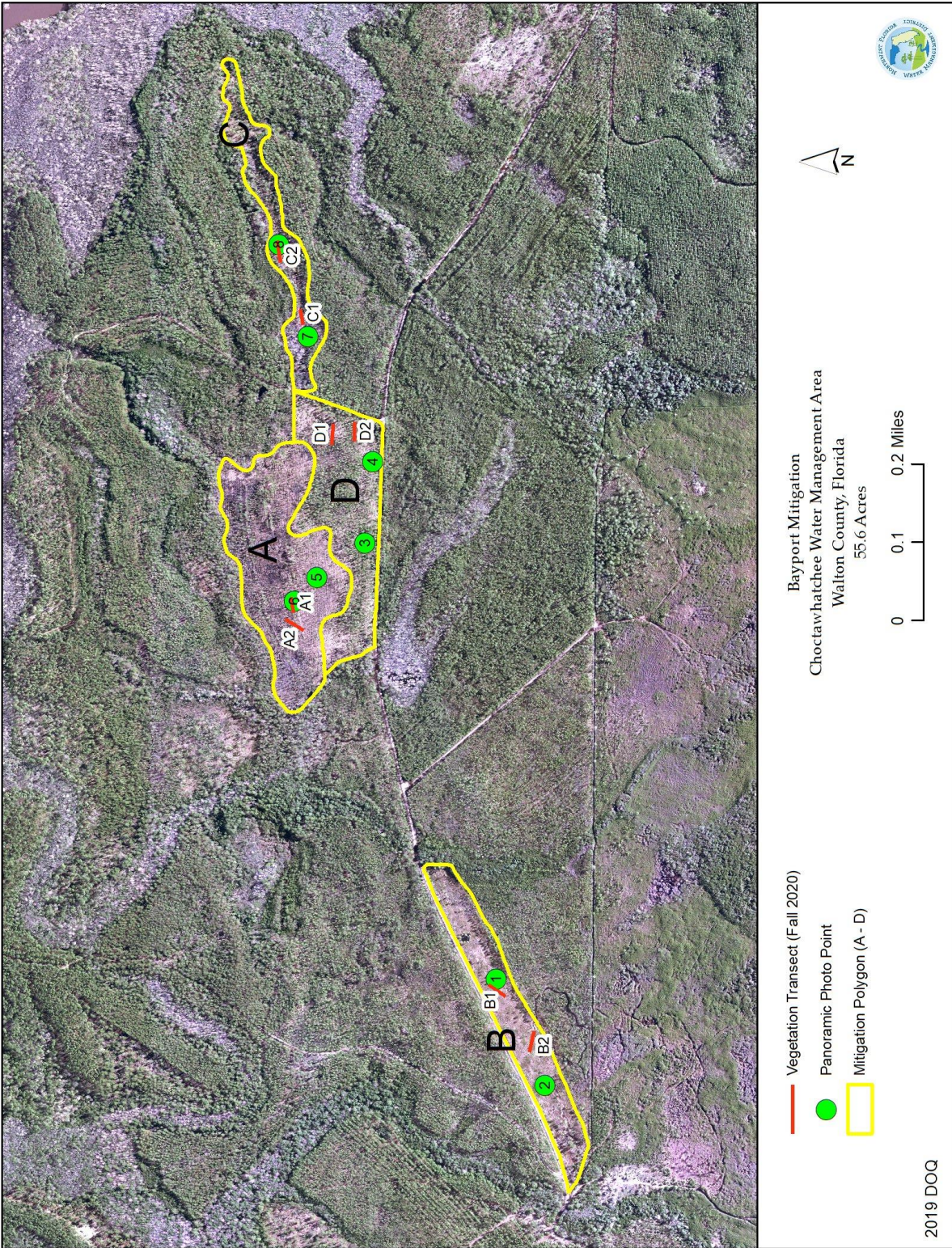


Figure 2. Fall 2020 Vegetation Transects

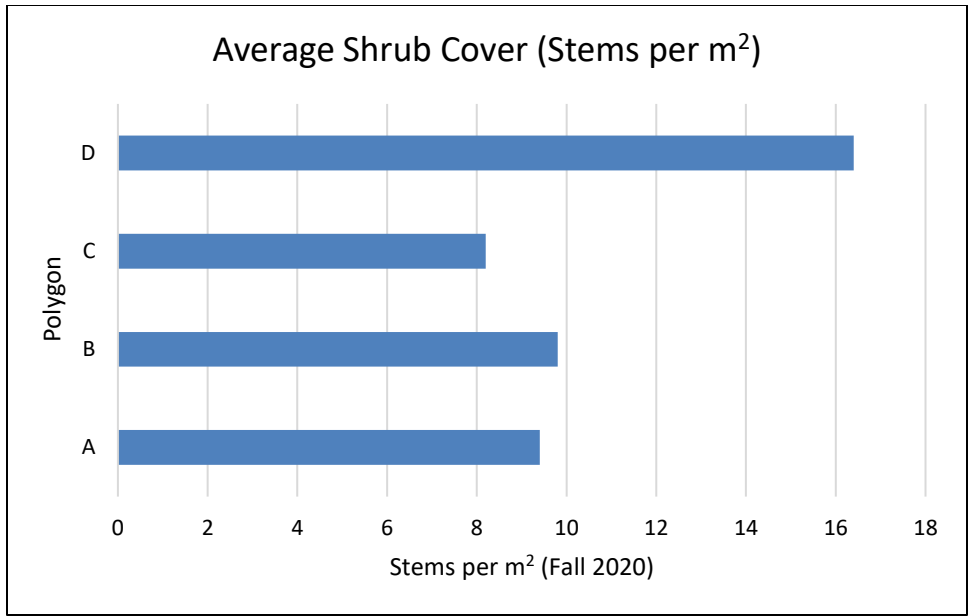


Figure 3. Average Rooted Shrub Stems per Square Meter (Fall 2020)

Table 9. Rooted Shrub Stems per Square Meter (Fall 2020)

Polygon A		Polygon B		Polygon C		Polygon D	
Shrub Quadrat	Shrub Stems per m ²	Shrub Quadrat	Shrub Stems per m ²	Shrub Quadrat	Shrub Stems per m ²	Shrub Quadrat	Shrub Stems per m ²
1	23	1	9	1	0	1	9
2	11	2	3	2	21	2	43
3	7	3	25	3	15	3	24
4	3	4	7	4	0	4	1
5	3	5	5	5	5	5	5
AVG Stems per m ²	9.4	AVG Stems per m ²	9.8	AVG Stems per m ²	8.2	AVG Stems per m ²	16.4