



**Assessment of Listed and Rare Plant
Species at Marjorie Harris Carr
Cross Florida Greenway
Levy, Citrus, Marion,
Putnam Counties, Florida**

Final Report to the
Florida Department of
Environmental Protection

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Cover Photographs:

- top: Spiked crested coralroot (*Hexilectris spicata*) flower (Katy NeSmith)
- center: Tamp vervain (*Glandularia tampensis*) flower (Brenda Herring)
- bottom: Florida spiny-pod (*Matelea floridana*) flower (Katy NeSmith)

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ABSTRACT

A rare plant survey of Marjorie Harris Carr Cross Florida Greenway (MHCCFG) in Levy, Citrus, Marion, and Putnam counties, Florida, was conducted from July 2016 to May 2017 to gather updated information on existing populations and establish baseline data for new populations of federal and state listed rare plants. During peak flowering and fruiting seasons, habitats likely to harbor rare species were searched using meandering transects. A total of 23 rare plant species were found during the survey including twelve state listed endangered species: dwarf spleenwort (*Asplenium pumilum*), Tampa vervain (*Glandularia tampensis*), spiked crested coralroot (*Hexalectris spicata*), Florida spiny-pod (*Matelea floridana*), sandhill spiny-pod (*Matelea pubiflora*), large-leaved grass-of-parnassus (*Parnassia grandifolia*), plume polypody (*Pectuma plumula*), swamp plume polypody (*Pectuma ptilodon*), pinewoods dainties (*Phyllanthus liebmannianus* ssp. *platylepis*), Florida willow (*Salix floridana*), pinkroot (*Spigelia loganioides*), and scrub stylisma (*Stylisma abdita*). Ten state listed threatened plants were found: variable-leaved Indian-plantain (*Arnoglossum diversifolium*), Chapman's sedge (*Carex chapmanii*), garberia (*Garberia heterophylla*), angle pod (*Gonolobus suberosus*), cardinal flower (*Lobelia cardinalis*), blueflower butterwort (*Pinguicula caerulea*), yellow-flowered butterwort (*Pinguicula lutea*), giant orchid (*Pteroglossaspis ecristata*), hooded pitcherplant (*Sarracenia minor*), and Treat's zephyrlily (*Zephyranthes atamasca* var. *treatiae*). One federally listed endangered rare plant was observed: longspurred mint (*Dicerandra cornutissima*). Dwarf spleenwort and Tampa vervain were species newly documented for the MHCCFG. A new population of Chapman's skeletongrass (*Gymnopogon chapmanianus*), tracked by FNAI but not listed, was also documented. Several locations were recorded for five species listed by the state as commercially exploited: Green fly orchid (*Epidendrum conopseum*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis* var. *spectabilis*), needle palm (*Rhapidophyllum hystrix*), and coontie (*Zamia integrifolia* [formerly *Z. pumila*]).

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CONTENTS

ABSTRACT	iii
ACKNOWLEDGMENTS	iii
LIST OF TABLES	1
LIST OF FIGURES	1
LIST OF APPENDICES	2
INTRODUCTION	3
METHODS	3
Target Rare Plant Species	3
Field Surveys	4
Data Management	4
RESULTS and RECOMMENDATIONS	9
Rare Plants	9
incised groove-bur (<i>Agrimonia incisa</i>)	
variable-leaved Indian-plantain (<i>Arnoglossum diversifolium</i>)	
dwarf spleenwort (<i>Asplenium pumilum</i>)	
Chapman's sedge (<i>Carex chapmanii</i>)	
longspurred mint (<i>Dicerandra cornutissima</i>)	
garberia (<i>Garberia heterophylla</i>)	
coastal vervain (<i>Glandularia maritima</i>)	
Tampa vervain (<i>Glandularia tampensis</i>)	
angle pod (<i>Gonolobus suberosus</i>)	
Chapman's skeletongrass (<i>Gymnopogon chapmanianus</i>)	
spiked crested coralroot (<i>Hexalectris spicata</i>)	
pine lily (<i>Lilium catesbaei</i>)	
southern twayblade (<i>Listera australis</i>)	
cardinal flower (<i>Lobelia cardinalis</i>)	
spiny-pod (<i>Matelea floridana</i>)	
sandhill spiny-pod (<i>Matelea pubiflora</i>)	
pygmy pipes (<i>Monotropsis reynoldsiae</i>)	
large-leaved grass-of-parnassus (<i>Parnassia grandifolia</i>)	
plume polypody (<i>Pecluma plumula</i>)	
swamp plume polypody (<i>Pecluma ptilodon</i>)	
pinewoods dainties (<i>Phyllanthus liebmannianus</i> ssp. <i>platylepis</i>)	
blueflower butterwort (<i>Pinguicula caerulea</i>)	
yellow-flowered butterwort (<i>Pinguicula lutea</i>)	
palegreen orchid (<i>Platanthera flava</i>)	
giant orchid (<i>Pteroglossaspis ecristata</i>)	
leafless beaked orchid (<i>Sacoila lanceolata</i>)	
Florida willow (<i>Salix floridana</i>)	
hooded pitcherplant (<i>Sarracenia minor</i>)	
buckthorn (<i>Sideroxylon lycioides</i>)	
pinkroot (<i>Spigelia loganioides</i>)	

scrub stylisma (*Stylisma abdita*)

Treat's zephyrlily (*Zephyranthes atamasca* var. *treatiae*)

REFERENCES	27
APPENDIX A	
APPENDIX B	
APPENDIX C	
APPENDIX D	

LIST OF TABLES

Table 1. Potential rare plant species on MHCCFG.....	6
Table 2. Summary of rare plant occurrences on MHCCFG	11

LIST OF FIGURES

Figure 1. Location map of study area	29
Figure 2. Location map of incised groove-bur (<i>Agrimonia incisa</i>).....	30
Figure 3. Location map of variable-leaved Indian-plantain (<i>Arnoglossum diversifolium</i>)	31
Figure 4. Location map of dwarf spleenwort (<i>Asplenium pumilum</i>).....	32
Figure 5. Location map Chapman's sedge (<i>Carex chapmanii</i>)	33
Figure 6. Location map of longspurred mint (<i>Dicerandra cornutissima</i>).....	34
Figure 7. Location map of garberia (<i>Garberia heterophylla</i>)	35
Figure 8. Location map of coastal vervain (<i>Glandularia maritima</i>).....	36
Figure 9. Location map of Tampa vervain (<i>Glandularia tampensis</i>).....	37
Figure 10. Location map of angle pod (<i>Gonolobus suberosus</i>)	38
Figure 11. Location map of Chapman's skeletongrass (<i>Gymnopogon chapmanianus</i>).....	39
Figure 12. Location map of spiked crested coralroot (<i>Hexalectris spicata</i>)	40
Figure 13. Location map of pine lily (<i>Lilium catesbaei</i>).....	41
Figure 14. Location map of southern twayblade (<i>Listera australis</i>).....	42
Figure 15. Location map of cardinal flower (<i>Lobelia cardinalis</i>).....	43
Figure 16. Location map of Florida spiny-pod (<i>Matelea floridana</i>).....	44
Figure 17. Location map of sandhill spiny-pod (<i>Matelea pubiflora</i>).....	45
Figure 18. Location map of pygmy pipes (<i>Monotropis reynoldsiae</i>).....	46
Figure 19. Location map of large-leaved grass-of-parnassus (<i>Parnassia grandifolia</i>).....	47
Figure 20. Location map of plume polypody (<i>Pecluma plumula</i>)	48
Figure 21. Location map of swamp plume polypody (<i>Pecluma ptilodon</i>).....	49
Figure 22. Location map of pinewoods dainties (<i>Phyllanthus liebmannianus</i> ssp. <i>platylepis</i>)	50
Figure 23. Location map of blueflower butterwort (<i>Pinguicula caerulea</i>)	51
Figure 24. Location map of yellow-flowered butterwort (<i>Pinguicula lutea</i>).....	52
Figure 25. Location map of palegreen orchid (<i>Platanthera flava</i>).....	53
Figure 26. Location map of giant orchid (<i>Pteroglossaspis ecristata</i>).....	54

Figure 27. Location map of leafless beaked orchid (<i>Sacoila lanceolata</i>)	55
Figure 28. Location map of Florida willow (<i>Salix floridana</i>).....	56
Figure 29. Location map of hooded pitcherplant (<i>Sarracenia minor</i>)	57
Figure 30. Location map of buckthorn (<i>Sideroxylon lycioides</i>).....	58
Figure 31. Location map of pinkroot (<i>Spigelia loganioides</i>).....	59
Figure 32. Location map of scrub stylisma (<i>Stylisma abdita</i>).....	60
Figure 33. Location map of Treat’s zephyrlily (<i>Zephyranthes atamasca</i> var. <i>treatiae</i>)	61

LIST OF APPENDICES

Appendix A. Data attributes, definitions, and values for rare plant and animal points
Appendix B. Ranking and legal status definitions
Appendix C. Data attributes, definitions, and values for exotic points
Appendix D. Rare plant descriptions

INTRODUCTION

Marjorie Harris Carr Cross Florida Greenway is a 70,817-acre conservation area that spans the state from the Gulf of Mexico to the St. Johns River. It passes through four counties, Levy, Citrus, Marion, and Putnam, and includes parts of three major river systems: the Withlacoochee, the Ocklawaha, and the St. Johns. The natural communities of the MHCCFG were mapped by the Florida Natural Areas Inventory (FNAI 2008). Although extensively fragmented by canal excavation, dams, locks, bridges, numerous roads, and abandoned agricultural lands, the MHCCFG harbors excellent examples of Florida's rapidly disappearing natural communities including bottomland forest, depression marsh, floodplain swamp, four types of hammocks (hydric, maritime, mesic, and xeric), mesic and wet flatwoods, sandhill, scrub, and upland hardwood forest. These communities provide habitat for a number of FNAI, state, and federally listed plant species.

One objective of this study was to visit known populations of rare plants documented on the MHCCFG prior to 2001 (FGFWFC 1976, Johnson 1988, Knight et al. 1991), during the rare plant surveys of 2002-2004 (Herring and Schultz 2003, Herring 2005), and through incidental observations during natural community mapping (FNAI 2008) and invasive plant surveys (FNAI 2013, FNAI 2014, FNAI 2015, FNAI 2016). Verification of their presence/absence and condition is especially important for the older occurrences collected from 2008 and before. A second objective was to document new populations of known rare plants and occurrences of new rare plant species within the project area by surveying those natural communities with the greatest potential to support listed plants. This data will provide a good updated foundation for future monitoring and management of threatened and endangered plants on the MHCCFG.

METHODS

Target Rare Plant Species

Known occurrences of rare plants and those with good potential of occurring on the MHCCFG were identified using data from previous survey work (Herring and Schultz 2003, Herring 2005), as well as more recent plant distribution information gathered from Wunderlin and Hansen (2011), and the online Florida Plant Atlas (Wunderlin et al. 2017).

A preliminary list of known and potential rare plants was used from a compilation by Herring during rare plant surveys, with Gary Schultz, from 2002 to 2004 (Herring and Schultz 2003, Herring 2005). At that time the county occurrence data was derived from FNAI's database, University of Florida Herbarium records, and Wunderlin and Hansen (2000). This list was reviewed and updated and supplemented with additional species that potentially occur on the MHCCFG based on county records for Citrus, Levy, Marion, and Putnam counties (Wunderlin and Hanson 2011, Wunderlin et al. 2017).

From the search list an order of survey priority was developed based on flowering season and habitat preference. Familiarity with the MHCCFG allowed us to discern high quality plant communities where rare species were most likely to occur. Information on phenology was collected for each of the target species using multiple sources but primarily included data collected by FNAI during previous surveys and Wunderlin and Hansen (2011). Thirty-nine rare plant species (FNAI-tracked, or federal and/or state listed) were known to occur on the

MHCCFG up to the current survey. An additional 67 species were deemed as potentially occurring on site. The final list consisted of 106 plant species and was used to determine best survey dates and habitats (Table 1).

Longspurred mint has a very restricted range globally and the MHCCFG harbors, by far, the largest population. It is the only federally listed plant currently known to occur on the Greenway. A survey that focuses solely on this plant was approved prior to the current rare plant survey and it was decided, with DEP, not to include the mint as a focal species for this survey.

Field Surveys

Maps for survey work were developed from the natural community map (FNAI 2008) and information on rare plant occurrence data compiled from prior FNAI surveys. Field maps showed locations of rare plant occurrences and phenology information. FNAI staff visited many locations of existing records to gather updated information on their condition and searched likely habitats when the target plants were most conspicuous or when reproductive structures necessary for identification were present.

Surveys took place in 2016 in July, August, and October, and in 2017, January, February, March, April, and May. Data were collected on all state threatened and endangered plants found and included location (latitude, longitude), condition of population, phenology, population size, habitat, and threats to long-term viability (data attributes and values given in Appendix A). A few representative locations of state listed commercially exploited plant species were documented. Any incidental sightings of rare animals and invasive exotic plants were also recorded.

Data Management

GPS points and population data were recorded using a Trimble GPS/datalogger and transformed into ArcGIS shapefiles using GPS Pathfinder Office, version 5.3. All data points were edited in ArcMap 10.1 and corrected for consistency. The projection parameters for all shapefiles are as follows:

Projection: Albers
Datum: HPGN
Units: Meters

Parameters

1st standard parallel:	24	0	0.000
2nd standard parallel:	31	30	0.000
central meridian:	-84	0	0.000
latitude of projection's origin:	24	0	0.000
false easting (meters):	400000	0.00000	
false northing (meters):		0.00000	

Four shapefiles are provided with this report:

- **CFG_Rare_Plants_FNAI_2017_v1.shp**
- **CFG_Rare_Animals_FNAI_2017_v1.shp**
- **CFG_InvPlants_FNAI_2017_v1.shp**
- **CFG_RarePlant_FNAI_2017_survey_tracks.shp**

All data for rare plants tracked by FNAI will be entered as Element Occurrences (EOs) into the FNAI Rare Species Conservation database (BIOTICS 5.0).

Natural Community Mapping

An additional project involved natural community mapping for three new additions to MHCCFG. Current natural community/landcover and historical natural communities were mapped in ArcGIS as Esri polygon shapefiles for three properties - McBride, McDowell, and Alford Exchange. The mapping was completed using aerial photography only and involved no field verification.

Three shapefiles are provided for the mapping project:

- **CFG_FNAI_Current_NC_Polygons_2017_Alford_McBride_McDowell.shp**
- **CFG_FNAI_Historic_NC_Polygons_2017_Alford_McBride_McDowell.shp**
- **CFG_FNAI_Current_NC_Polygons_DEPadjusted_plus_McBride_McDowell_2017.shp**
This shapefile combines the 2008 FNAI NC polygon file (that was adjusted by DEP to be congruent with new [at the time] MHCCFG boundaries) with the current mapping of McBride and McDowell natural communities. Alford Exchange could not be merged successfully with the above file because of boundary discrepancies that need to be resolved before merging the two files.

Table 1. Potential rare plant species on Marjorie Harris Carr Cross Florida Greenway. Rank explanations provided in Appendix B.

Scientific Name	Common Name	FNAI Global	FNAI State	Federal Status	State Status	FNAI Tracked	Documented on CFG	Habitat	Survey Season	Citrus	Levy	Marion	Putnam
<i>Adiantum tenerum</i>	brittle maidenhair fern	G5	S3	N	LE	yes	no	limestone hammock	All year	1		1	
<i>Agrimonia incisa</i>	incised groove-bur	G3	S2	N	LT	yes	yes	sandhill	Fall	1		1	
<i>Arnoglossum diversifolium</i>	variable-leaved Indian-plantain	G2	S2	N	LT	yes	yes	hydric hammock	Spring-Summer		1		1
<i>Asclepias curtissii</i>	Curtiss' milkweed	G3	SNR	N	LE	no	no	scrub, scrubby flatwoods	Spring-Fall			1	1
<i>Asplenium erosum</i>	auricled spleenwort	G5	S2	N	LE	yes	no	mesic hammock	All year	1			
<i>Asplenium heterosiliens</i>	Wagner's spleenwort	GNA	S1	N	N	yes	no	hammock, limestone outcrops	All year	1	1	1	
<i>Asplenium plenum</i>	ruffled spleenwort	G1Q	S1	N	N	yes	no	limestone hammock	All year	1			
<i>Asplenium pumilum</i>	dwarf spleenwort	G5	S1	N	LE	yes	no	limestone hammock	All year	1		1	
<i>Asplenium verecundum</i>	modest spleenwort	G1	S1	N	LE	yes	no	limestone hammock	All year	1		1	
<i>Asplenium X curtissii</i>	Curtiss' spleenwort	GNA	S1	N	N	yes	no	hammock, limestone outcrops	All year	1		1	
<i>Balduina atropurpurea</i>	purple honeycomb-head	G2	S1	N	LE	yes	no	bogs	Fall				1
<i>Blechnum occidentale</i>	sinkhole fern	G5	S1	N	LE	yes	no	sinkhole	All year	1			
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	LT	LE	yes	no	scrub	Spring-Summer			1	
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	LT	yes	no	scrub	All year			1	
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	LT	yes	no	flatwoods	Winter-Spring		1		1
<i>Calydorea coelestina</i>	Bartram's ixia	G2G3	S2S3	N	LE	yes	no	flatwoods	Spring				1
<i>Carex chapmanii</i>	Chapman's sedge	G3	S3	N	LT	yes	yes	hydric hammock, bottomland forest	Spring	1	1	1	1
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	LE	yes	yes*??	scrub, sandhill, scrubby flatwoods	Summer-Fall	1		1	1
<i>Cheilanthes microphylla</i>	southern lip fern	G5	S3	N	LE	yes	no	shell middens, limestone barrens	Summer-Fall	1			1
<i>Cleistes divaricata</i>	large rosebud orchid	G4	S1	N	LE	yes	no	wet flatwoods, bog, swamp	Spring-Summer			1	1
<i>Coelorachis tuberculosa</i>	piedmont jointgrass	G3	S3	N	LT	yes	no	marsh, pond margins	Summer-Fall			1	1
<i>Conradina etonia</i>	Etonia rosemary	G1	S1	LE	LE	yes	no	scrub	Summer-Fall				1
<i>Ctenium floridanum</i>	Florida toothache grass	G2	S2	N	LE	yes	no	wet flatwoods	Spring-Fall				1
<i>Dicerandra cornutissima</i>	longspurred mint	G1	S1	LE	LE	yes	yes	scrub, sandhill, xeric hammock, mesic hammock, ruderal	Fall			1	
<i>Digitaria floridana</i>	Florida fingergrass	G1	S1	N	N	yes	no	mesic hammock	Fall			1	
<i>Digitaria gracillima</i>	longleaf fingergrass	G1	S1	N	N	yes	no	scrub, sandhill	Summer-Fall				1
<i>Drosera intermedia</i>	spoon-leaved sundew	G5	S3	N	LT	yes	no	depression marsh, wet flatwoods	Spring			1	1
<i>Epidendrum conopseum</i>	green-fly orchid	G4	SNR	N	CE	no	yes	mesic hammock	Summer-Fall	1	1	1	1
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	LT	LE	yes	no	scrub, sandhill	All year			1	1
<i>Euphorbia commutata</i>	wood spurge	G5	S2	N	LE	yes	no	bottomland forest	All year		1	1	
<i>Forestiera godfreyi</i>	Godfrey's swampprivet	G2	S2	N	LE	yes	no	limestone hammock	Spring		1	1	
<i>Garberia heterophylla</i>	garberia	G3G4	S3S4	N	LT	W	yes	scrub, sandhill, scrubby flatwoods, successional hardwood forest; mesic, xeric hammocks; ruderal	All year	1		1	1
<i>Glandularia maritima</i>	coastal vervain	G3	S3	N	LE	yes	yes	ruderal, coastal pinelands	All year	1	1		
<i>Glandularia tampensis</i>	Tampa vervain	G2	S2	N	LE	yes	no	clearings in moist hammocks	Spring-Fall	1			
<i>Gonolobus suberosus</i> (synonym <i>Matelea gonocarpos</i>)	angle pod	G5	SNR	N	LT	W	yes	bottomland forest, floodplain swamp; hydric, maritime, mesic hammocks; sandhill, ruderal	Spring-Summer	1	1	1	1
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N	yes	yes	scrub, scrubby flatwoods, sandhill	Fall				1
<i>Hartwrightia floridana</i>	Hartwrightia	G2	S2	N	LT	yes	no	wet flatwoods, baygall	Fall			1	1
<i>Hasteola robertorum</i>	Florida hasteola	G1	S1	N	LE	yes	no	hydric hammock	Spring-Summer		1		
<i>Helianthus carnosus</i>	lake-side sunflower	G1G2	S1S2	N	LE	yes	no	wet prairie, flatwoods	Summer-Fall				1
<i>Helianthus debilis</i> ssp. <i>tardiflorus</i>	late flowering beach sunflower	G5T3	S3	N	N	yes	no	coastal dunes	Summer-Fall		1		
<i>Hexalectris spicata</i>	spiked crested coralroot	G5	S3	N	LE	W	yes	maritime hammock	Spring-Summer	1	1	1	
<i>Illicium parviflorum</i>	star anise	G2	S2	N	LE	yes	no	baygall, hydric hammock	All year			1	
<i>Leitneria floridana</i>	corkwood	G3	S3	N	LT	yes	no	freshwater and brackish swamps, sloughs	Spring-Summer		1		
<i>Lilium catesbaei</i>	pine lily	G4	S4	N	LT	W	yes	mesic flatwoods, wet prairie, wet flatwoods, ruderal	Summer-Fall	1		1	
<i>Lindera subcoriacea</i>	bog spicebush	G2G3	S1	N	LE	yes	no	bogs	All year				1
<i>Listera australis</i>	southern twayblade	G4	S3S4	N	LT	W	yes	hydric hammock, bottomland forest	Winter-Spring		1	1	1

Scientific Name	Common Name	FNAI Global	FNAI State	Federal Status	State Status	FNAI Tracked	Documented on CFG	Habitat	Survey Season	Citrus	Levy	Marion	Putnam
<i>Litsea aestivalis</i>	pondspice	G3?	S2	N	LE	yes	no	baygall, hydric hammock, depression marsh	Winter-Spring		1	1	1
<i>Lobelia cardinalis</i>	cardinalflower	G5	SNR	N	LT	W	yes	floodplain swamp	Summer-Fall	1	1	1	1
<i>Lythrum curtissii</i>	Curtiss loosestrife	G1	S1	N	LE	yes	no	swamps, seepage areas, river edges	Summer		1		
<i>Malaxis unifolia</i>	green adder's-mouth orchid	G5	S3	N	LE	yes	no	bottomland forest, mesic hammock	Winter			1	
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	LE	yes	yes	mesic hammock, successional hardwood forest, upland mixed woodland	Summer	1	1	1	
<i>Matelea pubiflora</i>	sandhill spiny-pod	G3G4	S3S4	N	LE	W	yes	sandhill	Spring-Summer	1	1	1	1
<i>Monotropa hypopithys</i>	Pinesap	G5	S1	N	LE	yes	no	scrub, upland hardwood forest	Winter			1	
<i>Monotropis reynoldsiae</i>	pygmy pipes	G1Q	S1	N	LE	yes	yes	xeric hammock	Winter	1		1	
<i>Myriophyllum laxum</i>	piedmont water milfoil	G3	S3	N	N	yes	no	ponds, lakes	Spring-Fall	1			1
<i>Najas filifolia</i>	narrowleaf naiad	G1	S1	N	LT	yes	no	ponds	All year			1	
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	LE	LE	yes	no	scrub	Spring-Summer			1	
<i>Nymphaea jamesoniana</i>	sleeping beauty waterlily	G5	S2S3	N	LE	yes	no	shallow ponds, sloughs	Summer-Fall	1	1		
<i>Orbexilum virgatum</i>	pineland scurfpea	G1	S1	N	LE	yes	no	mesic flatwoods	Summer-Fall				1
<i>Osmunda cinnamomea</i>	cinnamon fern	G5	SNR	N	CE	no	yes	floodplain swamp	Spring-Fall	1	1	1	1
<i>Osmunda regalis</i> var. <i>spectabilis</i>	royal fern	G5	SNR	N	CE	no	yes	floodplain swamp	Spring	1	1	1	1
<i>Parnassia grandifolia</i>	large-leaved grass-of-parnassus	G3	S2	N	LE	yes	yes	hydric hammock, spring-run stream	Winter			1	1
<i>Pavonia spinifex</i>	yellow hibiscus	G4G5	S2	N	N	yes	no	hammocks	Spring-Fall	1			
<i>Pecluma dispersa</i>	widespread polypody	G5	S2	N	LE	yes	yes	open, relatively dry, rocky hammocks; usually on limestone outcrops, occasionally terrestrial or epiphytic	Spring-Fall	1		1	
<i>Pecluma plumula</i>	plume polypody	G5	S2	N	LE	yes	yes	wet hammocks and swamps, epiphytic occasionally on rocks or terrestrial	Spring-Fall	1		1	
<i>Pecluma ptilodon</i>	swamp plume polypody	G5?	S2	N	LE	yes	yes	floodplain forest, moist hammock, swamps, terrestrial or epiphytic on tree bases, occasionally on rocks	All year	1		1	1
<i>Peperomia humilis</i>	terrestrial peperomia	G5	S2	N	LE	yes	no	hydric hammock, swamp	All year	1			
<i>Phyllanthus leibmannianus</i> ssp. <i>platylepis</i>	pinewood dainties	G4T2	S2	N	LE	yes	yes	mesic hammock	Spring		1		
<i>Pinguicula caerulea</i>	blueflower butterwort	G4	S3S4	N	LT	W	yes	flatwoods, pine plantation, bogs	Winter-Spring	1	1	1	1
<i>Pinguicula lutea</i>	yellow butterwort	G4G5	S3	N	LT	W	yes	flatwoods, pine plantation, bogs	Spring	1	1	1	1
<i>Plantago sparsiflora</i>	pineland plantain	G3	S3	N	N	W	yes	wet flatwoods	Spring-Fall				1
<i>Platanthera blephariglottis</i>	white fringed orchid	G4G5	SNR	N	LT	W	no	marsh	Summer-Fall			1	1
<i>Platanthera ciliaris</i>	yellow fringed orchid	G5	SNR	N	LT	no	no	floodplain swamp, marsh, wet flatwoods	Summer	1	1		1
<i>Platanthera cristata</i>	crested fringed orchid	G5	S3S4	N	LT	W	no	wet flatwoods, bog, swamp	Summer-Fall			1	
<i>Platanthera flava</i>	palegreen orchid	G4?	S3S4	N	LT	W	yes	hydric hammock; floodplain swamp	Winter-Summer	1	1	1	1
<i>Platanthera chapmanii</i>	Chapman's fringed orchid	G2	SNR	N	N	yes	no	flatwoods, roadsides, powerlines	Summer			1	
<i>Pogonia ophioglossoides</i>	rose pogonia	G5	S3S4	N	LT	W	no	wet flatwoods, bogs, swamp	Spring	1	1	1	1
<i>Polygala lewtonii</i>	Lewton's polygala	G2G3	S2S3	LE	LE	yes	no	sandhill, scrub	Spring-Summer			1	
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	LT	yes	yes	mesic flatwoods, scrub, sandhill, mesic hammock, ruderal	Summer-Fall	1	1	1	1
<i>Pycnanthemum floridanum</i>	Florida mountain-mint	G3	S3	N	LT	yes	no	sandhill, hammock	Summer		1	1	1
<i>Rhapidophyllum hystrix</i>	needle palm	G4	SNR	N	CE	no	yes	baygall, bottomland and floodplain forest, floodplain swamp; hydric, mesic, xeric hammocks; upland hardwood forest	All year	1	1	1	1
<i>Rhododendron canescens</i>	mountain azalea	G5	SNR	N	CE	no	yes	baygall, floodplain swamp, mesic hammock, wet flatwoods, pine plantation	Spring			1	
<i>Sacoila lanceolata</i>	leafless beaked orchid	G4T4	SNR	N	LT	no	yes	sandhill, wet flatwoods, mesic hammock, ruderal	Spring-Summer	1	1	1	
<i>Salix floridana</i>	Florida willow	G2	S2	N	LE	yes	yes	hydric hammock, bottomland forest	Spring-Fall	1	1	1	1
<i>Sarracenia minor</i>	hooded pitcherplant	G4	S4	N	LT	W	yes	wet flatwoods, wet prairie, mesic flatwoods, depression marsh, pine plantation, ruderal	Spring		1	1	1
<i>Schwalbea americana</i>	chaffseed	G2G3	S1	LE	LE	yes	no	open hammocks, flatwoods	Spring-Summer		1		1
<i>Sideroxylon alachuense</i>	silver buckthorn	G1	S1	N	LE	yes	no	hardwood hammock	Summer			1	

<i>Scientific Name</i>	Common Name	FNAI Global	FNAI State	Federal Status	State Status	FNAI Tracked	Documented on CFG	Habitat	Survey Season	Citrus	Levy	Marion	Putnam
<i>Sideroxylon lycioides</i>	buckthorn	G5	S2	N	LE	yes	yes	bottomland forest, hydric hammock	Spring			1	1
<i>Spigelia loganioides</i>	pinkroot	G2Q	S2	N	LE	yes	yes	bottomland forest, hydric hammock, mesic hammock	Spring	1	1	1	
<i>Spiranthes brevilabris</i>	small ladies'-tresses	G1	S1	N	LE	yes	no	wet flatwoods	Spring-Summer	1	1	1	
<i>Spiranthes floridana</i>	Florida ladies'-tresses	G1	S1	N	N	yes	no	wet flatwoods	Winter-Spring	1	1	1	
<i>Spiranthes laciniata</i>	lace-lip ladies'-tresses	G4G5	S3S4	N	LT	W	no	wet flatwoods, marsh, swamp	Spring	1	1		1
<i>Spiranthes longilabris</i>	long-lip ladies'-tresses	G3	S3	N	LT	W	no	wet flatwoods, marsh, bogs	Winter	1	1		
<i>Spiranthes ovalis</i>	October ladies'-tresses	G5?	S3	N	LE	W	no	swamp	Fall		1	1	
<i>Spiranthes polyantha</i>	green ladies'-tresses	G4	S1S2	N	LE	yes	no	dry calcareous hammocks	Winter-Spring	1			
<i>Spiranthes tuberosa</i>	little ladies'-tresses	G5	S3S4	N	LT	W	no	mesic flatwoods	Summer	1		1	1
<i>Stylisma abdita</i>	scrub stylisma	G3	S3	N	LE	yes	yes	sandhill; scrub	Spring-Summer	1		1	1
<i>Thelypteris reptans</i>	creeping maiden fern	G5	S2	N	LE	yes	no	limestone hammock, mesic hammock	All year	1		1	
<i>Tillandsia utriculata</i>	giant airplant	G5	S3	N	LE	W	no	hammock, swamp	All year	1			1
<i>Tipularia discolor</i>	crane-fly orchid	G4G5	SNR	N	LT	no	no	floodplain swamp	Summer				1
<i>Triphora craigheadii</i>	Craighead's nodding-caps	G1	S1	N	LE	yes	no	hardwood forest	Summer	1			
<i>Triphora trianthophora</i>	three birds orchid	G3G4	S3	N	LT	W	no	hardwood forest	Summer-Fall	1	1	1	
<i>Vicia ocalensis</i>	Ocala vetch	G1	S1	N	LE	yes	no	marsh, spring-run stream	Spring				1
<i>Zamia pumila</i>	coontie	G5	SNR	N	CE	no	yes	mesic and xeric hammock	All year	1	1	1	1
<i>Zephyranthes atamasca var. treatiae</i>	Treat's zephyrlily	G4G5T4	S4	N	LT	W	yes	bottomland forest, hydric hammock, wet flatwoods	Spring				1
<i>Zephyranthes simpsonii</i>	redmargin zephyrlily	G2G3	S2S3	N	LT	yes	no	wet flatwoods	Winter-Spring		1	1	

RESULTS and RECOMMENDATIONS

Rare Plants

Occurrences of 23 rare plant species listed by the state of Florida were found on MHCCFG. Twelve of these are state listed as endangered: dwarf spleenwort (*Asplenium pumilum*), Tampa vervain (*Glandularia tampensis*), spiked crested coralroot (*Hexalectris spicata*), Florida spiny-pod (*Matelea floridana*), sandhill spiny-pod (*Matelea pubiflora*), large-leaved grass-of-parnassus (*Parnassia grandifolia*), plume polypody (*Pecluma plumula*), swamp plume polypody (*Pecluma ptilodon*), pinewoods dainties (*Phyllanthus liebmannianus* ssp. *platylepis*), Florida willow (*Salix floridana*), pinkroot (*Spigelia loganioides*), and scrub stylisma (*Stylisma abdita*). Ten state listed threatened plants were found: variable-leaved Indian-plantain (*Arnoglossum diversifolium*), Chapman's sedge (*Carex chapmanii*), garberia (*Garberia heterophylla*), angle pod (*Gonolobus suberosus*), cardinal flower (*Lobelia cardinalis*), blueflower butterwort (*Pinguicula caerulea*), yellow-flowered butterwort (*Pinguicula lutea*), giant orchid (*Pteroglossaspis ecristata*), hooded pitcherplant (*Sarracenia minor*), and Treat's zephyrlily (*Zephyranthes atamasca* var. *treatiae*). One federally listed endangered rare plant was observed: longspurred mint (*Dicerandra cornutissima*). Several locations were recorded for five species listed by the state as commercially exploited: Green fly orchid (*Epidendrum conopseum*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis* var. *spectabilis*), needle palm (*Rhapidophyllum hystrix*), and coontie (*Zamia integrifolia* [formerly called *Z. pumila*]).

Populations of dwarf spleenwort and Tampa vervain, two species new to the MHCCFG, were found during the current survey. A new population of Chapman's skeletongrass (*Gymnopogon chapmanianus*), tracked by FNAI but not listed, was also documented. In addition, new populations were recorded of angle pod, Florida spiny-pod, sandhill spiny-pod, blueflower butterwort, cardinal flower, cinnamon fern, royal fern, green fly orchid, coontie, giant orchid, plume polypody, and swamp plume poypody. The known population of scrub stylisma was determined to be much larger than originally documented. One 15 foot tall star anise (*Illicium parviflorum*; state listed endangered) was found during an invasive exotic plant survey in January of 2016; this small tree was near a north boundary and we suspect it may be an introduction from a neighboring yard. The anise was not re-verified during the current survey.

A summary of the FNAI tracked and listed rare species documented at MHCCFG during the current survey were summarized (Table 2). Raw data for all GPS points recorded are provided in shapefiles. Complete descriptions, general species management information, and photographs of rare and commercially exploited species are provided in Appendix D.

Although the MHCCFG encompasses much area that has been altered through past engineering feats in relation to building the Cross Florida Ship Canal, as well as other smaller land altering activities from logging, cattle grazing, and excavations, there are many outstanding natural areas remaining. Eleven significant botanical sites have been identified on the MHCCFG, based on current and earlier surveys (Herring and Schultz 2003, Herring 2005, FNAI 2008, FNAI 2015). The botanical significant sites were determined based on rarity of a given species, numbers of listed species, numbers of species in general, lack of disturbance, or with lots of disturbance that warrant attention. The 11 significant botanical sites include: the vicinity of Inglis Canal and west of U.S. 19, Inglis Island, the Diggings scrub & sandhill (from ca. two miles west of SR 200 to

just east of I-75), SE 25th St. (west of Santos), Marshall Swamp Trail, Ocklawaha River floodplain, Eureka Dam, Deep Creek, select areas surrounding the Rodman Reservoir, Caravelle Ranch West, and select areas surrounding the Buckman Lock (Herring and Schultz 2003, Herring 2005).

From the western end of the MHCCFG in Citrus and Levy Counties, bordering the Gulf Coast, maritime hammock and mesic hammock that have exposed limestone provide habitat to several rare plant species. Three listed plants - Tampa vervain, spiked crested coralroot, and angle pod were documented in maritime hammock in the vicinity of the Inglis Canal. Angle pod and pinewoods dainties were observed in mesic hammock on Inglis Island. Most plants were located immediately adjacent to a jeep trail that runs along the southern end of mesic hammock. A few plants were in the trail; we recommend the trail be gated or closed to prevent excessive foot and vehicular traffic.

Further east in Marion County, within a linear east/west strip of the MHCCFG (ca. beginning with the Diggings west of SR 200 east to I-75), seven listed plants occur in sandhill, scrub, and successional hardwoods that surround and include the Diggings, the site of the slated Cross Florida Ship Canal. Scrub and sandhill (less so) harbor the population stronghold of the federal and state listed endangered long-spurred mint. State listed commercially exploited *Garberia* flourish within this region. The highest quality sandhills are found in this region of the MHCCFG and the rare species - giant orchid, long-spurred mint, *Garberia*, scrub stylisma, and sandhill spiny-pod occur here. In the Diggings proper within successional hardwoods, numerous large limestone boulders dot the landscape and are covered with a multitude of fern species forming a fern grotto. State listed plume polypody and swamp plume polypody were found on the limestone boulders that provide an ideal substrate. Sword fern (*Nephrolepis cordifolia*) poses perhaps the biggest threat to the ferns. A new population of Florida spiny-pod was found in this area on top of the old canal berm.

East of I-75, another fern grotto-like habitat occurs on the east side of SE 25th St. (west of Santos) in Marion County within successional hardwood forest. A series of boulders run parallel, north-south, to SE 25th St. Plume polypody, swamp plume polypody, and dwarf spleenwort (new species for the MHCCFG), were occasional, common, and rare, respectively on the limestone boulders. The sword fern is of concern here also.

Continuing northeast, Marshall Swamp Trail and Ocklawaha River floodplain in the Sharpes Ferry area offer high quality hydric hammock and bottomland forest in which several rare plants are known such as angle pod, needle palm, pinkroot, and Treat's zephyrlily. In areas where limestone is exposed, such as Butterbutt Landing, swamp plume polypody occurs.

Eureka Dam, east of the Ocklawaha River, was known to have populations of the rare pigmy pipes and giant orchid. Despite repeated searches neither species has been found in recent years.

In Putnam County, within the Deep Creek site, seven listed and one commercially exploited species were documented within excellent hydric hammock: angle-pod, cardinal flower, Chapman's sedge, Florida spiny pod, Florida willow, large-leaved grass-of-parnassus, needle palm, and variable leaf Indian plantain.

Several areas surrounding the Rodman Reservoir in Putnam County have listed or rare plants. A population of Chapman's skeletongrass and *Garberia* occurs on the scrub island north of the

Rodman Reservoir. Populations of hooded pitcherplants also grow in the vicinity of the Rodman Reservoir and north and south of Rodman Road in mesic flatwoods.

In the Caravelle Ranch West portion of the MHCCFG in Putnam County, five listed species were documented: blue butterwort, Chapman’s skeletongrass, *Garberia*, yellow-flowered butterwort and hooded pitcher plant in mesic flatwoods, wet prairie and scrubby flatwoods.

Several areas surrounding the Buckman Lock had listed plants. Along Rodeheaver Boys Ranch Road and west of the visitor’s center, populations of hooded pitcher plants occur in mesic flatwoods. *Garberia* occurs north and south of the Buckman Lock canal in sandhill and scrub.

This survey serves as a continuation of earlier studies on the MHCCFG and will help to develop a more complete picture of rare plant populations that may expand as management efforts continue to improve habitat. The 2003 and 2005 MHCCFG rare plant surveys provided management recommendations to land managers and changes were implemented that have led to much improved growing conditions for some of the rare plants (Herring and Schultz 2003, Herring 2005). Any single year survey is likely to miss some plant occurrences, particularly for species that can remain dormant for long periods of time, such as high-summer blooming orchids. Continued survey efforts will build the database, creating a useful management tool for effective stewardship of this conservation land.

Table 2. Summary of FNAI tracked or listed rare plant occurrences on Marjorie Harris Carr Cross Florida Greenway taken during the 2016-2017 survey. Negative data points are not included in this summary.

Scientific Name	# Data points	Global Rank	State Rank	Federal	State	FNAI Tracked
<i>Agrimonia incisa</i>	0*	G3	S2	N	E	Yes
<i>Arnoglossum diversifolium</i>	78	G2	S2	N	T	Yes
<i>Asplenium pumilum</i>	3	G5	S1	N	E	Yes
<i>Carex chapmanii</i>	31	G3	S3	N	T	Yes
<i>Centrosema arenicola</i>	0*	G2Q	S2	N	E	Yes
<i>Dicerandra cornutissima</i>	3**	G1	S1	E	E	Yes
<i>Garberia heterophylla</i>	45	G3G4	S3S4	N	T	No
<i>Glandularia maritima</i>	0*	G3	S3	N	E	Yes
<i>Glandularia tampensis</i>	15	G2	S2	N	E	Yes
<i>Gonolobus suberosus</i>	31	G5	SNR	N	T	No
<i>Gymnopogon chapmanianus</i>	24	G3	S3	N	N	Yes
<i>Hexalectris spicata</i>	1	G5	S3	N	E	No
<i>Lilium catesbaei</i>	0*	G4	S4	N	T	No
<i>Lobelia cardinalis</i>	3	G5	SNR	N	T	No
<i>Matelea floridana</i>	7	G2	S2	N	E	Yes
<i>Matelea pubiflora</i>	13	G3G4	S3S4	N	E	No
<i>Matelea</i> sp. (<i>floridana</i> or <i>Gonolobus</i> s.)	17	ZZ	ZZ	N	E or T	
<i>Monotropis reynoldsiae</i>	0*	G1Q	S1	N	E	Yes
<i>Parnassia grandifolia</i>	23	G3	S2	N	E	Yes
<i>Pecluma plumula</i>	13	G5	S2	N	E	Yes
<i>Pecluma ptilodon</i>	25	G5?	S2	N	E	Yes
<i>Phyllanthus liebmannianus</i> ssp. <i>platylepis</i>	14	G4T2	S2	N	E	Yes
<i>Pinguicula caerulea</i>	7	G4	S3S4	N	T	No

Scientific Name	# Data points	Global Rank	State Rank	Federal	State	FNAI Tracked
<i>Pinguicula lutea</i>	1	G4G5	S3	N	T	No
<i>Platanthera sp.</i>	3	ZZ	ZZ	N	E,T,orN	
<i>Pteroglossaspis ecristata</i>	10	G2G3	S2	N	T	Yes
<i>Sacoila lanceolata</i>	0*	ZZ	ZZ	N	T	No
<i>Salix floridana</i>	6	G2	S2	N	E	Yes
<i>Sarracenia minor</i>	51	G4	S4	N	T	No
<i>Sideroxylon lycioides</i>	0*	G5	S2	N	E	Yes
<i>Spigelia loganioides</i>	71	G2Q	S2	N	E	Yes
<i>Stylisma abdita</i>	46	G3	S3	N	E	Yes
<i>Zephyranthes atamasca</i> var. <i>treatiae</i>	17	G4G5T4	S4	N	T	No

*known from prior surveys; searched for in current survey and not found

**not a priority for this survey; more in depth survey later in year

The following species were either located at the study area or are considered to be important focal species that have the potential to occur there. A summary of occurrences and threats are given for each species. See Appendix D for photographs and additional descriptions of each species. Commercially exploited species are not listed here, but are included in Appendix D.

Incised groove-bur (*Agrimonia incisa*) - State listed Endangered

In 1975, incised groove-bur was found between SR 200 and I-75 in Marion County during the Cross Florida Barge Canal Study (FGFWFC 1976). GPS coordinates were followed from location information provided on a Herbarium voucher collected during the early survey. Although the area was searched thoroughly during the current survey, no individuals were found.

The continued restoration of the sandhill community with prescribed fire is beneficial if there are any pockets of these plants remaining in the area. Given the incised groove-bur was documented 42 years ago, location accuracy is also a concern.

Variable-leaved Indian-plantain (*Arnoglossum diversifolium*) – State listed Threatened

Variable-leaved Indian-plantain is found in floodplain forests, floodplain swamps, bottomland forests, hydric hammocks, and along streams and rivers. Only one occurrence is known on the MHCCFG, in the little disturbed and high quality hydric hammock in the Deep Creek area in Putnam County. It is found in dense forest shade under Atlantic white cedar (*Chamaecyparis thyoides*), cabbage palm (*Sabal palmetto*) and tuliptree (*Liriodendron tulipifera*) with a variety of shrub and herb species, including the listed species Florida willow (*Salix floridana*), Chapman's sedge (*Carex chapmanii*), and large-leaved grass of parnassus (*Parnassia grandifolia*). Other species growing in association with variable-leaved Indian-plantain include greendragon (*Arisaema dracontium*), joepyeweed (*Eupatorium fistulosum*), and green arrow arum (*Peltandra virginica*).

Management needs for this site include limiting access to maintain quality of site, protecting upstream creek and floodplain from disturbances, and monitoring populations for invasive species entry such as feral hog (*Sus scrofa*) and taro (*Colocasia esculenta*).

Dwarf spleenwort (*Asplenium pumilum*) - State listed Endangered

Dwarf spleenwort were documented for the first time during the 2016-2017 survey. These ferns occur in mesic hammocks and successional hardwood forests. Only one occurrence is known on the MHCCFG, on the east side of SE 25th St. (west of Santos) in Marion County within successional hardwoods. Plants were growing on large limestone boulders predominantly with other fern species thus, earning the name “fern grotto”. Among the fern flora growing with dwarf spleenwort were the listed species, plume polypody (*Pecluma plumula*) and swamp plume polypody (*Pecluma ptilodon*). Numerous occurrences of FLEPPC listed invasive fern species were noted including Japanese climbing fern (*Lygodium japonicum*), sword fern (*Nephrolepis cordifolia*), and Chinese brake fern (*Pteris vittata*) on some of the limestone boulders.

Management considerations include avoiding any disturbance to the limestone rocks, hand-pulling the numerous invasives species, and discouraging littering.

Chapman's sedge (*Carex chapmanii*) - State listed Threatened

Chapman's sedge is found in hydric hammock and floodplain forest; usually on wooded stream banks and in river floodplains. Only one occurrence of the sedge is known on the MHCCFG, in the high quality hydric hammock in the Deep Creek floodplain in Putnam County. It is found in dense forest shade under Atlantic white cedar (*Chamaecyparis thyoides*), cabbage palm (*Sabal palmetto*) and tuliptree (*Liriodendron tulipifera*) with a variety of shrub and herb species, including the listed species Florida willow (*Salix floridana*), variable-leaved Indian-plantain (*Arnoglossum diversifolium*), and large-leaved grass of parnassus (*Parnassia grandifolia*). Other species growing in association with Chapman's sedge include greendragon (*Arisaema dracontium*), joepyeweed (*Eupatorium fistulosum*), and green arrow arum (*Peltandra virginica*).

Management needs for this site include limiting access to maintain quality of the site and protecting upstream creek and floodplain from disturbances.

Longspurred mint (*Dicerandra cornutissima*) - Federally Endangered, State Endangered

Longspurred mint is found in sandhill and yellow sand scrub and is known only from Marion and Sumter counties. Occurrences are known on the MHCCFG, in a small area between Interstate-75 and SR 200 in scrub and sandhill. The MHCCFG provides critical habitat for this species and contains a significant portion of the known plants. A few known associates observed with longspurred mint include longleaf pine (*Pinus palustris*), sand pine (*Pinus clausa*), turkey oak (*Quercus laevis*), sand live oak (*Quercus geminata*),

myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), saw palmetto (*Serenoa repens*), scrub palmetto (*Sabal etonia*), and a lichen (*Cladina evansii*).

Longspurred mint was not a high priority target species during the current survey; a more thorough survey, concentrating exclusively on the mint is scheduled for summer and fall of 2017.

While it is not known how the mint responds to fire, it does appear to favor open areas as evident from its proliferation along roadsides. Other management needs are to control exotic plants (especially natal grass and cogon grass) and limit off road activity such as foot, horse, or vehicular traffic.

Garberia (*Garberia heterophylla*) - State listed Threatened

This is the only species of *Garberia* in Florida. *Garberia* is found in sandhill, scrub, and xeric hammock and is a Florida endemic known from the north and central peninsula. FNAI does not track this species as it is considered to be too common. Numerous, and fairly widespread occurrences are known on the MHCCFG. It is sometimes abundant in scrub and sandhill. A few known associate plant and lichen species observed with *Garberia* include longleaf pine (*Pinus palustris*), sand pine (*Pinus clausa*), turkey oak (*Quercus laevis*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), saw palmetto (*Serenoa repens*), scrub palmetto (*Sabal etonia*), and a lichen (*Cladina evansii*).

Garberia is moderately tolerant of shade and can persist in xeric hammocks. However, plants also respond well to fire and will resprout. Many populations would benefit from increased fire in the understory to control oaks in both sandhill and scrub.

Tampa vervain (*Glandularia tampensis*) - State listed Endangered

Tampa vervain is a new species, and a Florida endemic, confirmed for MHCCFG during the 2016-2017 survey. Previous surveys documented coastal vervain (*G. maritima*) in the same vicinity. The earlier records were resurveyed and no plants were found at three of the four known locations. The fourth location, on the north side of the Inglis Canal, was reexamined and discovered to be a healthy population of Tampa vervain. We now suspect that the early records may have been Tampa vervain and not coastal vervain.

These herbs occur in openings of moist hammocks. At the MHCCFG, Tampa vervain occurs both north and south of the former Cross Florida Barge Canal in Citrus County along the ruderal edge of mesic and maritime hammock. Plant associates observed growing with Tampa vervain north of the canal along the ruderal edge of maritime hammock include live oak (*Quercus virginiana*), red cedar (*Juniper virginiana*), cabbage palm (*Sabal palmetto*), yaupon (*Ilex vomitoria*), American beautyberry (*Callicarpa americana*), and dogfennel (*Eupatorium capillifolium*). South of the canal, Tampa vervain was growing on the ruderal edge of mesic hammock in a thick bramble of

muscadine (*Vitis rotundifolia*) and sawtooth blackberry (*Rubus pensilvanicus*) with American beautyberry and the FLEPPC listed species lantana (*Lantana camara*).

Management needs for Tampa vervain include monitoring for and hand pulling exotic species that pose a threat to these plants. Avoid utilizing heavy equipment (mowers, vehicles, ATV's, etc.) along road edges where Tampa vervain is known to occur.

Angle pod (*Gonolobus suberosus*) - State listed Threatened

Angle pod is typically found in rich hydric hammocks, upland hardwood forests, and bottomland forests, often where limestone is near the surface. At MHCCFG, angle pod vines, were seen both in flower and in fruit in several locations in hydric, mesic, and maritime hammocks, bottomland forests, and in sandhill, upland hardwood forests and upland mixed woodlands. This is a widespread species with numerous occurrences on the MHCCFG. A new county record of angle pod was documented near the west end of the Inglis Lock Canal in Citrus County. This population occurs along the ruderal edge of maritime hammock with live oak (*Quercus virginiana*), red cedar (*Juniper virginiana*), cabbage palm (*Sabal palmetto*), yaupon (*Ilex vomitoria*), and American beautyberry (*Callicarpa americana*).

There were no known easy ways in which to distinguish angle pod from the very similar Florida spiny-pod vegetatively, which is why they were classified as *Matelea* species; there are possibly more angle pod occurrences than were documented. Late during the current survey we learned that *Gonolobus* can be distinguished from *Matelea floridana* by having leaves with an odor described by some as burnt popcorn. This was confirmed by examining known populations of both species; the Florida spiny-pod had no smell, while the angle pod did have the distinctive smell, we agreed, of burnt popcorn. This information came too late to resolve all the previously re-visited *Matelea* sp. locations. FNAI does not track this species as it is considered too common.

Plants respond well to fire. An exemplary display of flowering was observed following recent prescribed fire on Inglis Island within mesic hammock. Angle pod prefers shaded habitats but requires openings with sunlight in order to flower. Ecotones to hardwood hammocks should be kept open with fire, and hammocks should be protected from canopy disturbance and rooting by feral hogs. Since reproductive individuals are more likely to be found along trails where they may receive more sunlight, care should be taken while maintaining vehicle and foot trails to avoid damage to these plants. Exotic plants are a potential threat, particularly the similar looking skunkvine (*Paederia foetida*), which can occur with this species. Limiting off road activity such as foot, horse, and vehicular traffic to designated trails would benefit this species.

Chapman's skeletongrass (*Gymnopogon chapmanianus*) – FNAI tracked, not listed

Chapman's skeletongrass occurs in dry, sandy flatwoods, dry prairie, and scrub. At MHCCFG, this plant was observed in scrub and in transitional ecotones to scrubby flatwoods in the northeastern portions of the Greenway in Putnam County. Previously

only one occurrence was known to occur on the MHCCFG (north of the Rodman Reservoir and south of the confluence with Deep Creek in a scrub community). Here, Chapman's skeletongrass grows in a disturbed open area in otherwise densely vegetated scrub. The site is frequented by hunters and foot traffic. The plants were growing in deep, white sand in both full sun and underneath shrubs of fetterbush (*Lyonia lucida*) and myrtle oak (*Quercus myrtifolia*). Other vegetation associates observed were Indian pipes (*Monotropa uniflora*), the lichens-*Cladina evansii*, *Cladina subtenuis*, and *Cladonia leporina* as well as the listed plant, Garberia (*Garberia heterophylla*).

During the 2016-2017 survey, a new occurrence of Chapman's skeletongrass was documented north of the known occurrence and east of Sweetwater Creek in a sandy edge of scrubby flatwoods that bordered baygall. Associated with the Chapman's skeletongrass at the new location were sand pine (*Pinus clausa*), loblolly pine (*Pinus taeda*), loblolly bay (*Gordonia lasianthes*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), and fetterbush. A white, sandy footpath provides access to the plants and the openings they require.

Management needs for these sites include maintaining natural fire intervals in sandhills and flatwoods, and limiting access by closing the trail to vehicular traffic. Since the earlier rare plant surveys were completed, the land managers have closed off the road to the Chapman's skeletongrass (north of the Rodman Dam) and the population is faring well.

Spiked crested coralroot (*Hexalectris spicata*) - State listed Endangered

Spiked crested coralroot occurs in dry upland hardwood forests and mesic or maritime hammocks with a well-developed duff layer, often with limestone outcropping near the surface. They are often found in the vicinity of red cedar (*Juniperus virginiana*), pines (*Pinus* spp.), or oaks (*Quercus* spp.). At MHCCFG, plants were seen in flower and fruit along a recreation trail bordering maritime hammock south of the Inglis Canal in the western portion of the property in Citrus County. This site is characterized by its exposed limestone and numerous limestone-loving plants (calciphiles). Associated plants observed with spiked crested coralroot include red cedar, live oak (*Quercus virginiana*), soapberry (*Sapindus marginatus*), cabbage palm (*Sabal palmetto*), southern magnolia (*Magnolia grandiflora*), slash pine (*Pinus elliotii*), pignut hickory (*Carya glabra*), small flower mock buckthorn (*Sageretia minutiflora*), red mulberry (*Morus rubra*), wax myrtle (*Myrica cerifera*), saltbush (*Baccharis halimifolia*), yaupon holly (*Ilex vomitoria*), rouge plant (*Rivina humilis*), Carolina wild petunia (*Ruellia caroliniensis*), and wild coffee (*Psychotria nervosa*). FNAI does not track crested coralroot.

Management needs for this species include keeping foot and vehicle traffic from driving off road or parking, monitoring the site for exotics species, and protecting the plants from fire since they require accumulation of leaf litter.

Pine lily (*Lilium catesbaei*) - State listed Threatened

Pine lilies are found in open pine flatwoods and wet prairie and are often observed along grassy road edges. No pine lilies were found at MHCCFG during the 2016-2017 survey, but five populations were documented during previous surveys in 2003, 2004, and 2007 within mesic and wet flatwoods and wet prairie in Putnam County. Pine lilies have been documented previously at the following sites along wet road edges of mesic flatwoods: two populations were known to occur along the south side of CR 310, a third population was documented along the south side of Rodman Rd, and a fourth occurrence was noted along the south side of Rodeheaver Boys Ranch Rd. The dominant species observed growing with the roadside pine lilies were longleaf pine (*Pinus palustris*), wax myrtle (*Myrica cerifera*), saw palmetto (*Serenoa repens*), meadowbeauty (*Rhexia mariana*), and pineland plantain (*Plantago sparsiflora*). A population of hooded pitcher plants (*Sarracenia minor*) was recorded previously close to the Rodman Rd. pine lily population. The fifth population was observed in the northwestern portion of Caravelle Ranch within wet prairie/wet flatwoods.

Both the roadside habitats of mesic and wet flatwoods and wet prairie have been affected by historical land management practices. Roadside mowing of pine lily communities is encouraged, but only after fruits have set and dispersed and only under dryer conditions to avoid saturated ground and adverse impacts on the soil and vegetation. Continued prescribed fire in flatwoods/wet prairie and roadsides every 2-3 years should help maintain the open, grassy habitat preferred by the lilies. These natural communities have had lots of disturbance as evident from the numerous old stumps, old logging roads, fire suppression, cattle grazing, and wild hog digging. Removal of the wild hogs, reintroduction of prescribed fire, and restoration of the hydrology is of the utmost importance in wet flatwoods/wet prairie sites to not only protect the known rare plants, but to encourage the establishment of new ones.

Southern twayblade (*Listera australis*) - State listed Threatened

Southern twayblade was documented on the MHCCFG in hydric hammock in 2015, but not during the 2016-2017 survey. These small, diminutive orchids occur in low moist woodlands, ravines, banks of streams, and hydric hammocks. A single plant was documented north of CR 316, east of the Ocklawaha River in Marion County and was growing with bald cypress (*Taxodium distichum*), loblolly pine (*Pinus taeda*), swamp laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), cabbage palm (*Sabal palmetto*), and cinnamon fern (*Osmunda cinnamomea*).

Management needs for southern twayblade include protection from collection and habitat loss.

Cardinal flower (*Lobelia cardinalis*) - State listed Threatened

Cardinal flower occurs in streambanks, hydric hammocks, and swamps, often in standing water. Cardinal flower had been documented during earlier surveys in the floodplain

bordering the St. Johns River. During the 2016-2017 survey, a new occurrence of cardinal flower was documented at MHCCFG, in hydric hammock along Deep Creek in Putnam County. Associated plant species occurring with cardinal flower include Atlantic white cedar (*Chamaecyparis thyoides*), cabbage palm (*Sabal palmetto*), red maple (*Acer rubrum*), dahoon (*Ilex cassine*), and Virginia chain fern (*Woodwardia virginica*).

Management needs for cardinal flower include limiting access to maintain quality of site and protecting upstream creek and floodplain from disturbances. Showy flowers may encourage poaching

Florida spiny-pod (*Matelea floridana*) - State listed Endangered

Florida spiny-pod occurs in sandhill, upland pine and dry hammocks. Florida spiny-pod was found occasionally throughout MHCCFG in oak/pine dominated hammocks (successional hardwoods). See *Gonolobus suberosus* account for new identification information. Two new Florida spiny-pod occurrences were documented in Marion County during the 2016-2017 survey. One was found on the east side of SE 25th St. (west of Santos) within a sink area. Many FLEPPC listed species were noted in the vicinity of the Florida spiny-pod including mimosa (*Albizia julibrissin*) and a large patch of air-potato (*Dioscorea bulbifera*). The sink historically had been a source of trash dumping and appeared to be where the invasive species are originating. The second new population was found west of SR 200 and north of Halpata Tastanaki Preserve in the diggings. Plants, exhibiting an admirable display of flowers, were growing on the top and slope of the south berm of the diggings with loblolly pine (*Pinus taeda*), cabbage palm (*Sabal palmetto*), and wax myrtle (*Myrica cerifera*).

Management of this species in pine-dominated communities should focus on maintaining natural fire return intervals, generally 2-3 years, but allowing for small inclusions of young hardwoods. Since reproductive individuals are more likely to be found along trails where they may receive more sunlight, care should be taken while maintaining vehicle and foot trails to avoid damage to these plants. Control nearby exotic pest plant populations and discourage trash dumping.

Sandhill spiny-pod (*Matelea pubiflora*) - State listed Endangered

Unlike Angle pod (*Gonolobus suberosus*) and Florida spiny-pod (*Matelea floridana*), sandhill spiny-pod is unique in its slender, prostrate habit and it occurs in sandhill and scrub. Flowering and fruiting plants were found on the MHCCFG in recently burned sandhill north and south of the diggings area and west of I-75 and also west of the Santos area, in Marion County. Associate species observed include longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), sand live oak (*Quercus geminata*), saw palmetto (*Serenoa repens*), and wiregrass (*Aristida stricta*). FNAI does not track this species.

Management of this species should focus on maintaining natural fire return intervals and avoiding soil disturbance. Plants respond well to fire. Several recently burned areas within the diggings had many plants vigorously flowering. Eradicate nearby exotic plant

populations and limit off road activity such as foot, horse, or vehicular traffic to designated trails.

Pygmy pipes (*Monotropsis reynoldsiae*) - State listed Endangered

Pygmy pipes, endemic to central Florida, are found in upland mixed forest, mesic and xeric hammock, and scrub. Pygmy pipes were last documented at MHCCFG, in xeric hammock in 2003. Only one occurrence is currently known to have occurred on the MHCCFG, east of the Eureka Dam and Ocklawaha River in Marion County. Repeated surveys from 2015-2017, have failed to locate the pygmy pipes. This site is disturbed by an old sand borrow pit that was formerly used for storage of road material. During the 2003 documentation of the pygmy pipes, the site was a popular ATV area. Most of the ATV activity was north of the paved road, but there was also an ATV trail south of the road where the pygmy pipes were observed. The trail was along a ridge and is still present today, but the site was gated off and closed to all vehicles shortly after the discovery of the pygmy pipes. The flora of the pygmy pipes site is typified by sand live oak (*Quercus geminata*), laurel oak (*Quercus hemisphaerica*), saw palmetto (*Serenoa repens*), sparkleberry (*Vaccinium arboreum*), and earleaf greenbrier (*Smilax auriculata*).

Management needs include eradicating nearby exotic pest plant populations of cogon grass (*Imperata cylindrica*) and natal grass (*Melinis repens*) and avoiding all ground disturbance including foot traffic and use of heavy machinery. The site should remain closed to all vehicles.

Large-leaved grass-of-pannassus (*Parnassia grandifolia*) - State listed Endangered

Large-leaved grass-of-pannassus is found in wet habitats including open grassy wet prairies and seepage slopes as well as hydric hammock and edges of swamps along rivers and streams. Only one occurrence is known on the MHCCFG, in the relatively undisturbed and high quality hydric hammock in the Deep Creek floodplain in Putnam County. It is found in dense forest shade under Atlantic white cedar (*Chamaecyparis thyoides*), cabbage palm (*Sabal palmetto*) and tuliptree (*Liriodendron tulipifera*) with a variety of shrub and herb species, including the listed species Florida willow (*Salix floridana*), variable-leaved Indian-plantain (*Arnoglossum diversifolium*), and Chapman's sedge (*Carex chapmanii*). Other species include greendragon (*Arisaema dracontium*), joepyeweed (*Eupatorium fistulosum*), and green arrow arum (*Peltandra virginica*).

Protection of the upstream creek and floodplain from disturbances and maintaining the high quality of the site by limiting public access are two major management needs.

Plume polypody (*Pecluma plumula*) - State listed Endangered

Plume polypody is found in mesic to hydric hammocks and successional hardwood forests and grows on limestone or tree species such as live oak. A new population of plume polypody was documented on the MHCCFG west of Santos on the east side of SW

25th Avenue in Marion County during the 2016-2017 survey. Another population of plume polypody is known to occur at MHCCFG, west of I-75 and east of SR 200 in the diggings. Both populations occurred in successional hardwood forests and grew on limestone with numerous other fern species some native, some introduced, forming fern grottos. Ebony spleenwort (*Asplenium platyneuron*), golden polypody (*Phlebodeum aureum*), resurrection fern (*Pleopeltis polypoides* var. *michauxiana*), and southern shield fern (*Thelypteris kunthii*) were some of the native fern species documented at both sites.

Management recommendations include careful treatment or hand pulling (those co-existing on limestone rocks) of the following FLEPPC listed exotic species posing threats: Chinese brake fern (*Pteris vittata*), cogon grass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), and sword fern (*Nephrolepis cordifolia*). Sword fern poses the most serious and imminent threat to the listed ferns. Plume polypody is sensitive to fire and dependent on maintenance of natural hydrology.

Swamp plume polypody (*Pecluma ptilodon*) - State listed Endangered

Swamp plume polypody is found in hydric and mesic hammocks, swamps, and successional hardwood forests and grows on stumps, tree bases, and rocks. A new population of swamp plume polypody was documented on the MHCCFG west of Santos on the east side of SW 25th Avenue in Marion County during the 2016-2017 survey. Two other populations of swamp plume polypody are known to occur in Marion County, one west of I-75 in the diggings in successional hardwood forests and another within hydric hammock east of the Ocklawaha River at Butterbutt Landing. All three populations of swamp plume polypody were growing on limerock. See above description of plume polypody for associate species for the SW 25th Avenue and diggings sites. The same suite of species (native and introduced) occur at both sites. At the Butterbutt Landing site, swamp plume polypody is growing on rocks of an old retaining wall. Numerous FLEPPC listed invasive species dominated the hydric hammock at Butterbutt Landing including: Caesar's weed (*Urena lobata*), coral ardisia (*Ardisia crenata*), glossy privet (*Ligustrum lucidum*), and Japanese honeysuckle (*Lonicera japonica*). There were also numerous introduced *Citrus* sp. trees that cover significant area where the swamp plume polypody occurs. Many trees had also blown down from recent storms at the Butterbutt Landing site.

Management recommendations for swamp plume polypody are the same as for plume polypody and include careful treatment or hand pulling (those co-existing on limestone rocks) of the following FLEPPC listed exotic species posing threats at all three sites: Caesar's weed, Chinese brake fern (*Pteris vittata*), cogon grass, coral ardisia, glossy privet, Japanese climbing fern, Japanese honeysuckle, and sword fern. Swamp plume polypody is sensitive to fire and dependent on maintenance of natural hydrology.

A third *Pecluma* species – widespread polypody (*Pecluma dispersa*) was documented west of I-75 and east of SR 200 in the Diggings in 2003 in successional hardwood forest. Widespread polypody was not observed during the 2016-2017 survey. It is possible that the widespread polypody could have been confused with swamp plume polypody since the latter was present at the site. The FLEPPC listed exotic species, Chinese brake fern,

Japanese climbing fern (*Lygodium japonicum*), and sword fern (*Nephrolepis cordifolia*) were noted at the time of the 2003 site visit and could have out-competed the small occurrence of the widespread polypody.

Pinewoods dainties (*Phyllanthus liebmannianus* ssp. *platylepis*) - State listed Endangered

Pinewoods dainties occur in low grassy pinelands and hammocks, floodplain and bottomland forests, and are associated with limestone. At MHCCFG, a population of pinewoods dainties was seen both in flower and fruit in openings (road edges) of mesic hammock on Inglis Island on the north side of the Withlacoochee River in Levy County. It is found in dense shade under live oak (*Quercus virginiana*), red cedar *Juniperus virginiana*, and sugarberry (*Celtis laevigata*). It grows with the shrub, smallflower mock buckthorn (*Sageretia minutiflora*) and a diverse assemblage of herbaceous species such as Carolina scalystem (*Elytraria caroliniensis*), greendragon (*Arisaema dracontium*), Florida bellflower (*Campanula floridana*), and swamp twinflower (*Dyschoriste humistrata*).

Based on observation, pinewoods dainties prefer openings with sunlight such as road and trail edges. Use and maintenance of roads and trails in which pinewood dainties occur should be carefully managed and perhaps gated to avoid damage to these plants. Avoid walking, driving and parking on road edges.

Blueflower butterwort (*Pinguicula caerulea*) - State listed Threatened

Blueflower butterwort occurs in pine flatwoods and wet prairies. At MHCCFG, blueflower butterwort was found primarily along roads in mesic and wet flatwoods and pine plantations. Most of the MHCCFG occurrences of blueflower butterwort have been documented in Putnam County, but one population is known to occur in Citrus County. Some associate plants that have been observed growing with blueflower butterwort include loblolly pine (*Pinus taeda*), wax myrtle (*Myrica cerifera*), gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), maidencane (*Panicum hemitomon*), blue maidencane (*Amphicarpum muhlenbergianum*), wiregrass (*Aristida stricta*), small butterwort (*Pinguicula pumila*), orange milkwort (*Polygala lutea*), candyroot (*Polygala nana*), and the listed species, hooded pitcher plant (*Sarracenia minor*).

Butterworts prefer open sunny areas and are sensitive to soil disturbance. Prairies and flatwoods should be burned every 2-4 years and heavy machinery should be excluded from wetlands. Maintenance of natural hydrology is critical as is invasive plant removal.

Yellow-flowered butterwort (*Pinguicula lutea*) - State listed Threatened

Yellow-flowered butterwort occurs in pine flatwoods and wet prairies. At MHCCFG, a single population of yellow-flowered butterwort was found along the ruderal ditch edge of mesic flatwoods/pine plantation within Putnam County. Sawgrass (*Cladium jamaicense*) was growing with the yellow-flowered butterwort.

Management recommendations are to burn mesic flatwoods/pine plantations every 2-4 years to reduce shrub cover and promote sunny openings that yellow-flowered butterwort prefers.

Palegreen orchid (*Platanthera flava*) – State listed Threatened

Palegreen orchid is found in swamp and hydric hammock. A single palegreen orchid plant was documented during a previous survey in 2003 within hydric hammock in the Deep Creek area in Putnam County. This occurrence was not relocated during a re-visit to the location where originally documented. Several vegetative orchids were documented in the vicinity of the previous occurrence that could have been this species.

It is important to maintain the natural hydrology of the Deep Creek hydric hammock by protecting the upstream creek and floodplain from disturbances and limiting public access due to the fragility of the terrain.

Giant orchid (*Pteroglossaspis ecristata*) - State listed Threatened

Giant orchid is found in sandhill, scrub, pine flatwoods, and occasionally in old fields. Populations of giant orchid are known to occur in four areas of the MHCCFG: the Diggings area (SR 200 east to I-75), the scrub triangle (west of I-75), the Eureka Bridge site (east side of the Ocklawaha River), and north of CR 314 (southwest of Parch Landing along Cedar Creek). During the 2016-2017 survey, giant orchid was documented on the MHCCFG mostly in Marion County in the Diggings area in high quality sandhill, scrub and in successional hardwood forests. A few new occurrences of giant orchid were documented in recently burned sandhill in the Diggings area. Some associate plant species occurring with giant orchid in sandhill included longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), sand live oak (*Quercus geminata*), saw palmetto (*Serenoa repens*), and wiregrass (*Aristida stricta*). In successional hardwoods, giant orchid occurred with loblolly pine (*Pinus taeda*), laurel oak (*Quercus hemisphaerica*), and American beautyberry (*Callicarpa americana*). Within scrub, giant orchid grew with sand pine (*Pinus clausa*), myrtle oak (*Quercus myrtifolia*), sand live oak (*Quercus geminata*), and scrub palmetto (*Sabal etonia*).

Given that giant orchid is only likely to be detected when flowering or fruiting, the failure to find these plants in some of the original recorded locations in the scrub triangle, the Eureka Bridge site, and north of CR 314 along Cedar Creek does not indicate that the plants are no longer present. These plants can also remain dormant for long periods of time or have been affected by the dry conditions.

Application of prescribed fire is crucial in maintaining openings for giant orchid. Mechanical treatment may also create openings, but care should be taken to avoid soil disturbances. Invasive species should also be carefully removed when growing in the near vicinity of the giant orchid.

Leafless beaked orchid (*Sacoila lanceolata*) - State listed Threatened

Leafless beaked orchid occurs in roadsides, old fields, flatwoods, and sandhill. Leafless beaked orchids were not observed during the 2016-2017 survey, but several plants were documented during 2013 invasive plant surveys in sandhill south of the Diggings in Marion County. These plants can also remain dormant for long periods of time or have been affected by the dry conditions.

Leafless beaked orchid prefers open habitats so fire exclusion and competition from invasive exotic plants might further contribute to the decline of this species. Prescribed burning of pine-dominated communities on a 2 to 5 year interval and careful removal of invasive species will promote the open habitat that this orchid favors.

Florida willow (*Salix floridana*) - State listed Endangered

Florida willow is found in wet, mucky soils in bottomland forests, floodplains, hydric hammocks, swamps, edges of spring-runs, and streams. Only one occurrence of Florida willow is known on the MHCCFG, in the little disturbed and high quality hydric hammock in the Deep Creek area in Putnam County. It is found in dense forest shade under Atlantic white cedar (*Chamaecyparis thyoides*), cabbage palm (*Sabal palmetto*) and tuliptree (*Liriodendron tulipifera*) with a variety of shrub and herb species, including the listed species variable-leaved Indian-plantain (*Arnoglossum diversifolium*), Chapman's sedge (*Carex chapmanii*), and large-leaved grass of parnassus (*Parnassia grandifolia*). Other species growing in association with Florida willow include greendragon (*Arisaema dracontium*), joepyeweed (*Eupatorium fistulosum*), and green arrow arum (*Peltandra virginica*).

Management needs for this site include limiting access to maintain quality of site, protecting upstream creek and floodplain from disturbances, and monitoring populations for invasive species entry such as feral hog (*Sus scrofa*) and taro (*Colocasia esculenta*).

Hooded pitcherplant (*Sarracenia minor*) - State listed Threatened

Hooded pitcherplant is found in mesic and wet flatwoods, marsh ecotones, and wet ditches. At MHCCFG, hooded pitcherplants occur in the northeastern portion of the site in Putnam County within mesic and wet flatwoods, pine plantations, depression marshes, and roadsides. Several new occurrences of hooded pitcher plants were documented during the 2016-2017 survey in Putnam County, north of CR 310 and north of the confluence of Deep Creek and the Ocklawaha River before joining the Rodman Reservoir. Most of the new hooded pitcher plant occurrences were in wet flatwoods/pine plantation growing with planted loblolly pine (*Pinus taeda*), longleaf pine (*Pinus palustris*), wax myrtle (*Myrica cerifera*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), blue maidencane (*Amphicarpum muhlenbergianum*), and wiregrass (*Aristida stricta*).

Management recommendations include maintaining natural fire return intervals and allowing fires to enter wetlands naturally. Avoid mechanical disturbance of ecotones, and avoid mowing roadsides until after the fruiting season.

Buckthorn (*Sideroxylon lycioides*) - State listed Endangered

Buckthorn is found in floodplain and bottomland forests, hydric hammocks, borders of cypress swamps, and often along rivers or streams. In previous surveys at MHCCFG in 2003, buckthorns were found widely scattered in hydric hammock along Deep Creek in Putnam County and in floodplain swamp bordering the east side of the Ocklawaha River that is south of CR 316 in Marion County. During the 2016-2017 survey, no buckthorns were observed at the documented locations and no additional occurrences were found. Numerous large trees were down (storm produced) throughout the hydric hammock when revisiting the Deep Creek buckthorn population; fallen large trees could have possibly buried or crushed small buckthorn trees. This hydric hammock is characterized by having Atlantic white cedar (*Chamaecyparis thyoides*), cabbage palm (*Sabal palmetto*), tuliptree (*Liriodendron tulipifera*), and a high number of rare plant species such as Florida willow (*Salix floridana*), variable-leaved Indian-plantain (*Arnoglossum diversifolium*), Chapman's sedge (*Carex chapmanii*), and large-leaved grass-of-parnassus (*Parnassia grandifolia*). The Marion County population of buckthorn that was known to occur in floodplain swamp that borders the Ocklawaha River was also revisited. The reported five scattered individuals of buckthorn were not present. Possible scenarios include a high water event such as that produced by back-to-back Hurricanes Charlie, Frances, and Jeanne in north Central Florida in 2004, weakened or washed the plants away or the original location is not accurate. Dominant vegetation occurring in the floodplain swamp in which the buckthorn was reported included bald cypress (*Taxodium distichum*), swamp laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), and red maple (*Acer rubrum*).

Other than the downed trees, the Deep Creek hydric hammock is still regarded as one of the highest quality natural communities of the MHCCFG. Management needs for the Deep Creek hydric hammock population of buckthorn are to limit access to the site to maintain the high quality of the natural community and protect upstream creek and floodplain from disturbances. Management recommendations for the Marion County population of buckthorn are to avoid alterations to the natural hydrological regime, discourage littering, and monitor for and control invasive species.

Pinkroot (*Spigelia loganioides*) - State listed Endangered

Pinkroot, a Florida endemic, is found in bottomland and floodplain forest and hydric and mesic hammock over limestone. Several occurrences of pinkroot are known on the MHCCFG, all near the Ocklawaha River in Marion County. Pinkroot occurs in hydric hammock along the Florida National Scenic Trail in Marshall Swamp and near the Ocklawaha River in the Sharpes Ferry area. Associate plant species observed in the hydric hammock include loblolly pine (*Pinus taeda*), swamp laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), swamp chestnut oak (*Quercus michauxii*),

sugarberry (*Celtis laevigata*), American hornbeam (*Carpinus caroliniana*), bluestem palmetto (*Sabal minor*), slender woodoats (*Chasmanthium laxum*), and greendragon (*Arisaema dracontium*). Within the Marshall Swamp hydric hammock the listed species Treat's zephyrlily (*Zephyranthes atamasca* var. *treatiae*) and angle pod (*Gonolobus suberosus*) also occurs. Further north, and south of U.S. 40, two additional sites were known to have pinkroot in 2003. One site is at the Delks Bridge area, on the east side of the Ocklawaha River, within the ruderal edge of floodplain swamp. A second site in which pinkroot has been documented is on the west side of the Ocklawaha River at Rays Wayside Park within a powerline cut in hydric hammock. There were no pinkroot plants documented at the latter two sites during the 2016-2017 survey.

Management needs for pinkroot at the Marshall Swamp site include limiting pedestrian and bicycle traffic to the designated trail. Multiple FLEPPC invasive plants warrant immediate attention at the Sharpes Ferry site. South of CR 314, some of the worst infestations of cat's claw vine (*Dolichandra unguis-cati*, Syn. *Macfadyena unguis-cati*), and Japanese climbing fern (*Lygodium japonicum*) were growing with pinkroot. North of CR 314, cogon grass (*Imperata cylindrica*) and cat's claw vine are problematic. The Delks Bridge site should be monitored for trash accumulation and invasive species. At Rays Wayside Park, the powerline should be maintained as open, but without heavy machinery or mowers that scrape the soil. Mowing should be done after the plants have set seed.

Scrub stylisma (*Stylisma abdita*) - State listed Endangered

A Florida endemic, scrub stylisma occurs in dry sandy soils in scrub and sandhills. It is a very inconspicuous plant often hidden by leaf litter or grasses. Only one occurrence is known on the MHCCFG, in the sandhill east of SR 200 and south of CR 484 in Marion County. Associate plant species observed growing with scrub stylisma include longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), sand live oak (*Quercus geminata*), saw palmetto (*Serenoa repens*), wiregrass (*Aristida stricta*), pineywoods dropseed (*Sporobolus junceus*), and narrowleaf silkygrass (*Pityopsis graminifolia*). This sandhill was in good condition and more plants were documented during the 2016-2017 survey, a result of more frequent burning.

A regular prescribed burn regime with burning every 2 to 3 years during the growing season is recommended to maintain an open canopy. This inconspicuous plant grows in open sand and may be inadvertently destroyed by management activities. Avoid heavy machinery driving or parking off road. Creating new roads or expanding current roads could be problematic for this species. A portion of this population is growing near a roadside so avoid disking or other soil disturbances that could harm them.

Treat's zephyrlily (*Zephyranthes atamasca* var. *treatiae*) - State listed Threatened

Treat's zephyrlily is found in bottomland forests, hydric hammocks, wet prairies and flatwoods. FNAI does not track *Zephyranthes atamasca* var. *treatiae*. Only one occurrence of Treat's zephyrlily is known on the MHCCFG, in hydric hammock along

the Florida National Scenic Trail in the Marshall Swamp Trail. Associate plant species observed in the hydric hammock include swamp laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), swamp chestnut oak (*Quercus michauxii*), sugarberry (*Celtis laevigata*), American hornbeam (*Carpinus caroliniana*), bluestem palmetto (*Sabal minor*), red buckeye (*Aesculus pavia*), slender woodoats (*Chasmanthium laxum*), and greendragon (*Arisaema dracontium*). Within the Marshall Swamp hydric hammock the listed species pinkroot (*Spigelia loganioides*) and angle pod (*Gonolobus suberosus*) also occurs.

Management recommendations include protecting the forest from disturbance, controlling exotics, protecting from poaching, and avoiding soil disturbance by keeping pedestrian and bicycle traffic on designated trails.

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Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2017. *Atlas of Florida Plants* (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa. Accessed May 31, 2017.

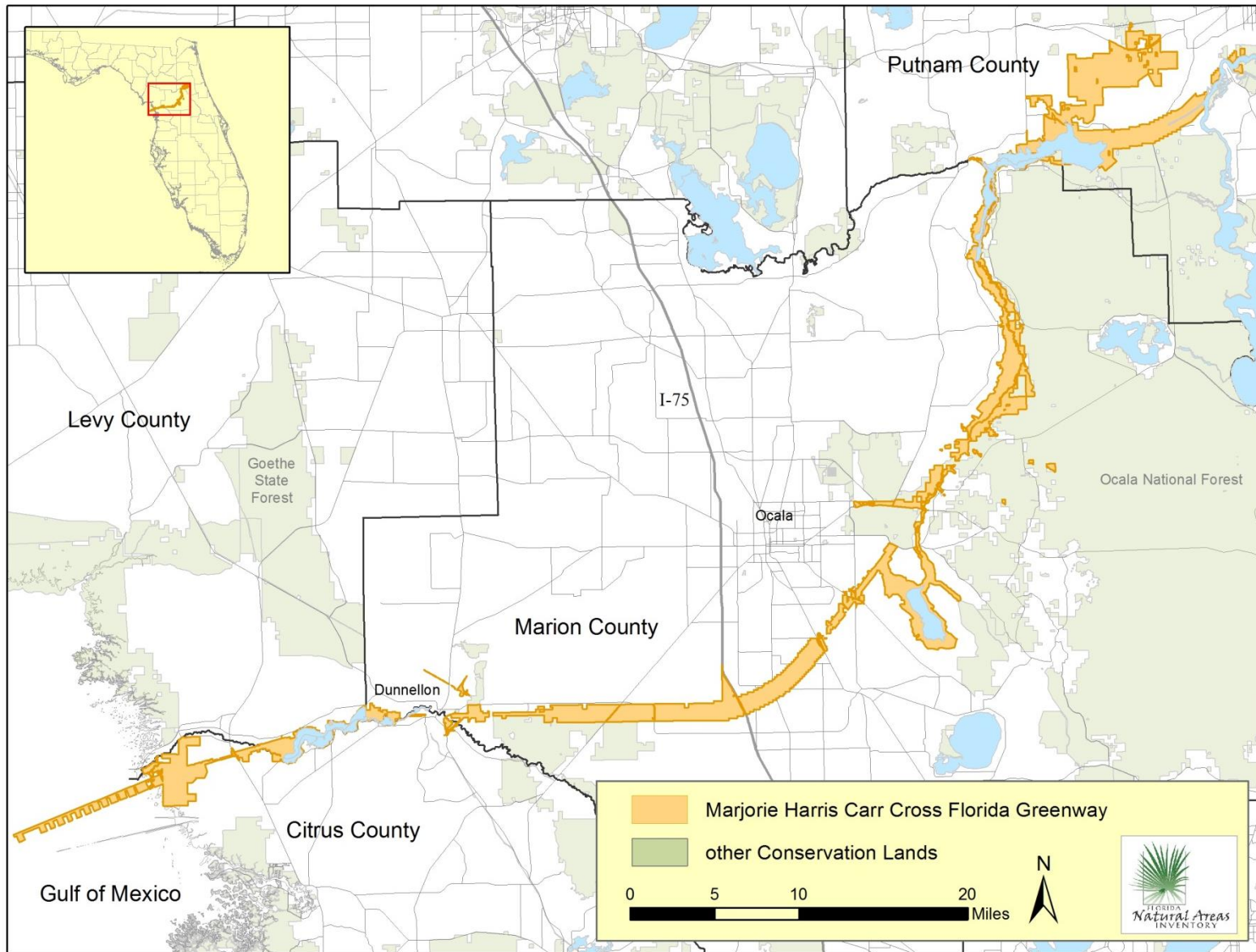


Figure 1. Location map of Marjorie Harris Carr Cross Florida Greenway.

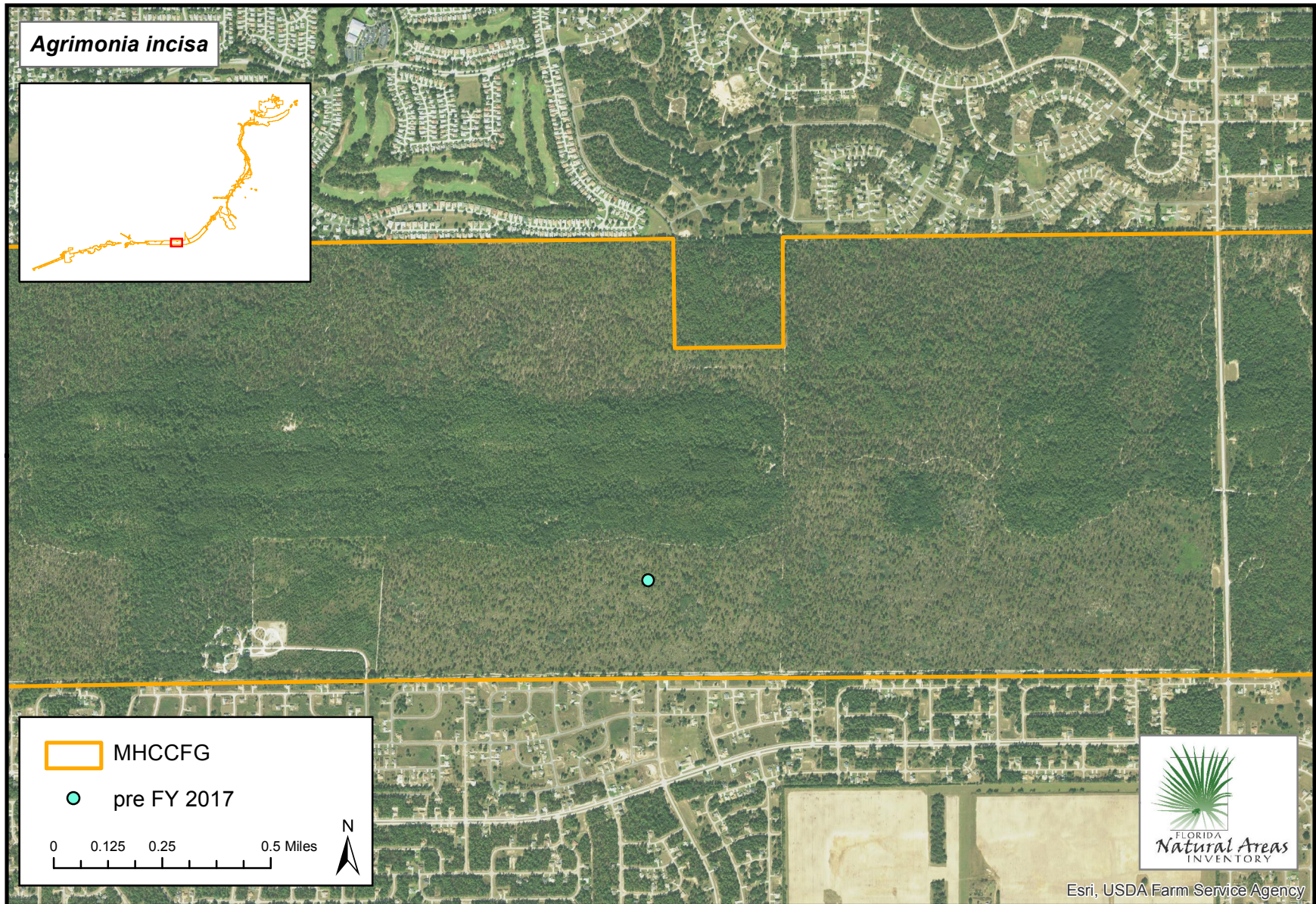


Figure 2. Location map of incised groove-bur (*Agrimonia incisa*), state listed as endangered, on MHCCFG. Not found in fiscal year 2017.

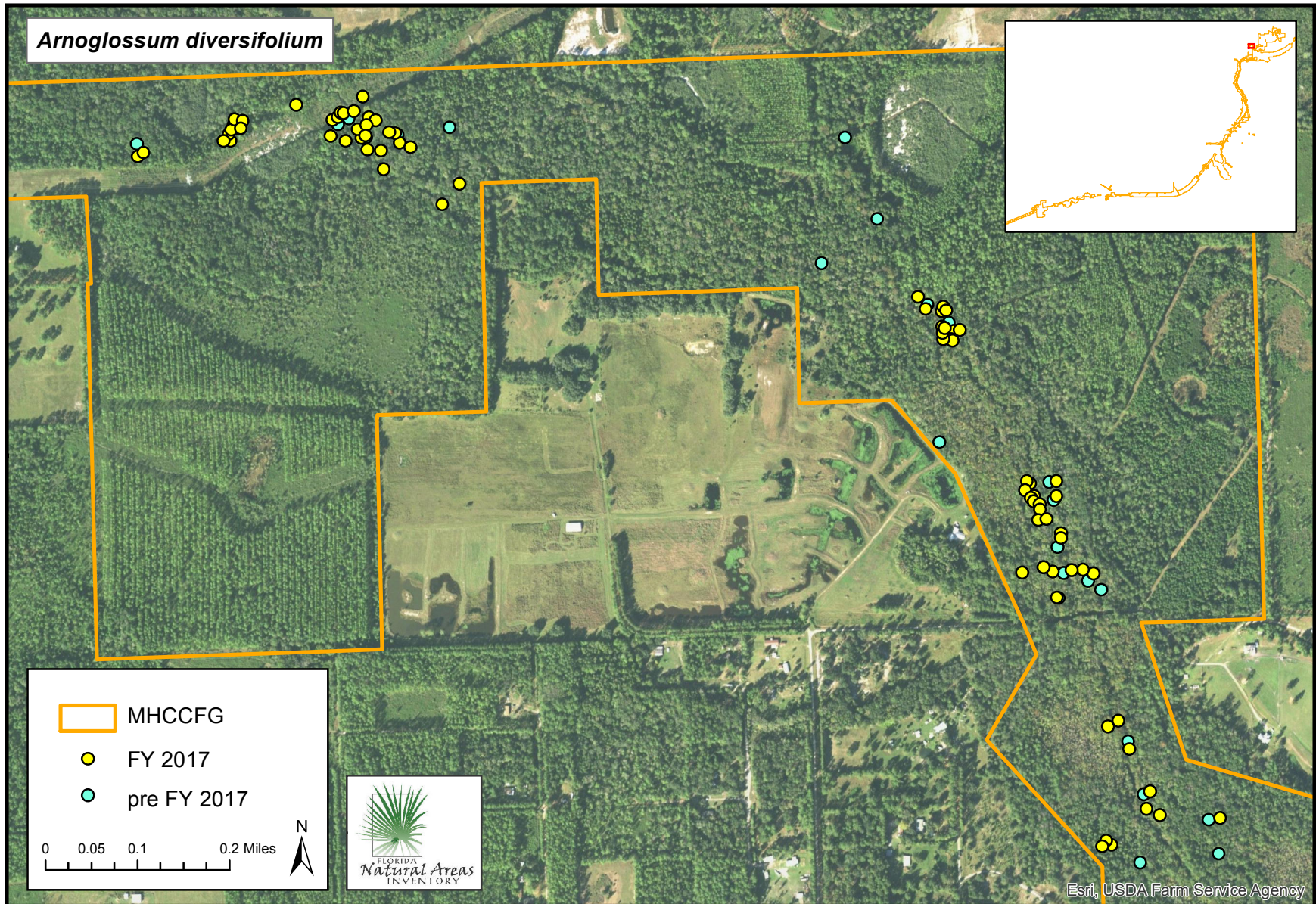


Figure 3. Location map of variable-leaved Indian-plantain (*Arnoglossum diversifolium*), state listed as threatened, on MHCCFG.

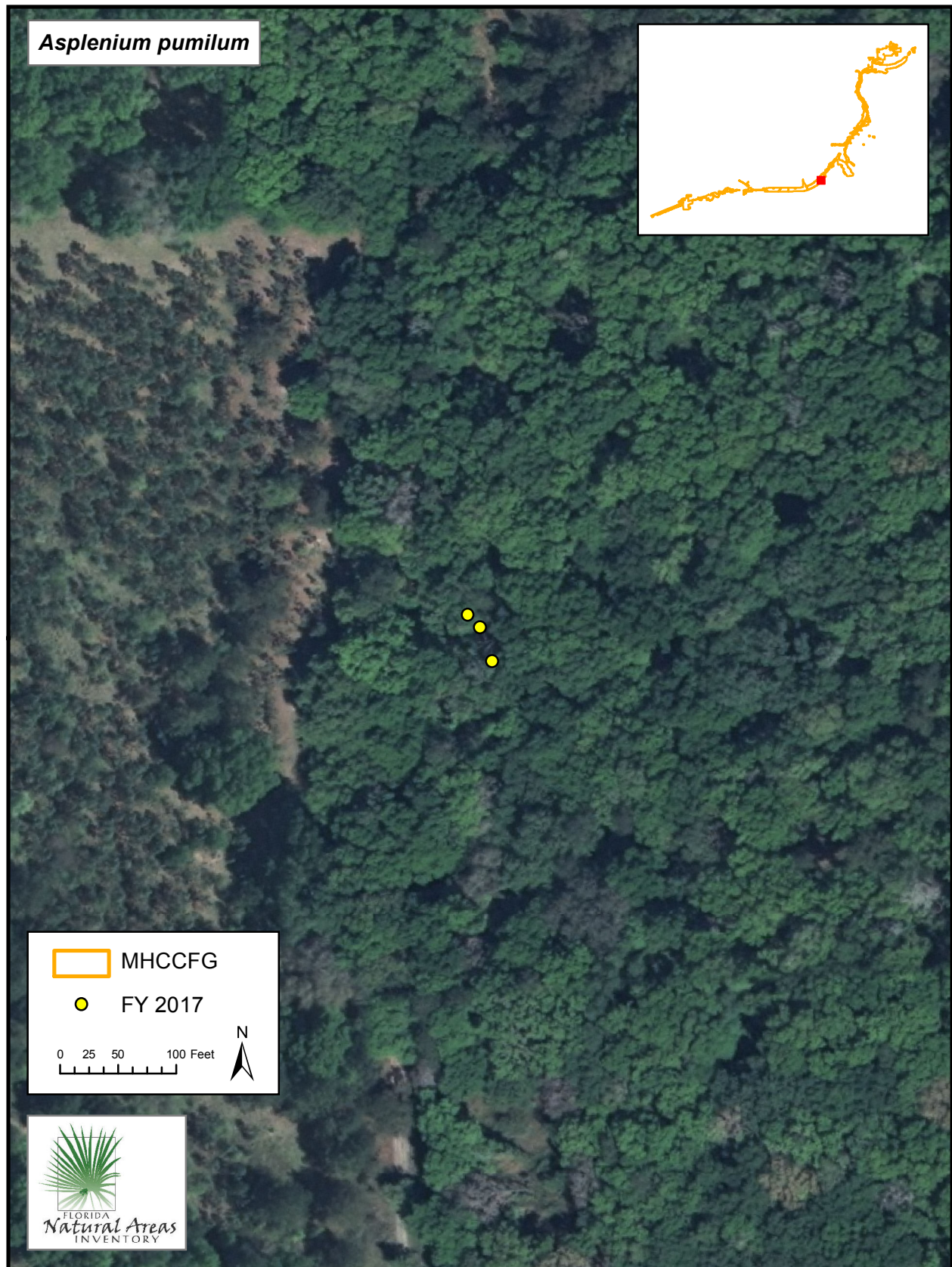


Figure 4. Location map of dwarf spleenwort (*Asplenium pumilum*), state listed as endangered, on MHCCFG. This was a new species for the greenway in fiscal year 2017.

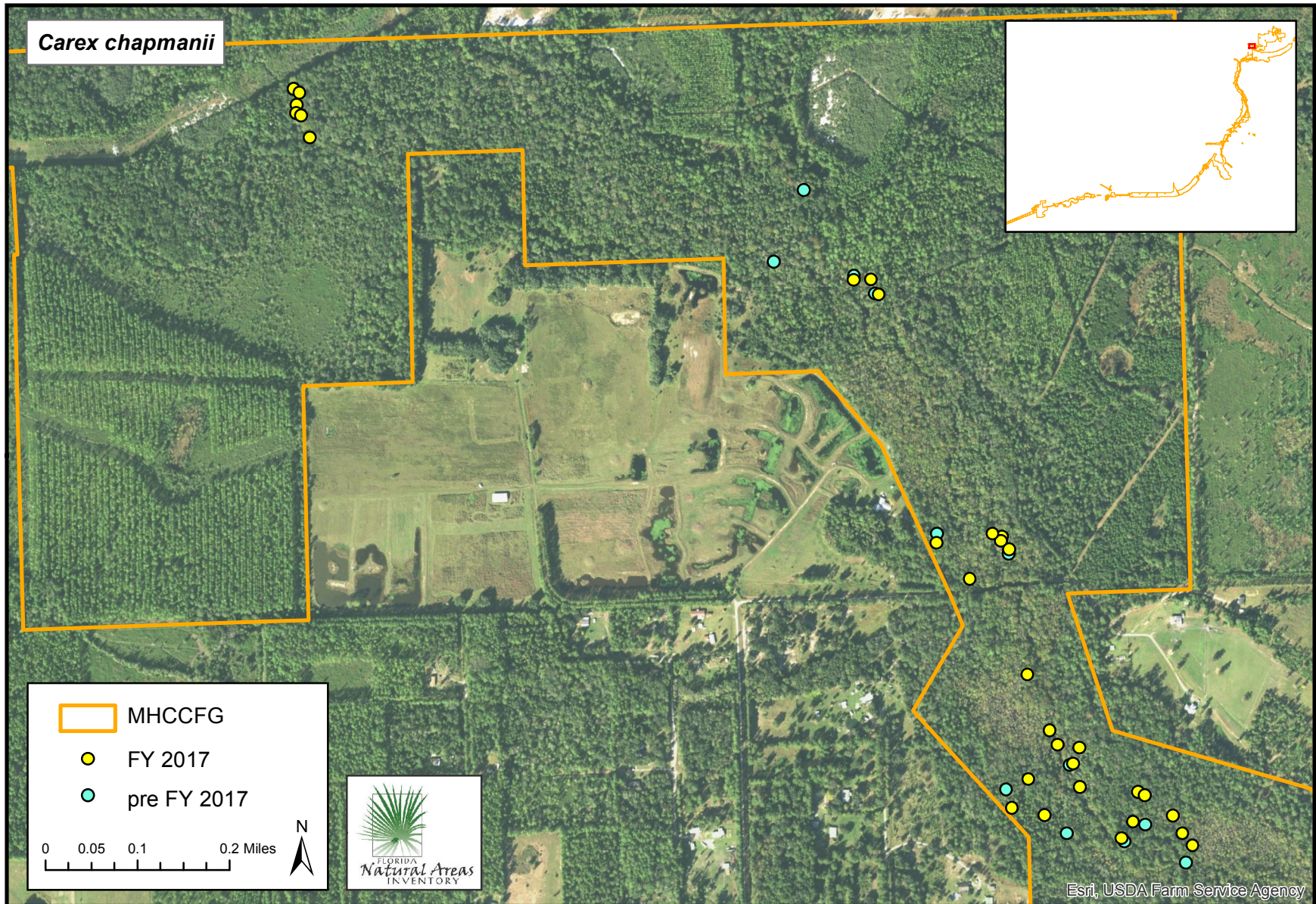


Figure 5. Location map of Chapman's sedge (*Carex chapmanii*), state listed as threatened, on MHCCFG.

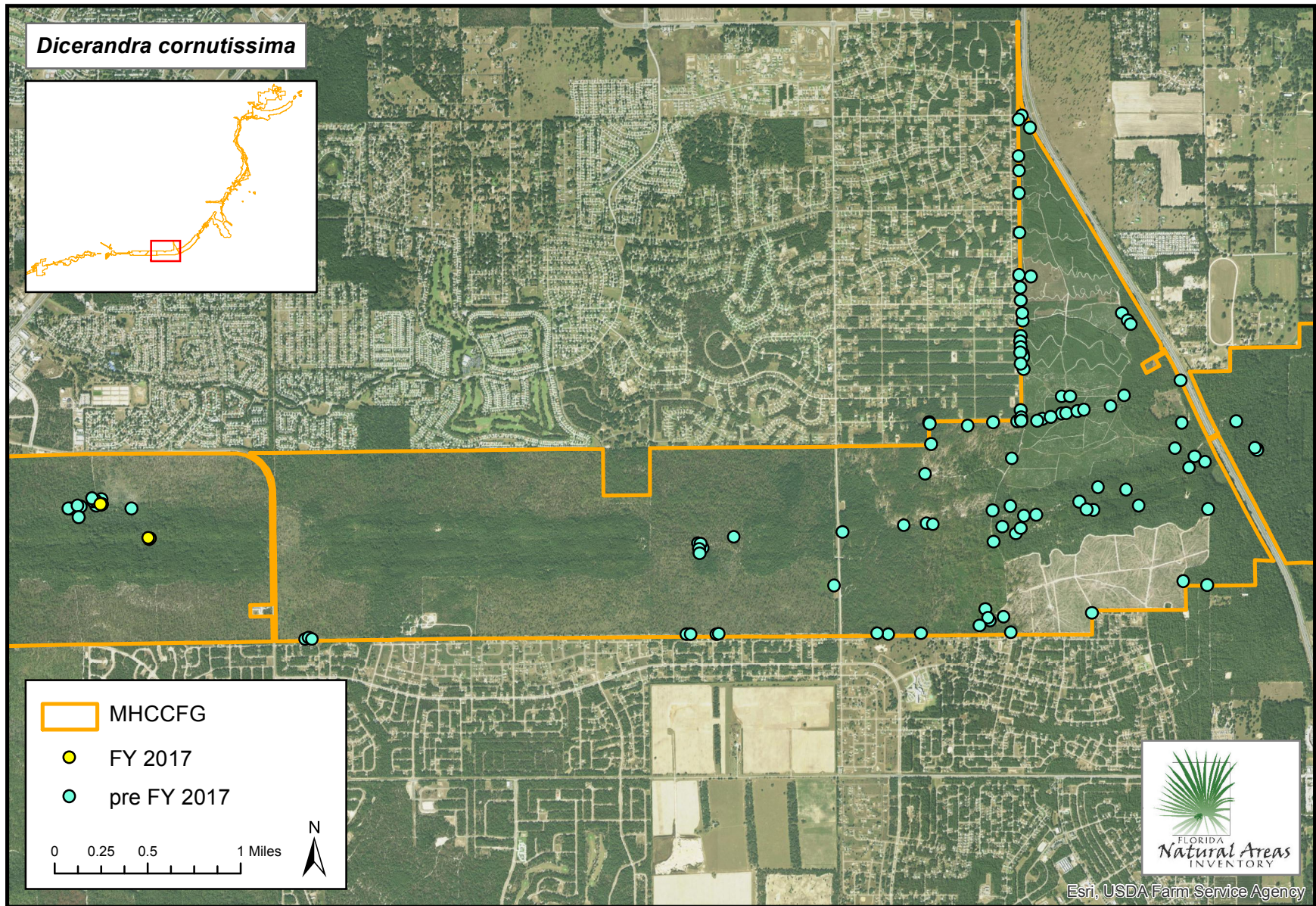


Figure 6. Location map of longspurred mint (*Dicerandra cornutissima*), federal and state listed as endangered, on MHCCFG. The mint was not a target species for fiscal year 2017.

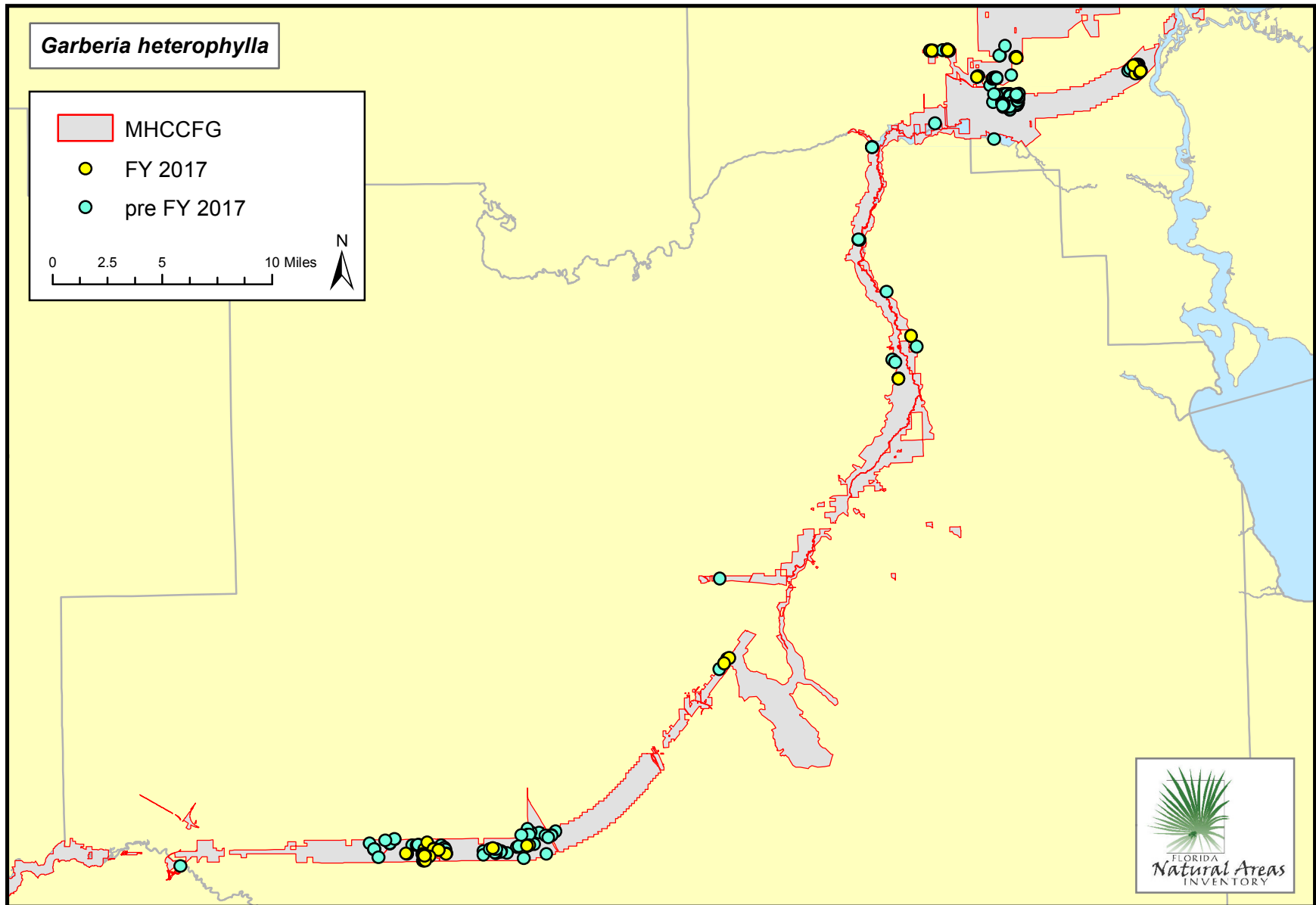


Figure 7. Location map of garberia (*Garberia heterophylla*), state listed as threatened, on MHCCFG.

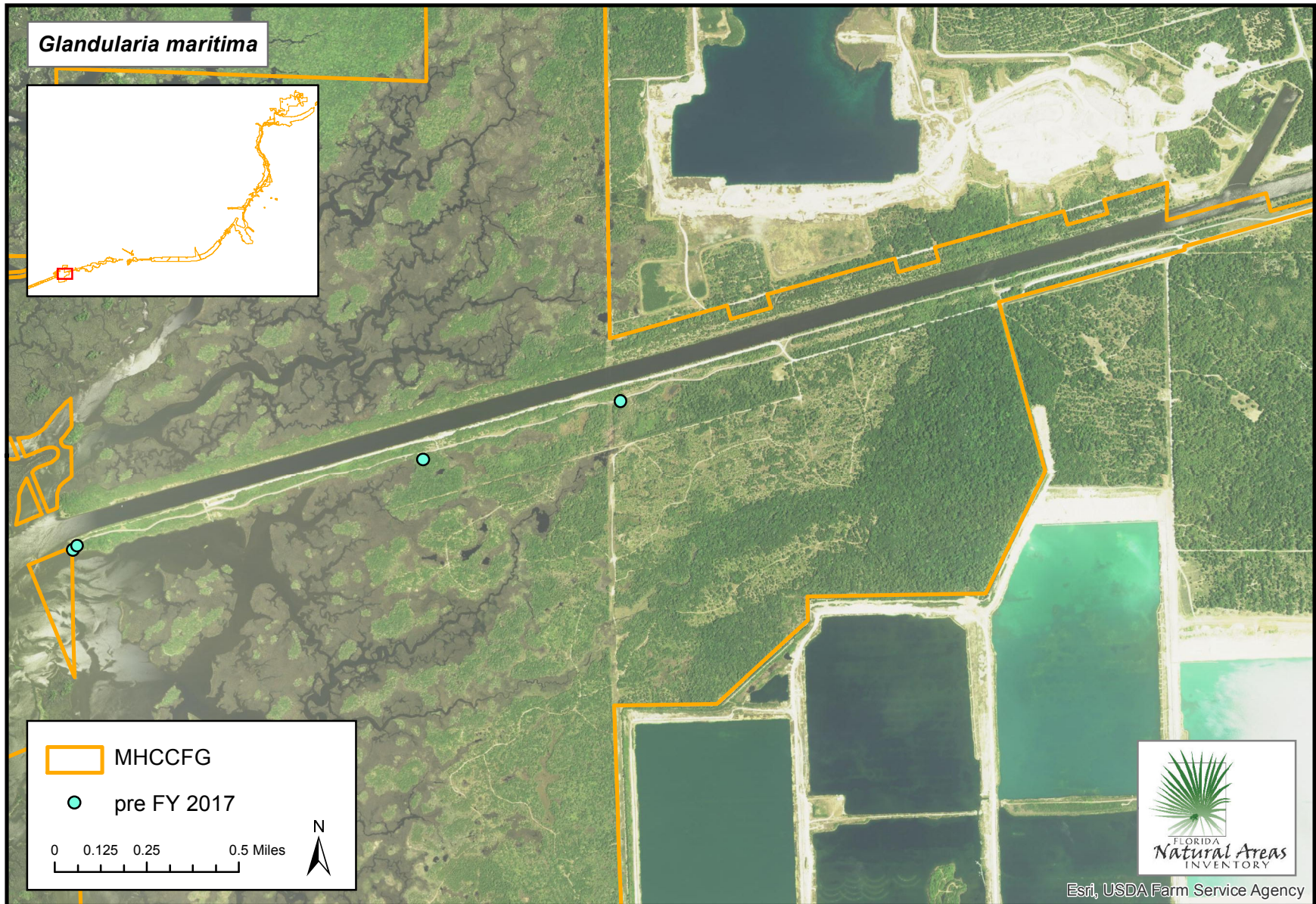


Figure 7. Location map of coastal vervain (*Glandularia maritima*), state listed as endangered, on MHCCFG. Not found in fiscal year 2017.

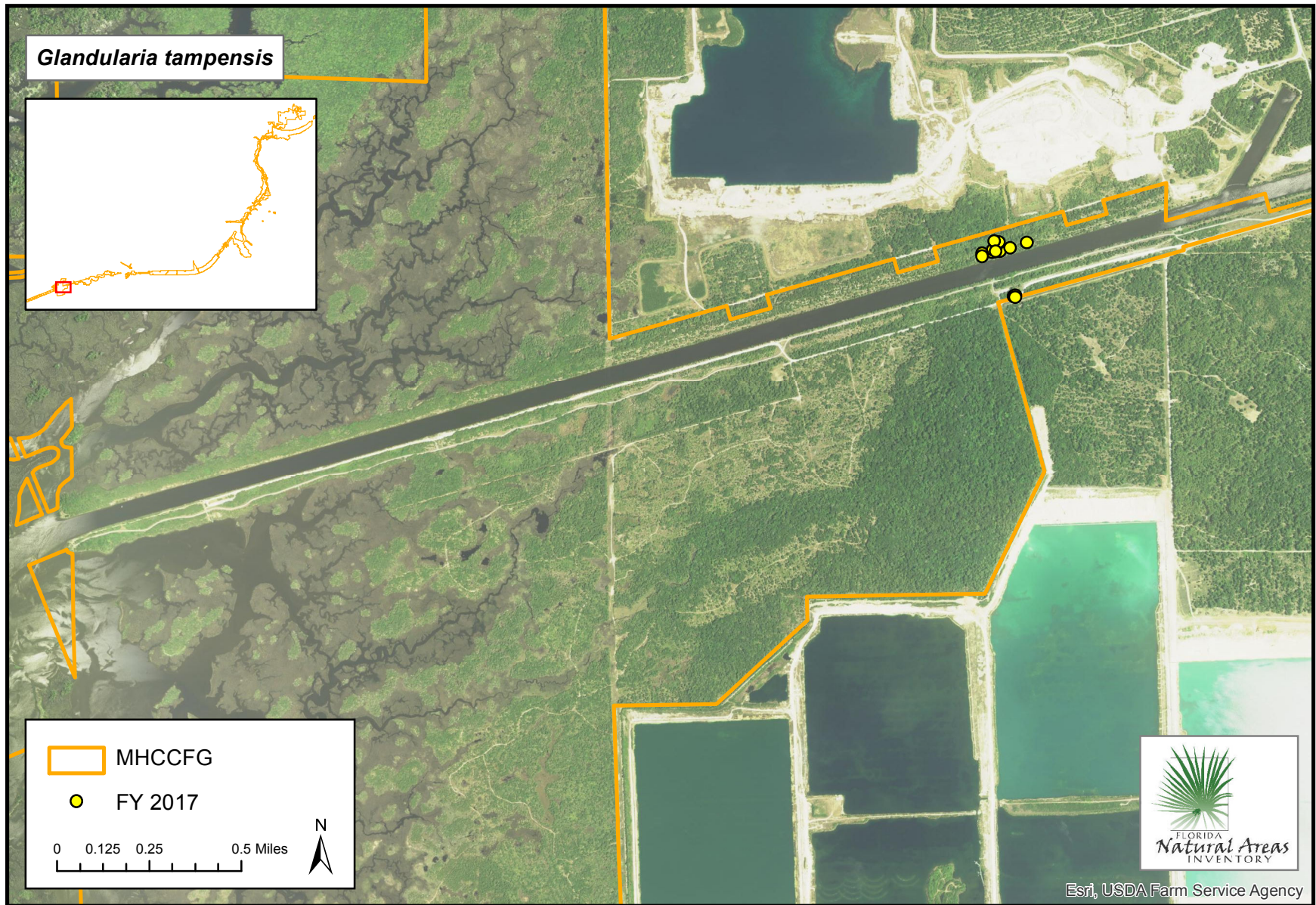


Figure 7. Location map of Tampa vervain (*Glandularia tampensis*), state listed as endangered, on MHCCFG.

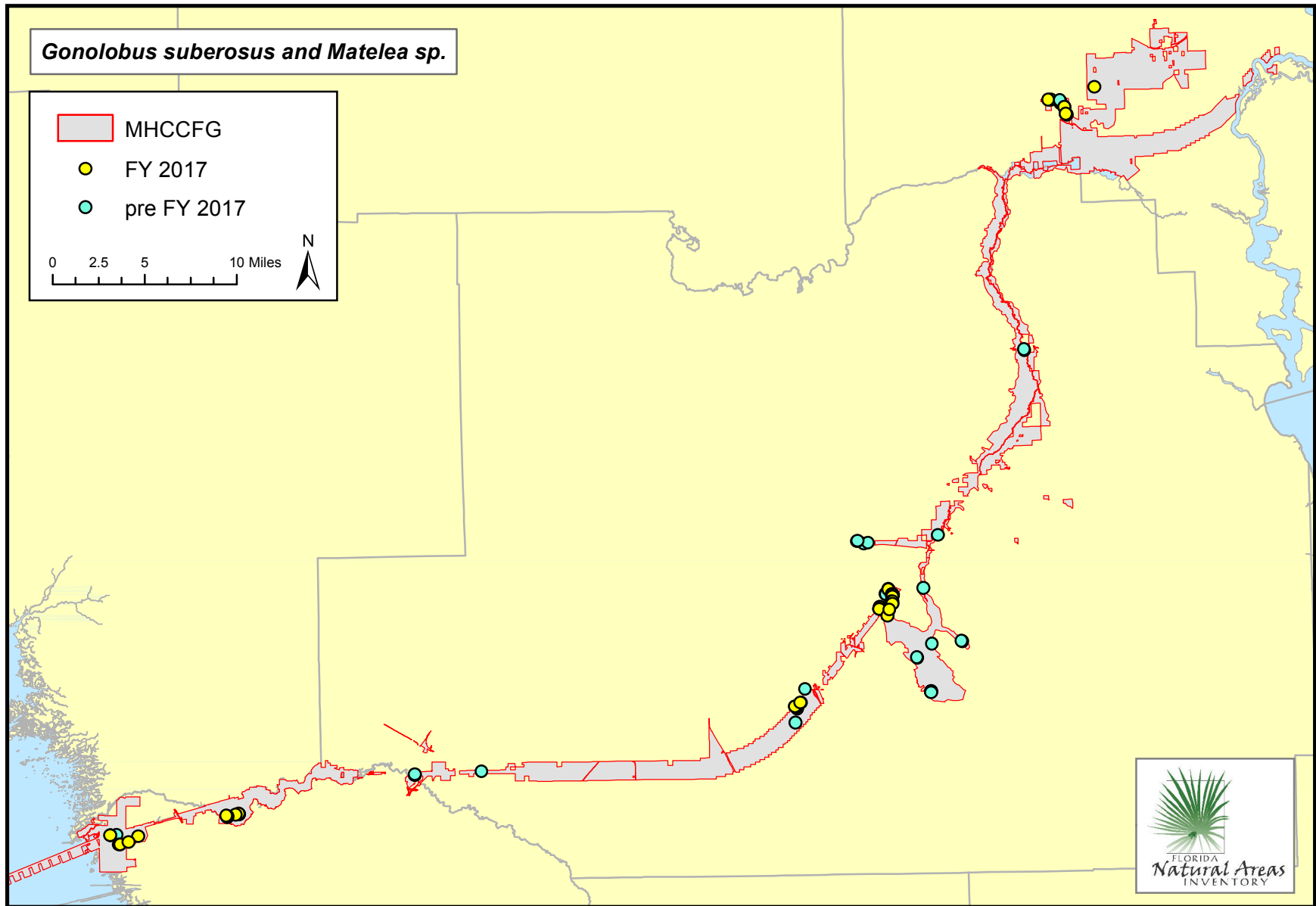


Figure 10. Location map of angle pod (*Gonolobus suberosus*), state listed as threatened, on MHCCFG. *Matelea* sp., those plants not positively identified, are also shown. It is difficult to distinguish *G. suberosus* from state endangered *Matelea floridana* without flower or fruit.

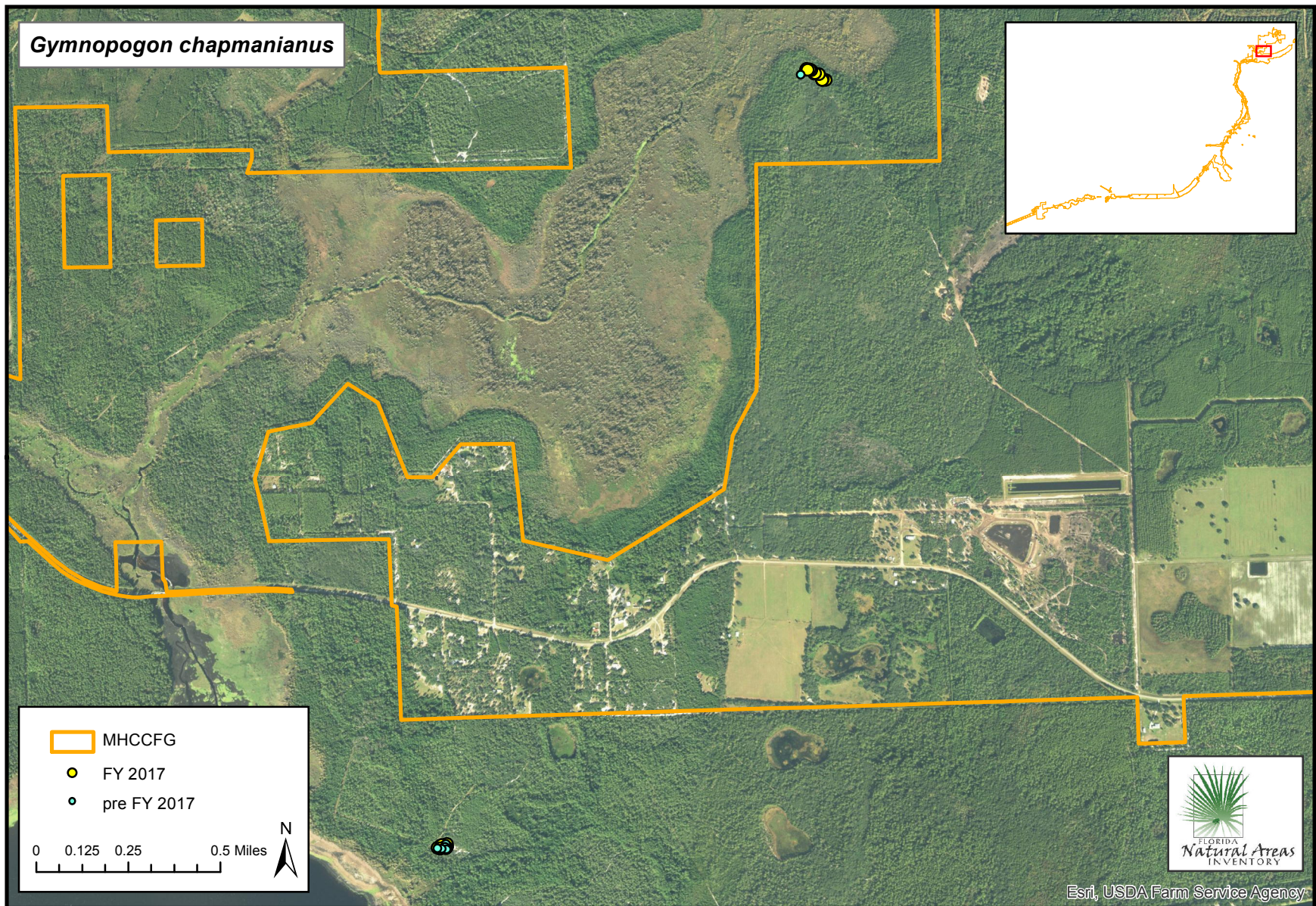


Figure 11. Location map of Chapman's skeletongrass (*Gymnopogon chapmanianus*), FNAI tracked, not state listed, on MHCCFG.

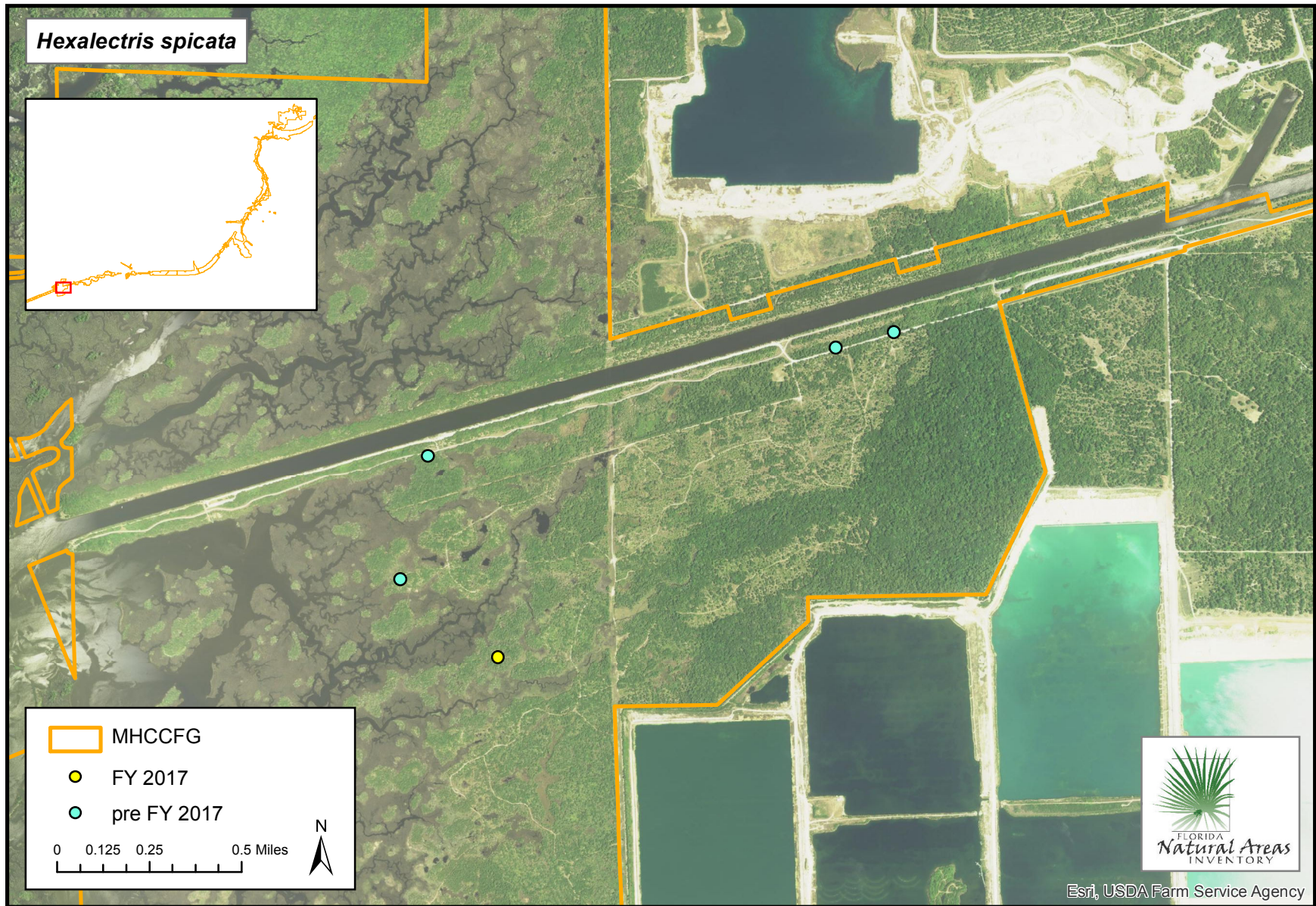


Figure 12. Location map of spiked crested coralroot (*Hexalectris spicata*), state listed as endangered, on MHCCFG.

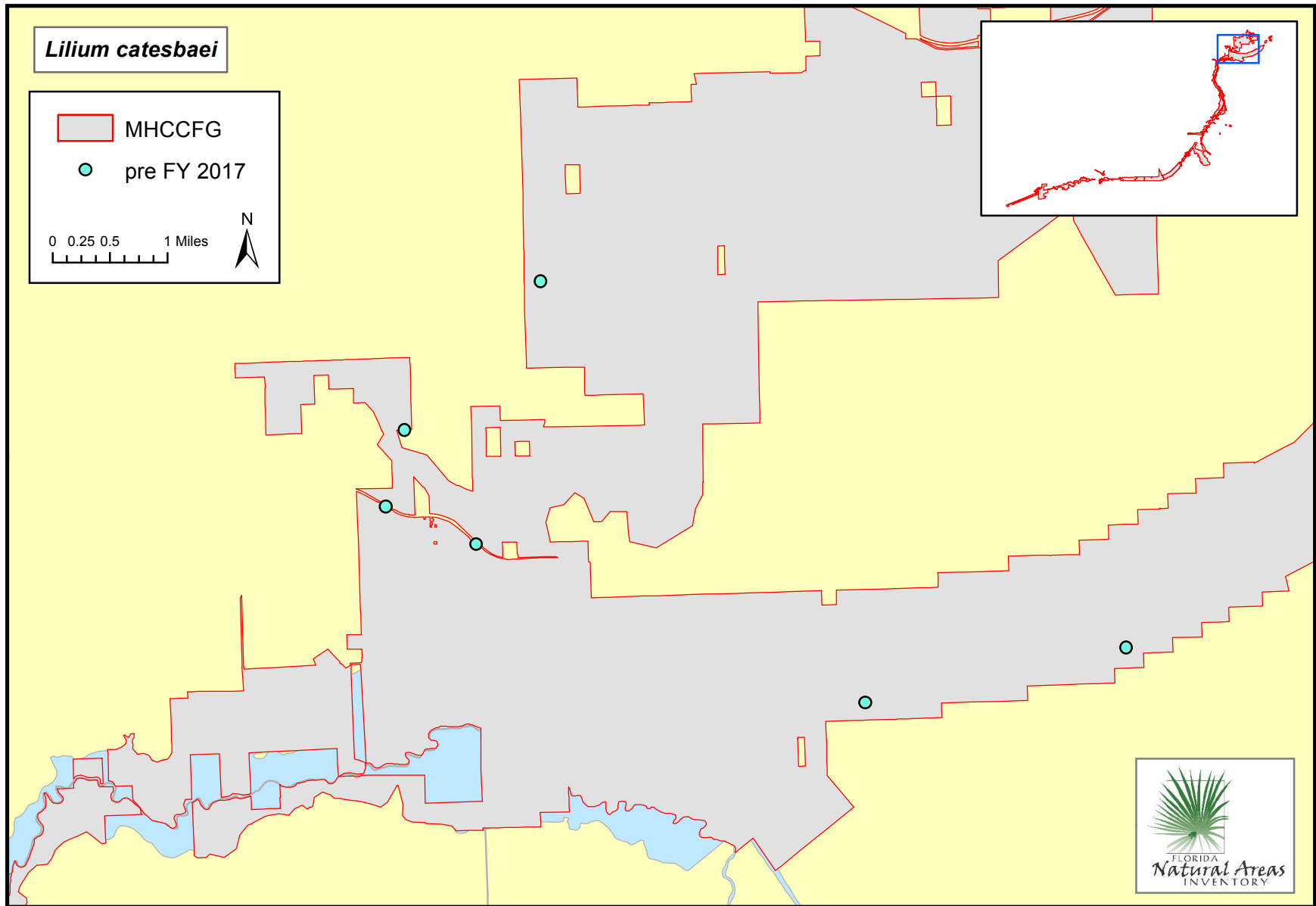


Figure 13. Location map of pine lily (*Lilium catesbaei*), state listed as threatened, on MHCCFG.

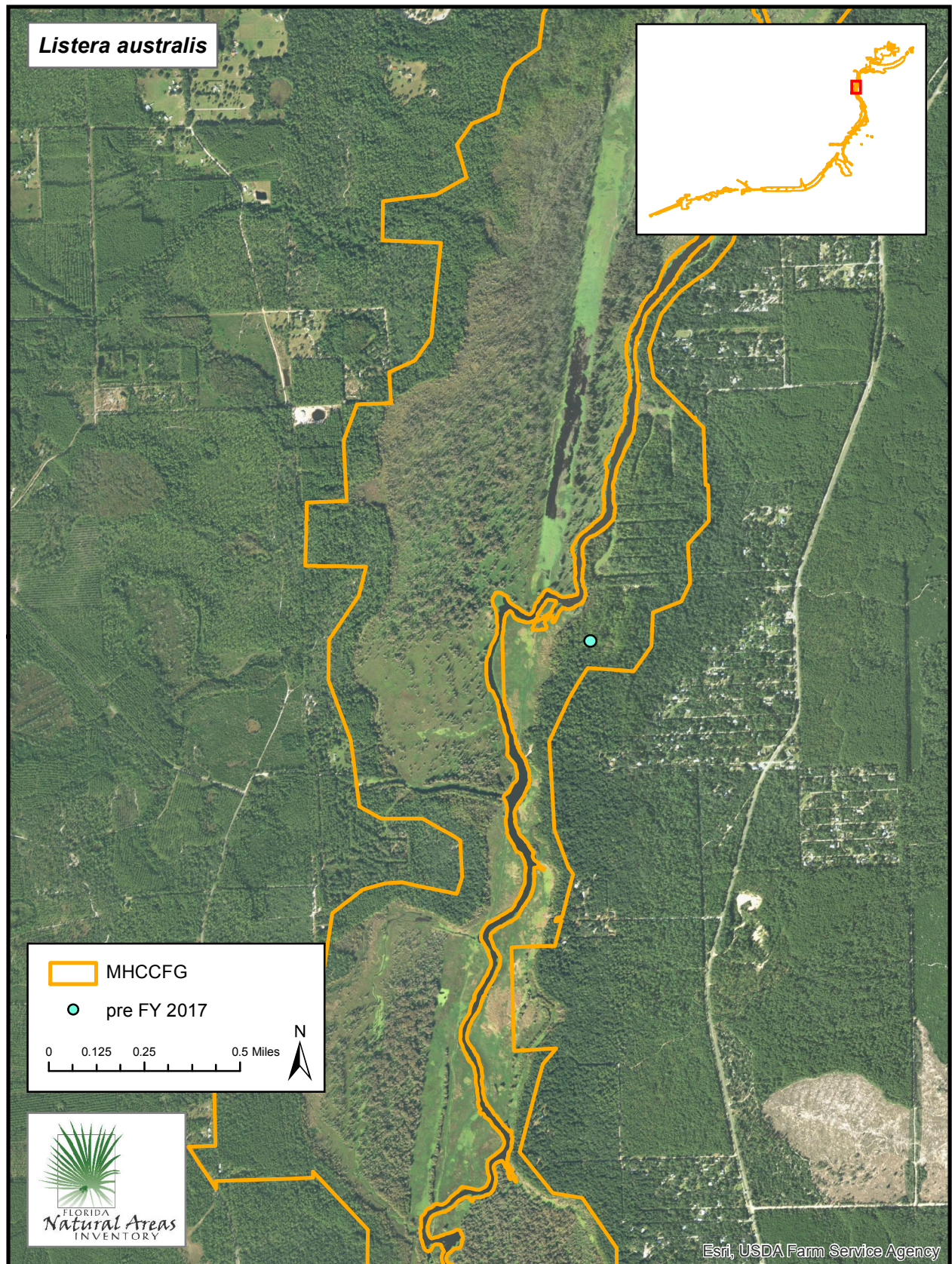


Figure 14. Location map of southern twayblade (*Listera australis*), state listed as threatened, on MHCCFG.

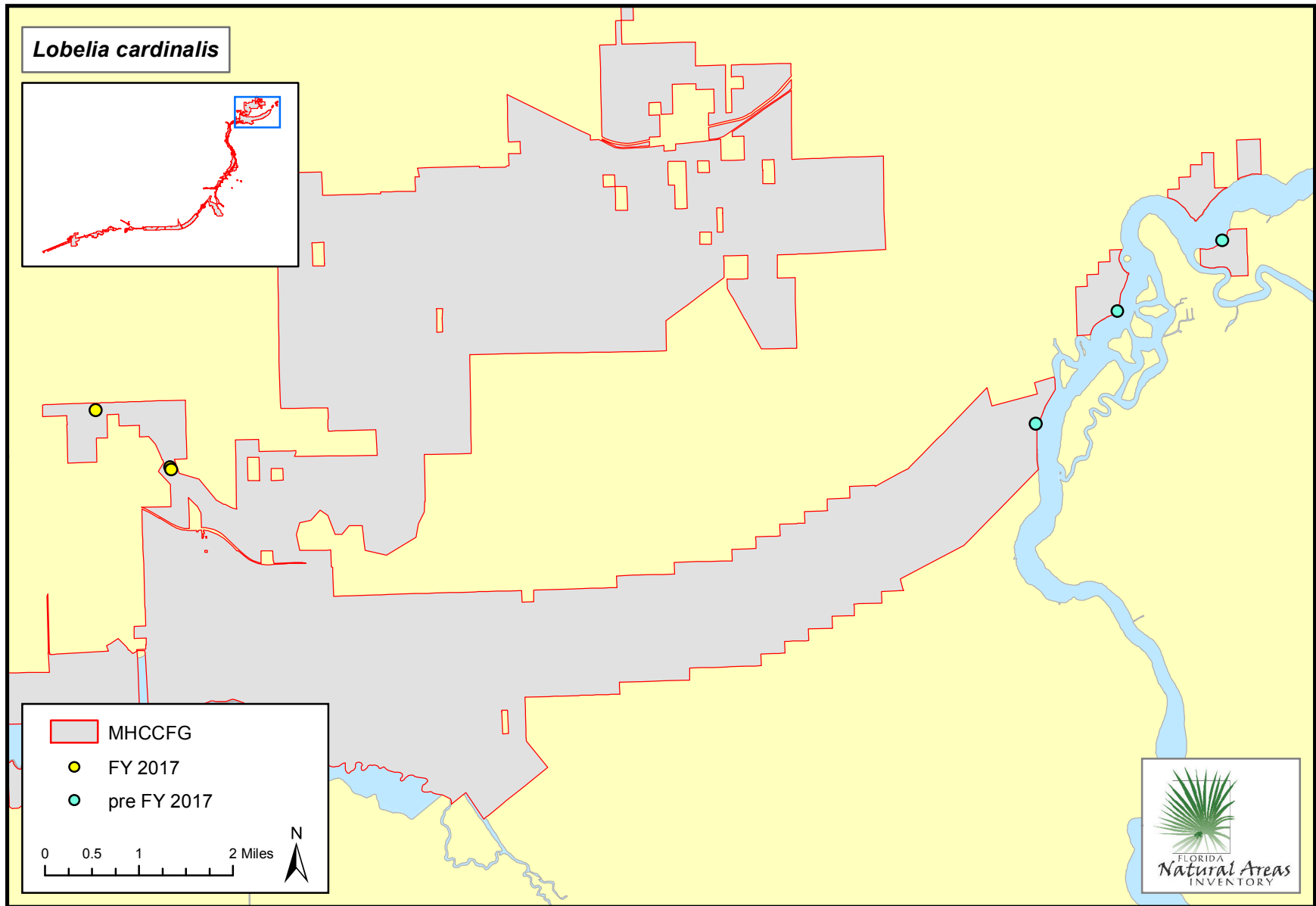


Figure 15. Location map of cardinal flower (*Lobelia cardinalis*), state listed as threatened, on MHCCFG.

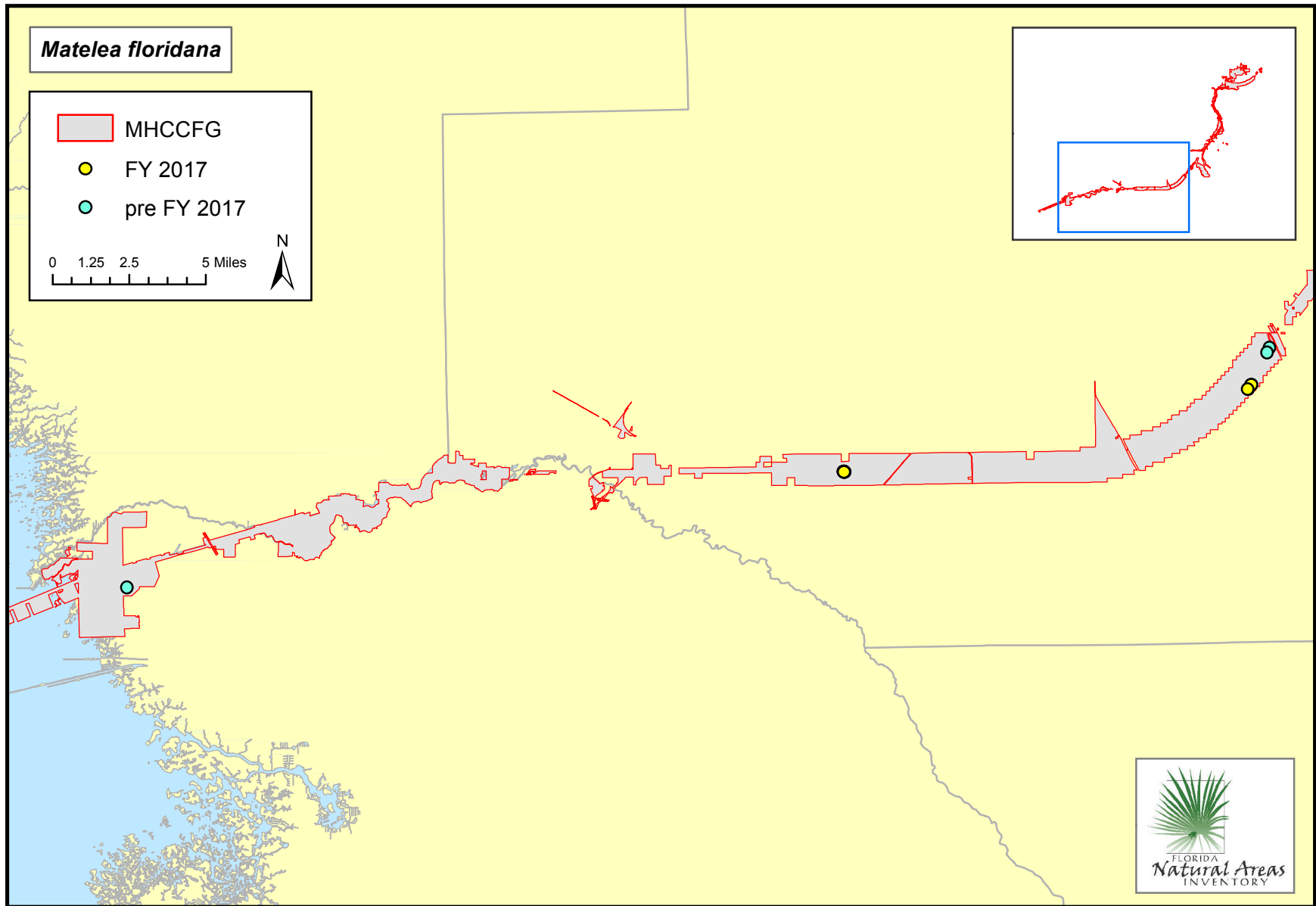


Figure 16. Location map of Florida spiny-pod (*Matelea floridana*), state listed as endangered, on MHCCFG.

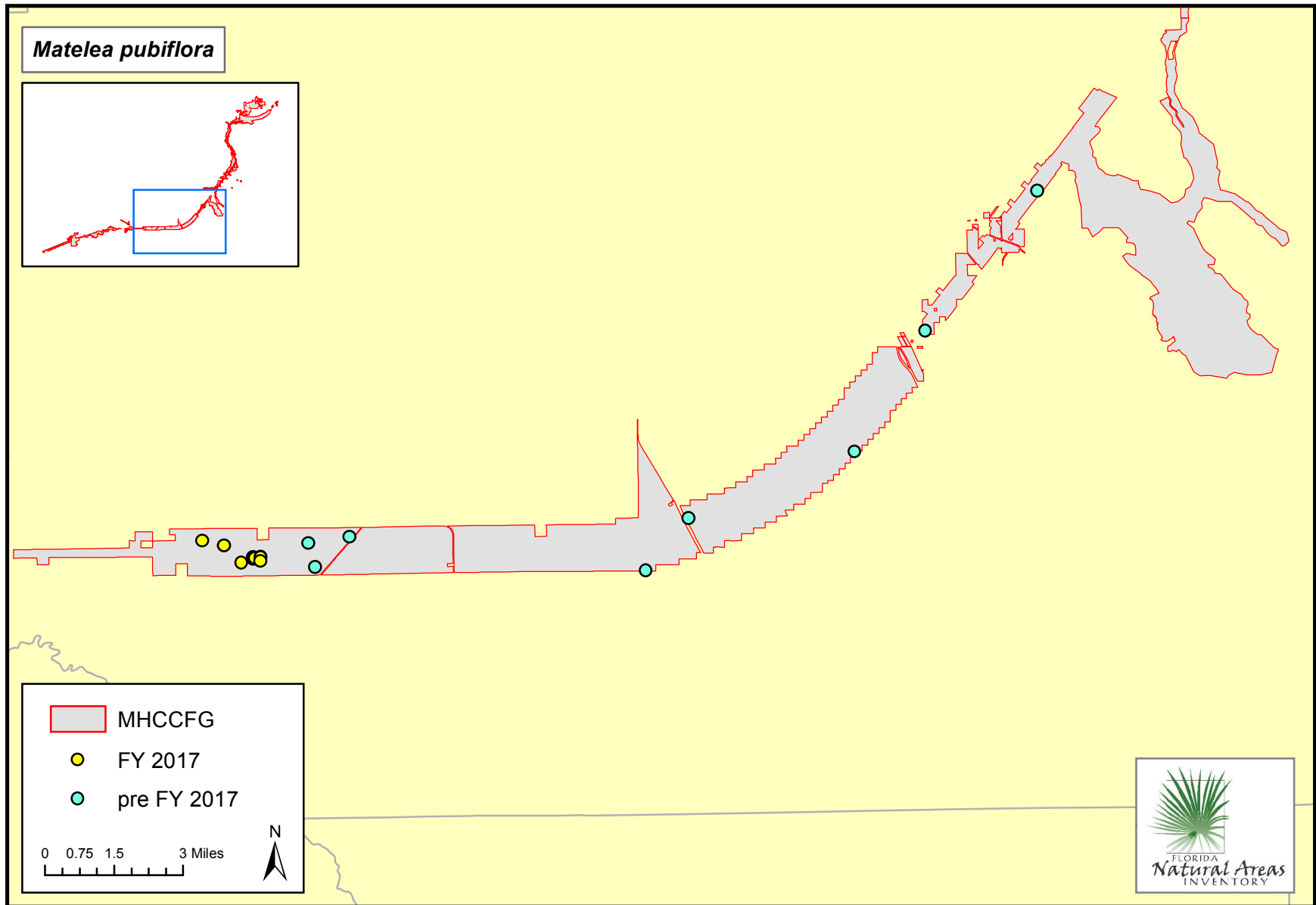


Figure 17. Location map of sandhill spiny-pod (*Matelea pubiflora*), state listed as endangered, on MHCCFG.

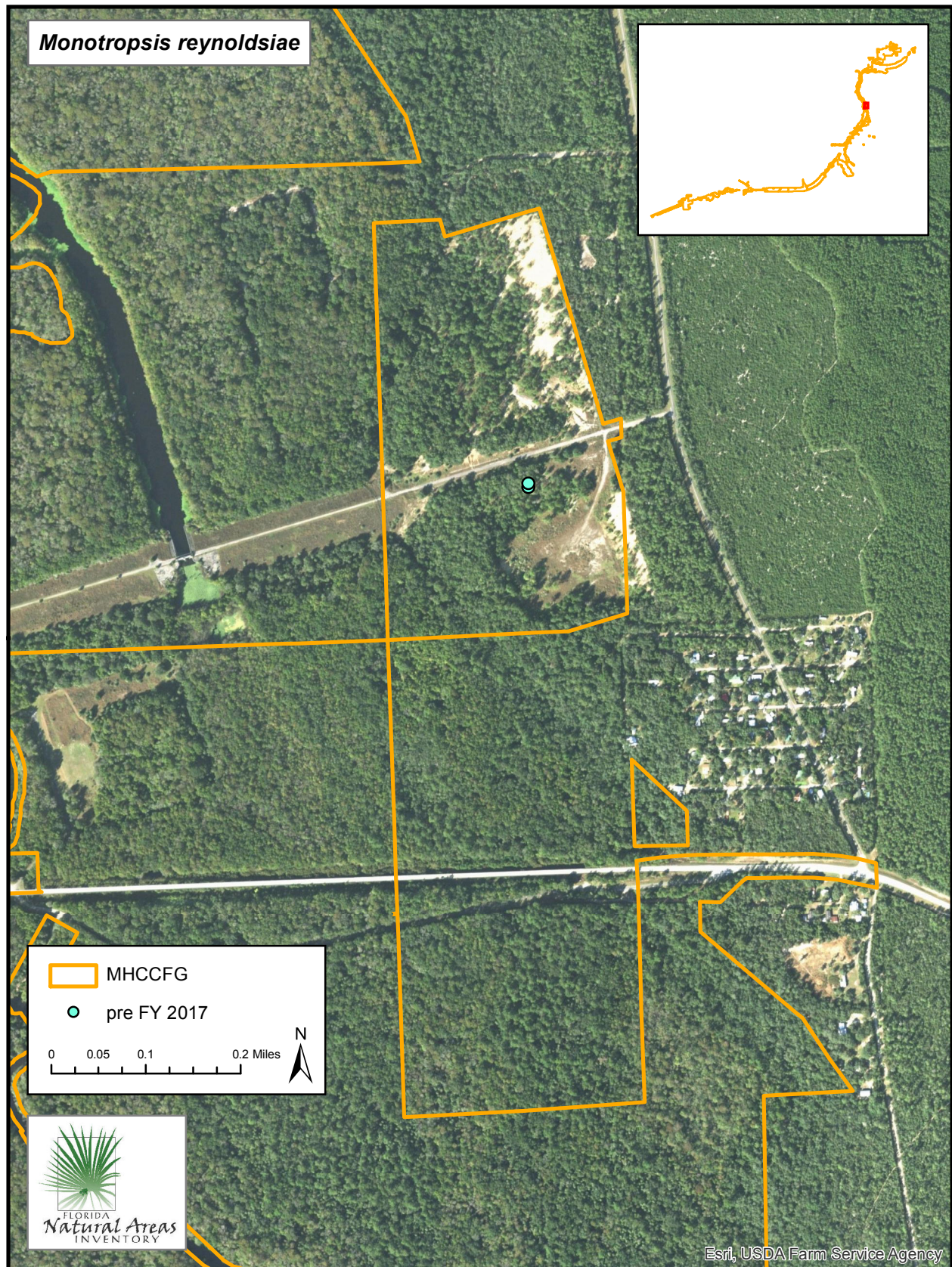


Figure 18. Location map of pygmy pipes (*Monotropsis reynoldsiae*), state listed as endangered, on MHCCFG. Not found in fiscal year 2017 or since 2003.

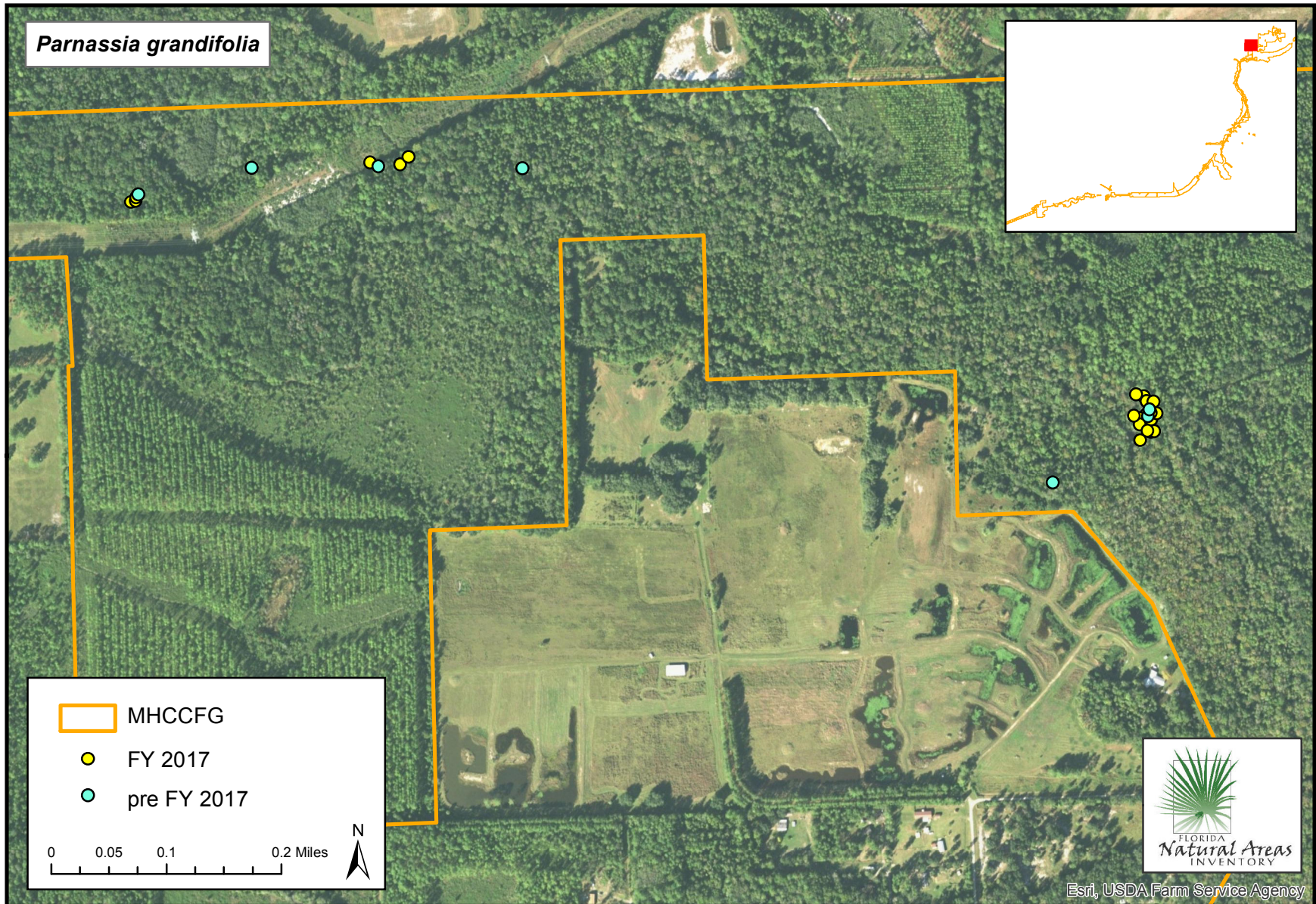


Figure 19. Location map of large-leaved grass-of-parnassus (*Parnassia grandifolia*), state listed as endangered, on MHCCFG.

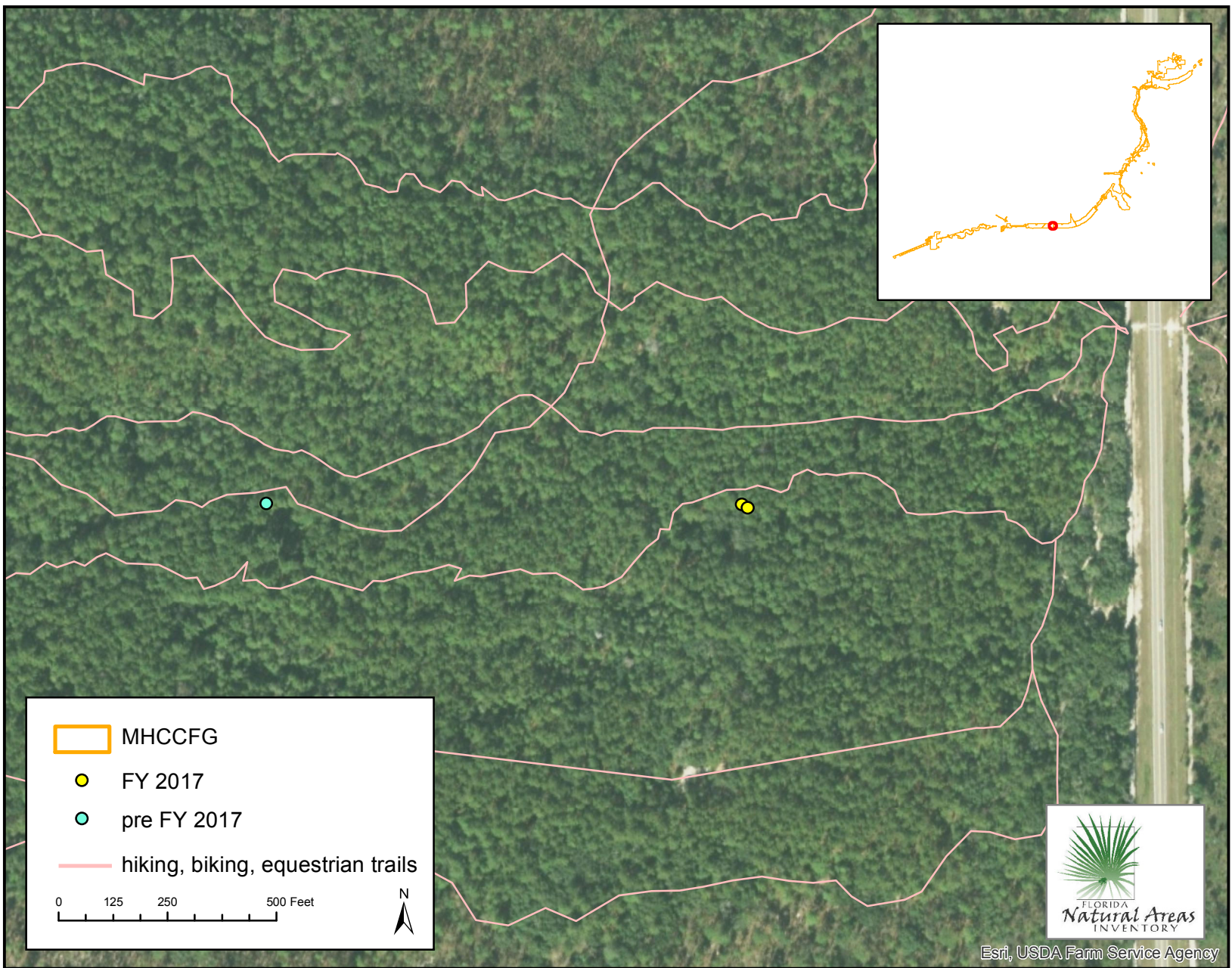
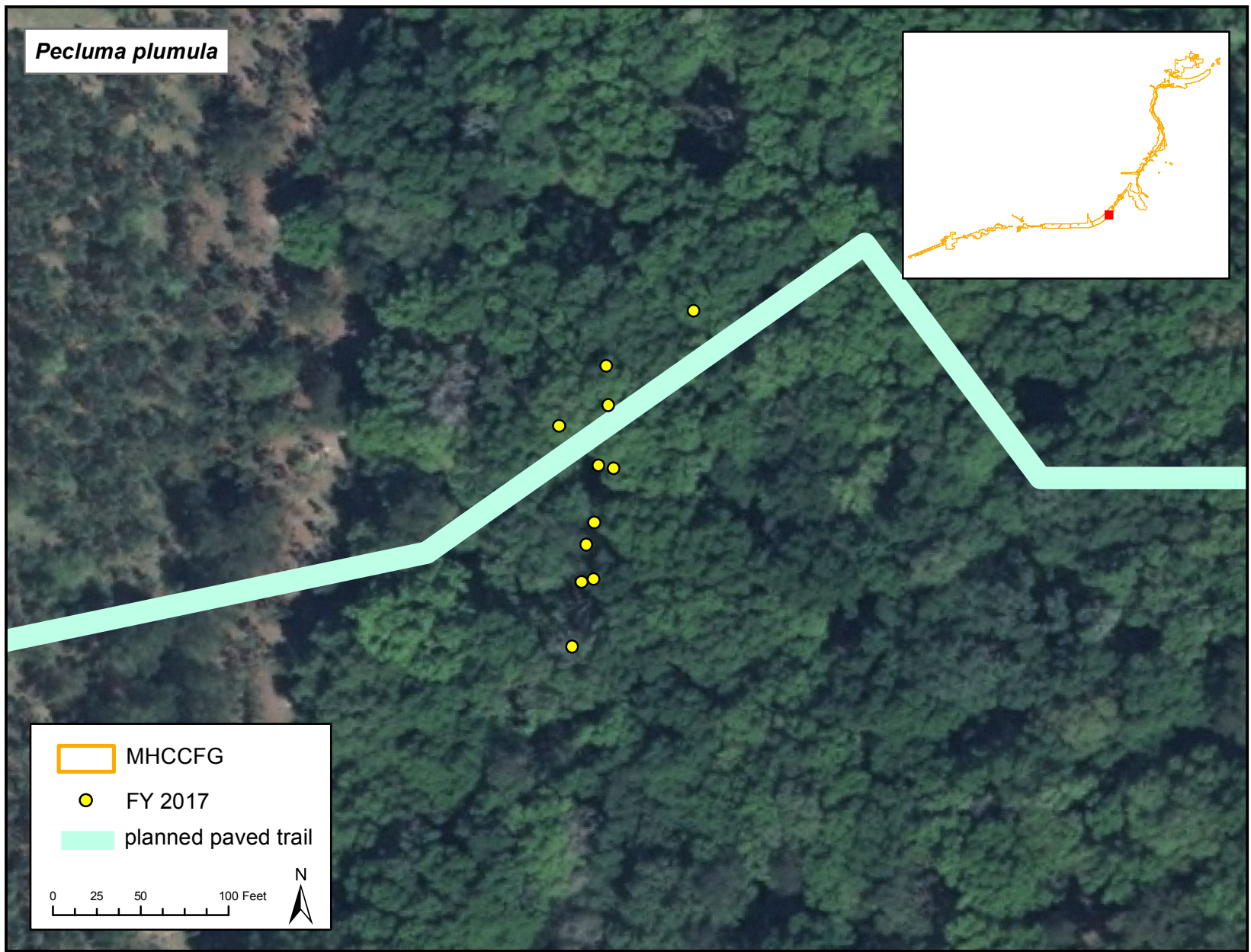


Figure 20. Location map of plume polypody (*Pecluma plumula*), state listed as endangered, on MHCCFG.

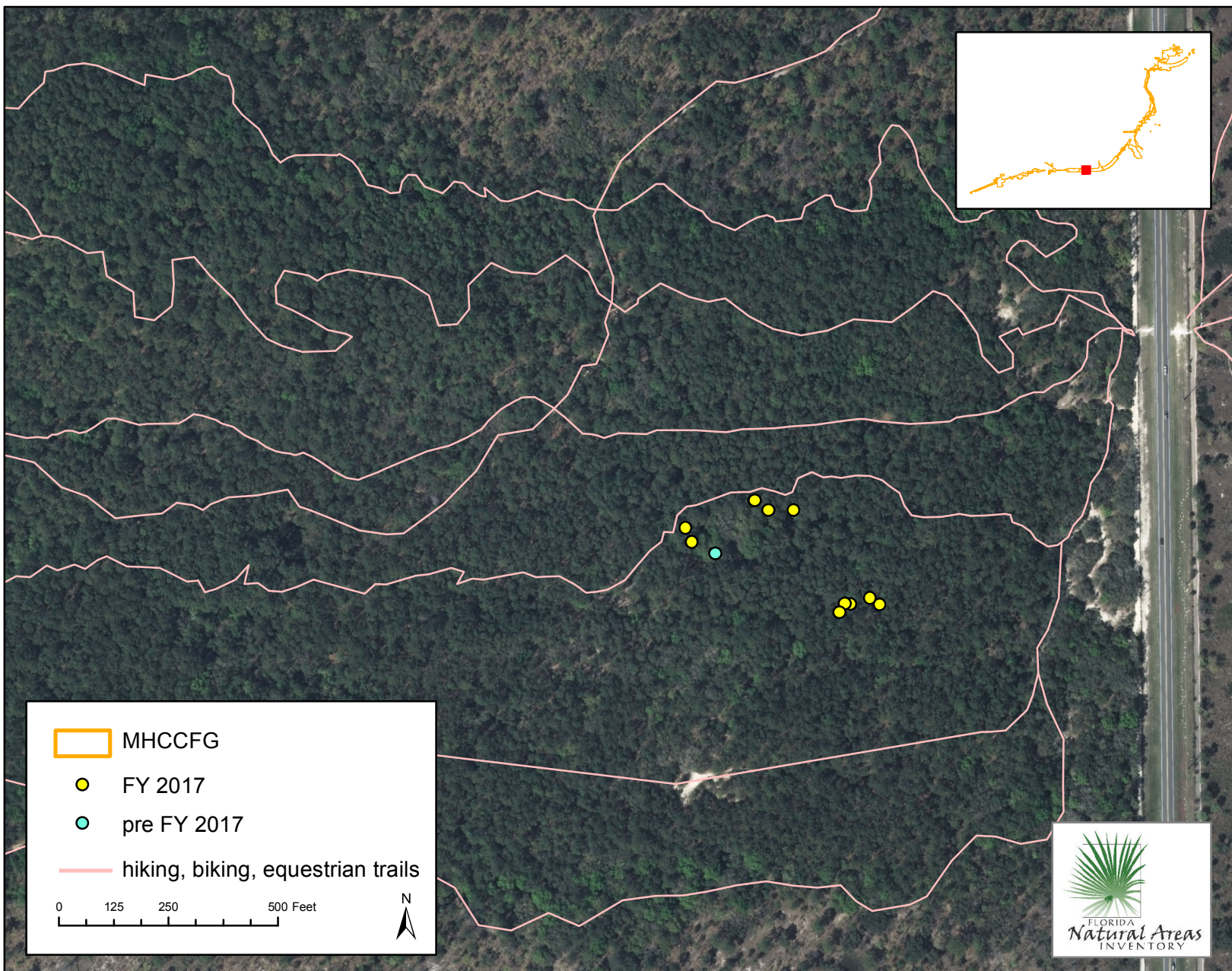
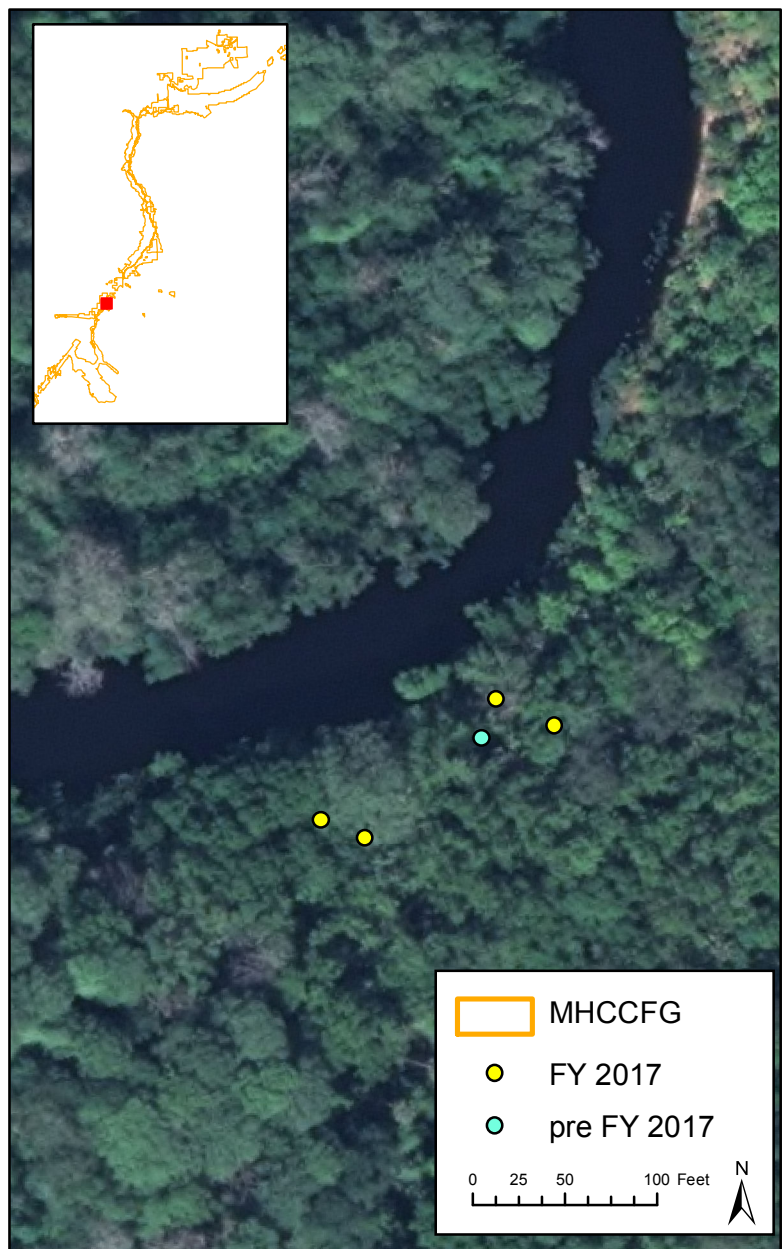


Figure 21. Location map of swamp plume polypody (*Pecluma ptilodon*), state listed as endangered, on MHCCFG.

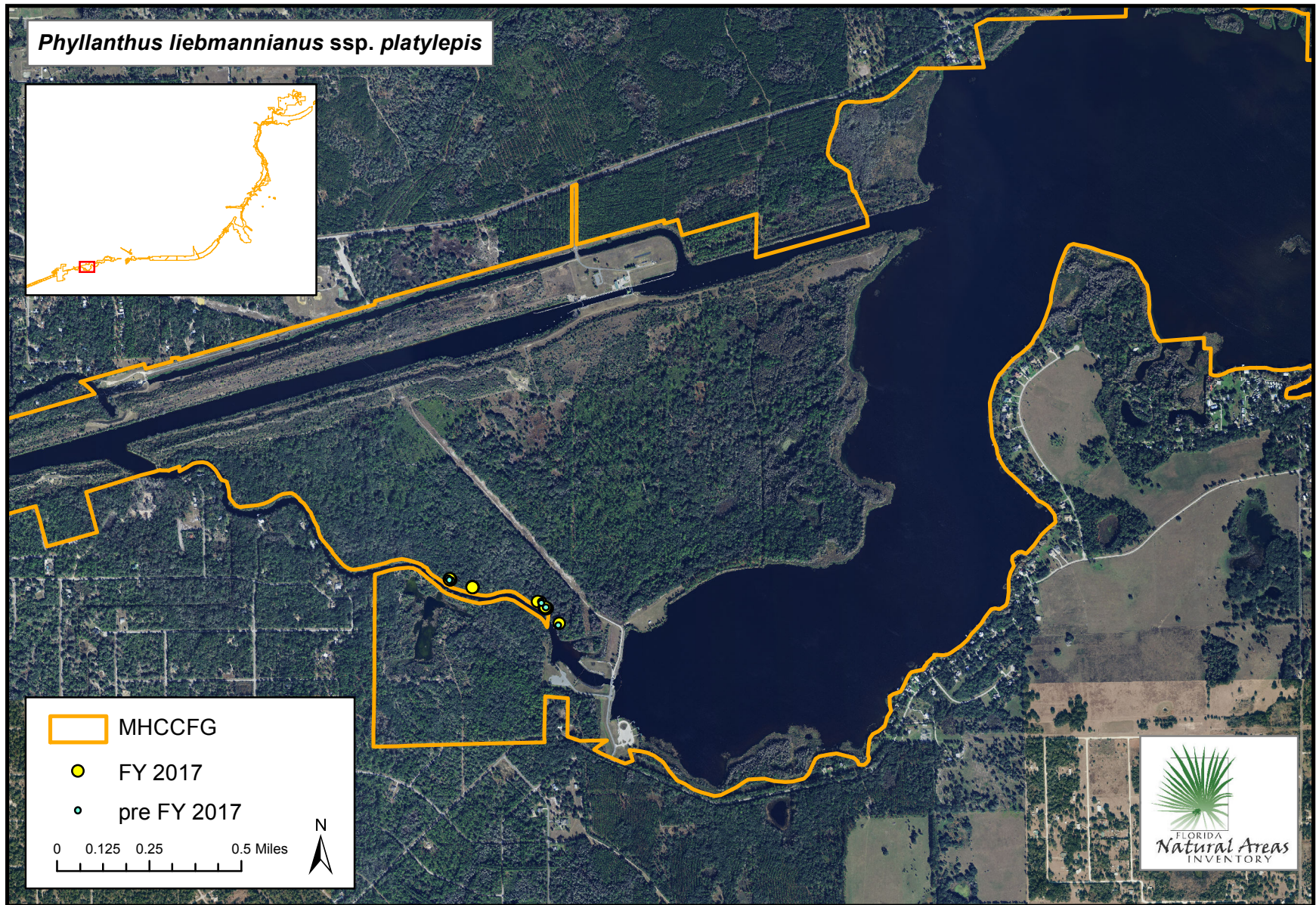


Figure 22. Location map of pinewoods dainties (*Phyllanthus liebmannianus ssp. platylepis*), state listed as endangered, on MHCCFG.

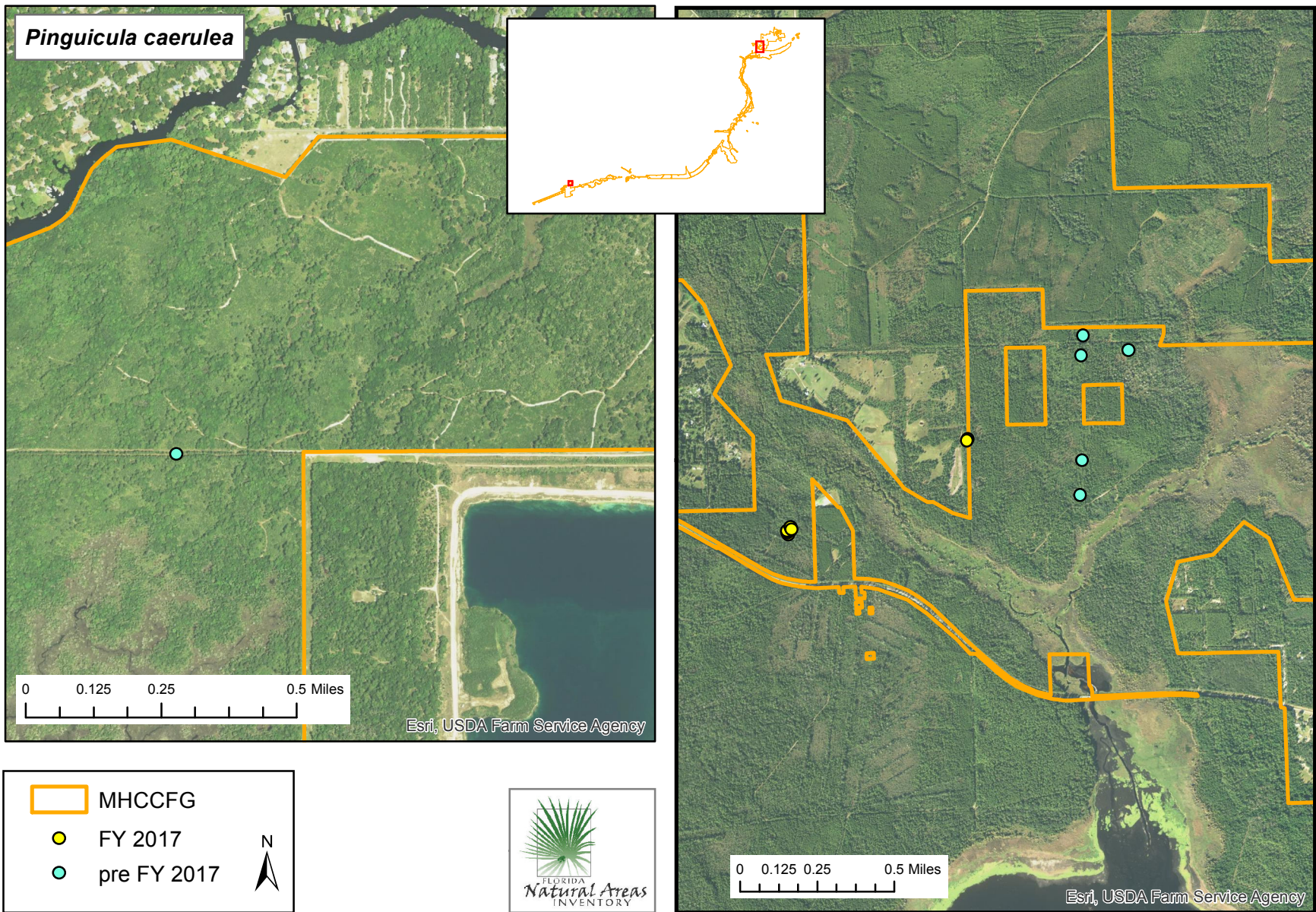


Figure 23. Location map of blueflower butterwort (*Pinguicula caerulea*), state listed as threatened, on MHCCFG.

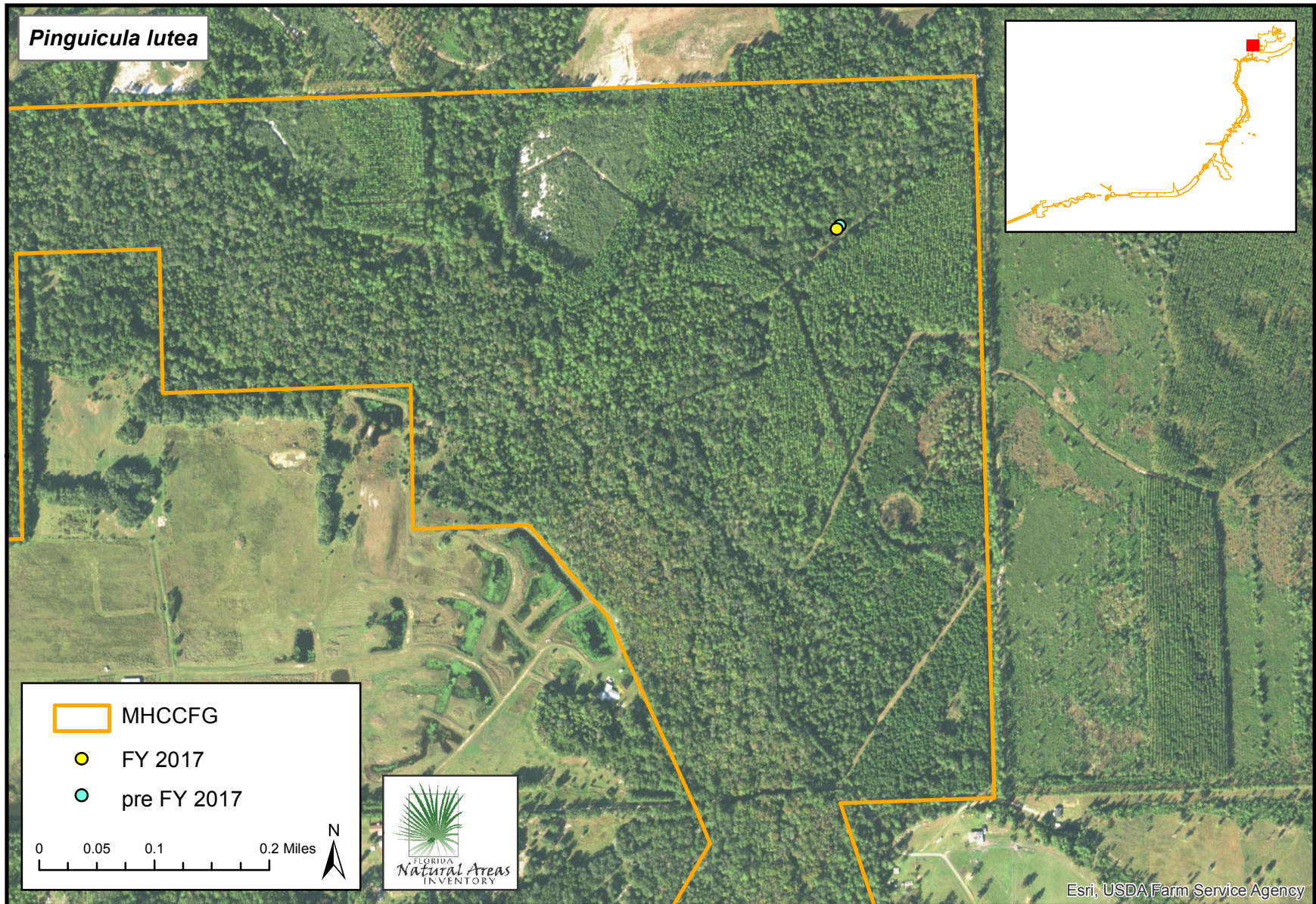


Figure 24. Location map of yellow-flowered butterwort (*Pinguicula lutea*), state listed as threatened, on MHCCFG.

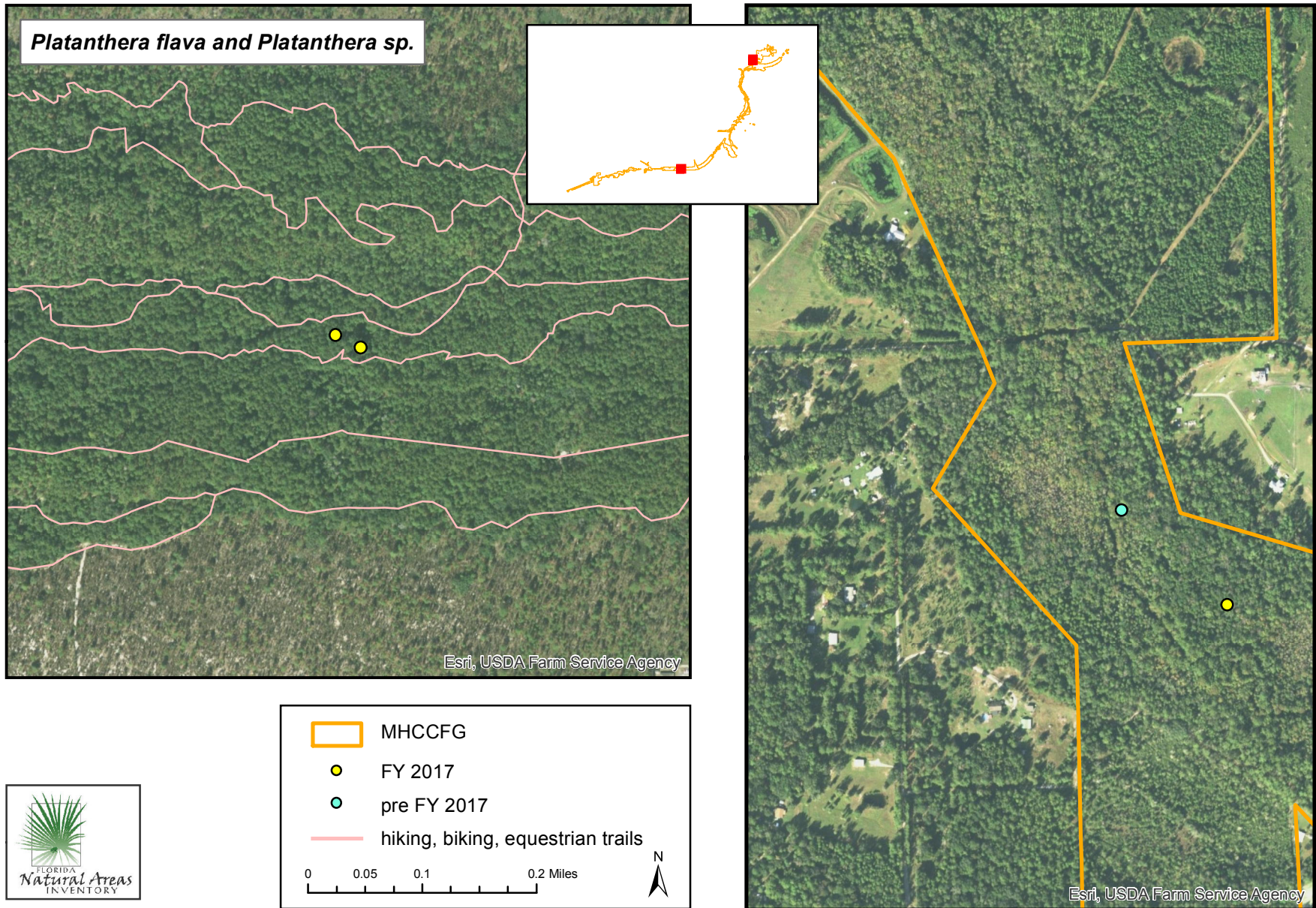


Figure25. Location map of palegreen orchid (*Platanthera flava*), state listed as threatened, on MHCCFG. All fiscal year 2017 occurrences were not in flower or fruit so not identified to species. The pre FY2017 occurrence was not re- located during survey.

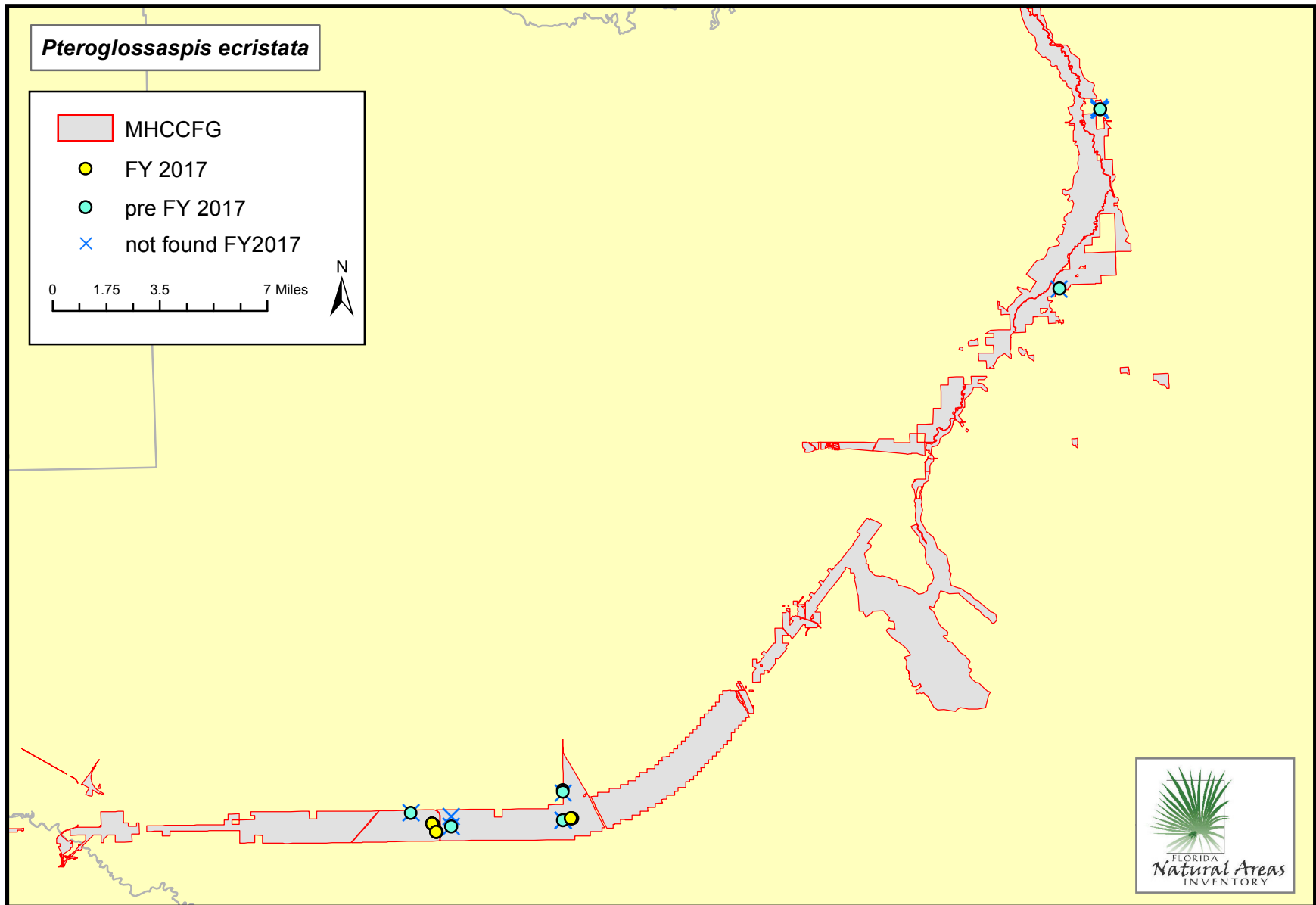


Figure 26. Location map of giant orchid (*Pteroglossaspis ecristata*), state listed as threatened, on MHCCFG. Many pre FY2017 records were not re-located; orchid may remain dormant for extended periods.

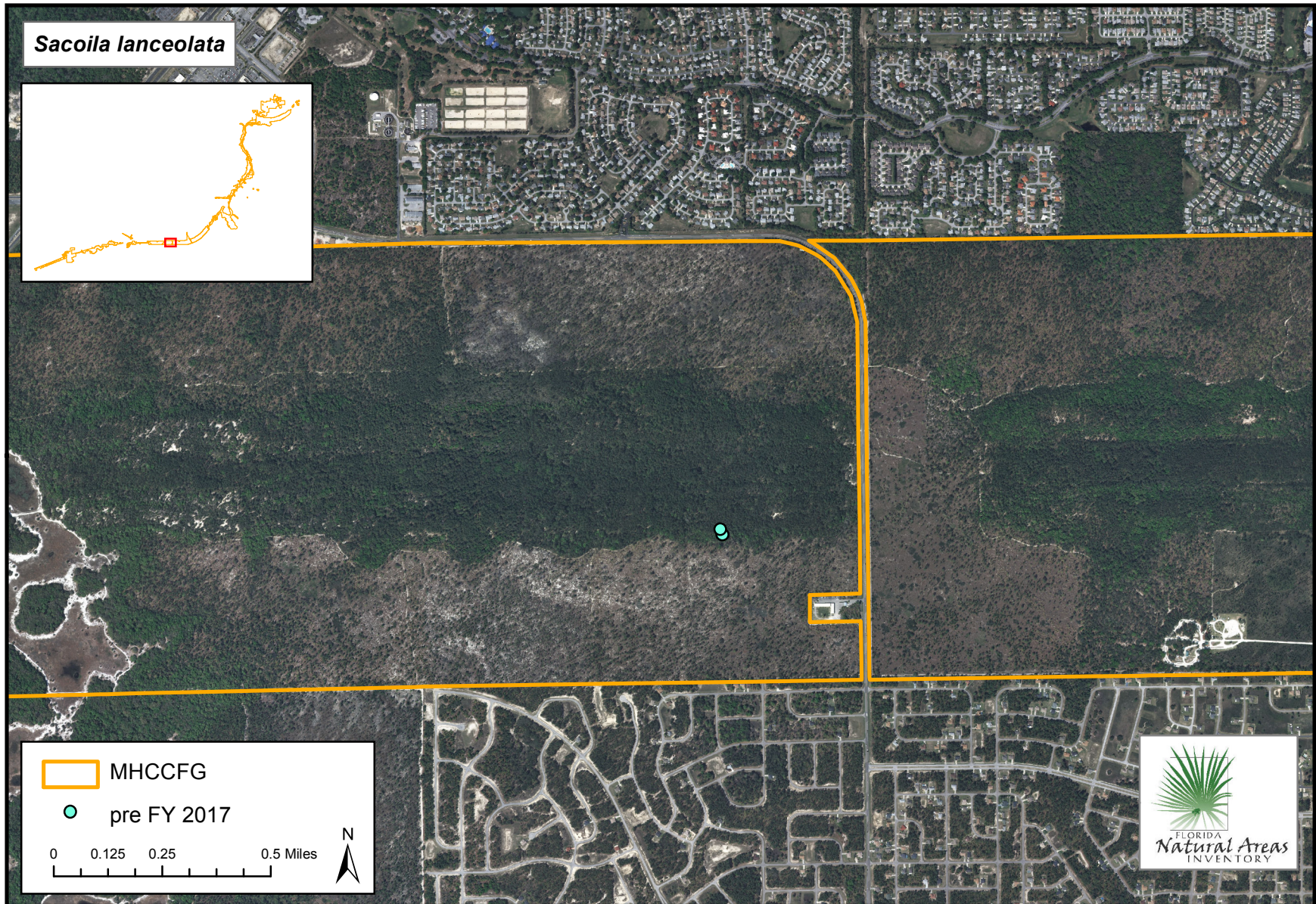


Figure 27. Location map of leafless beaked orchid (*Sacoila lanceolata*), state listed as threatened, on MHCCFG. Not re-located in fiscal year 2017; first documented in 2013; orchid may stay dormant some years.

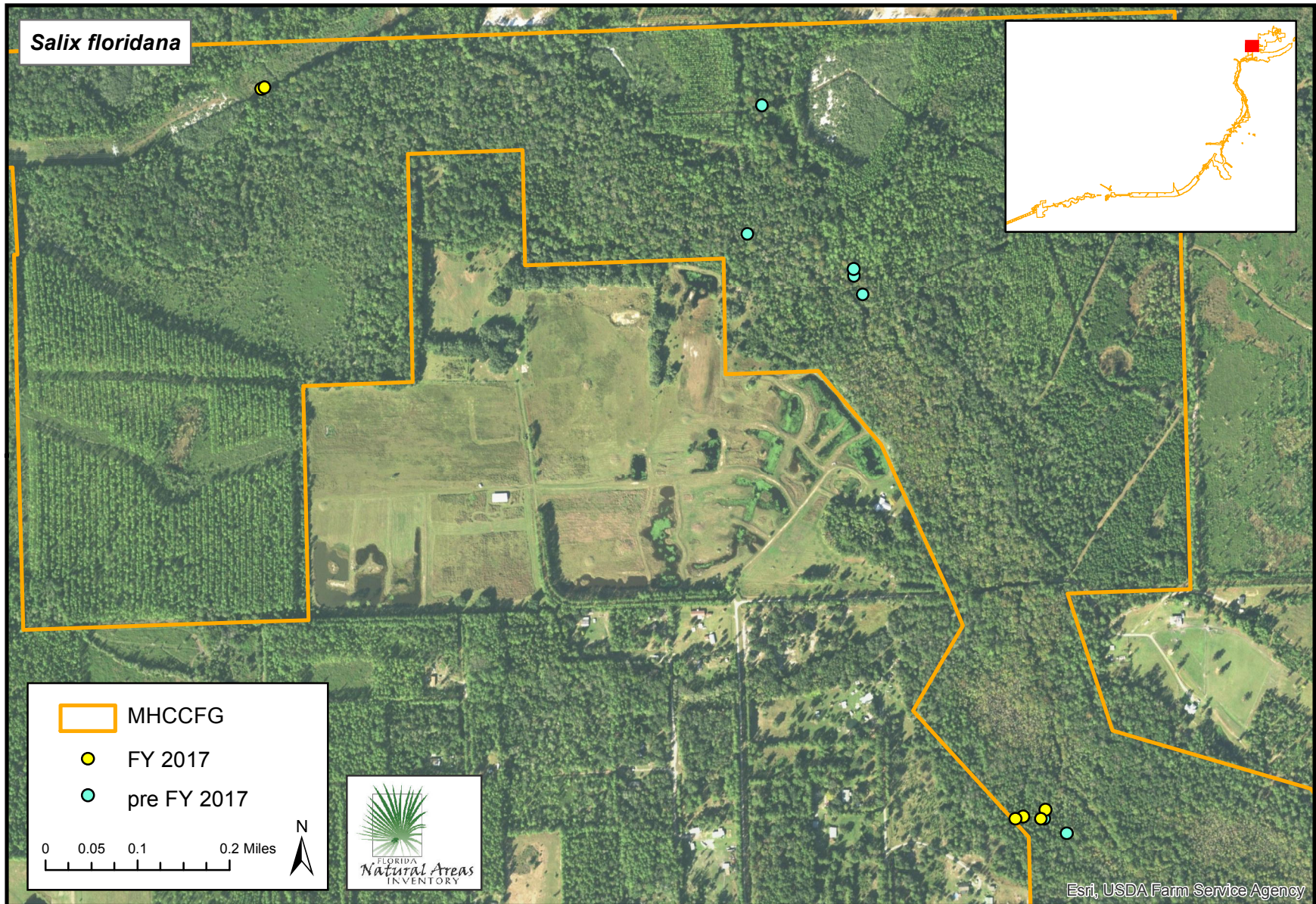


Figure28. Location map of Florida willow (*Salix floridana*), state listed as endangered, on MHCCFG.

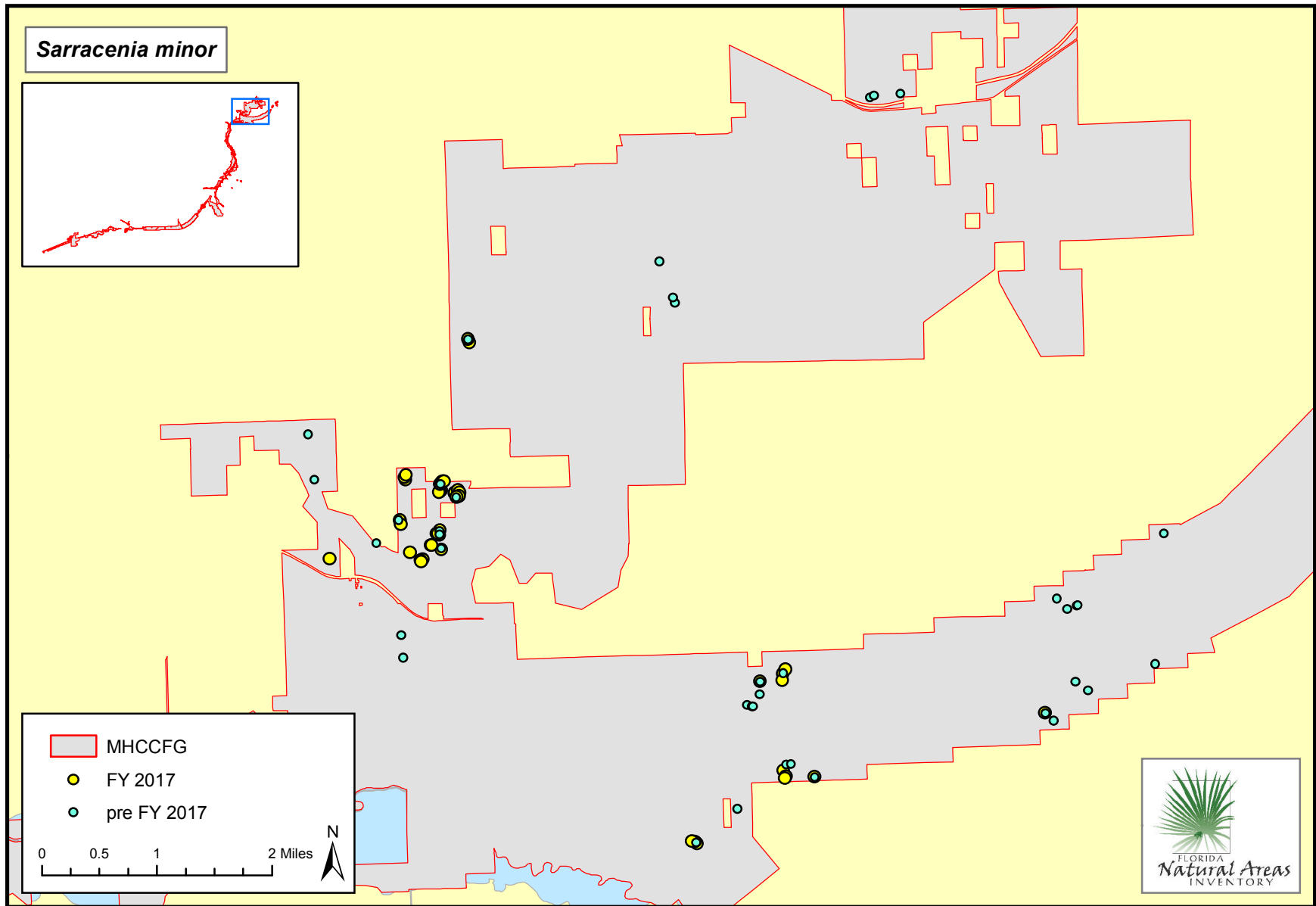


Figure 29. Location map of hooded pitcherplant (*Sarracenia minor*), state listed as threatened, on MHCCFG.

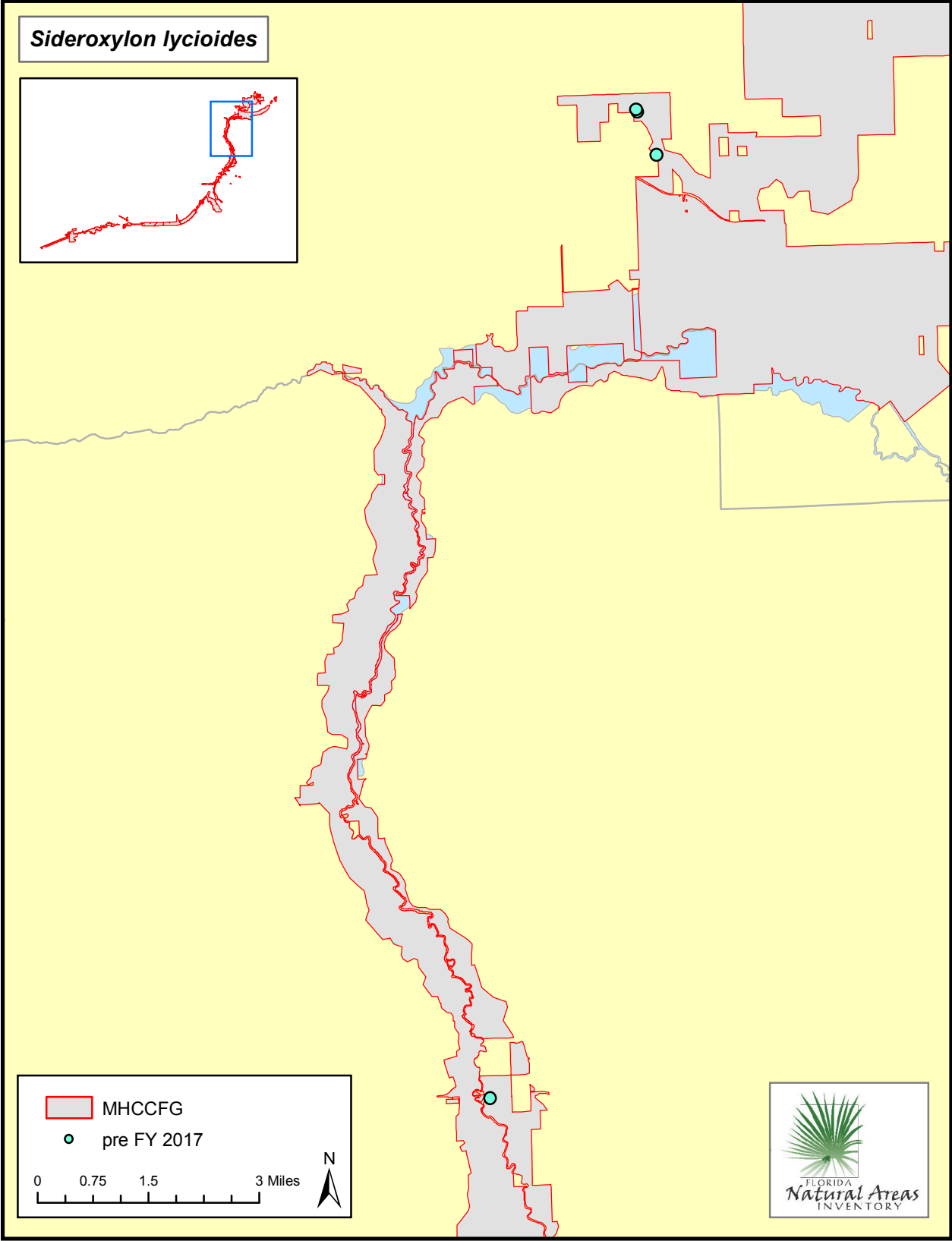


Figure 30. Location map of buckthorn (*Sideroxylon lycioides*), state listed as endangered, on MHCCFG. Not re-located in fiscal year 2017.

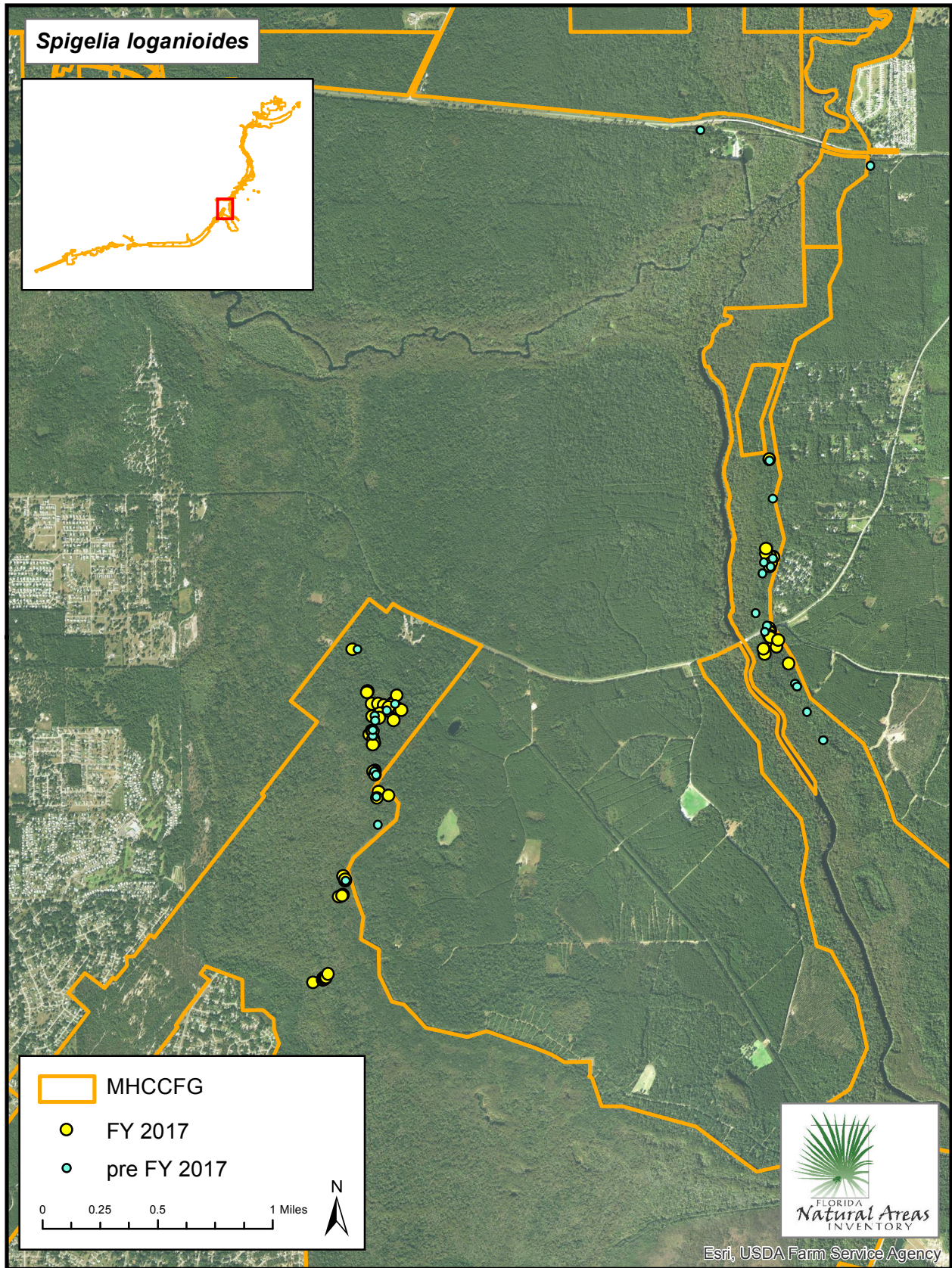


Figure 31. Location map of pinkroot (*Spigelia loganioides*), state listed as endangered, on MHCCFG.

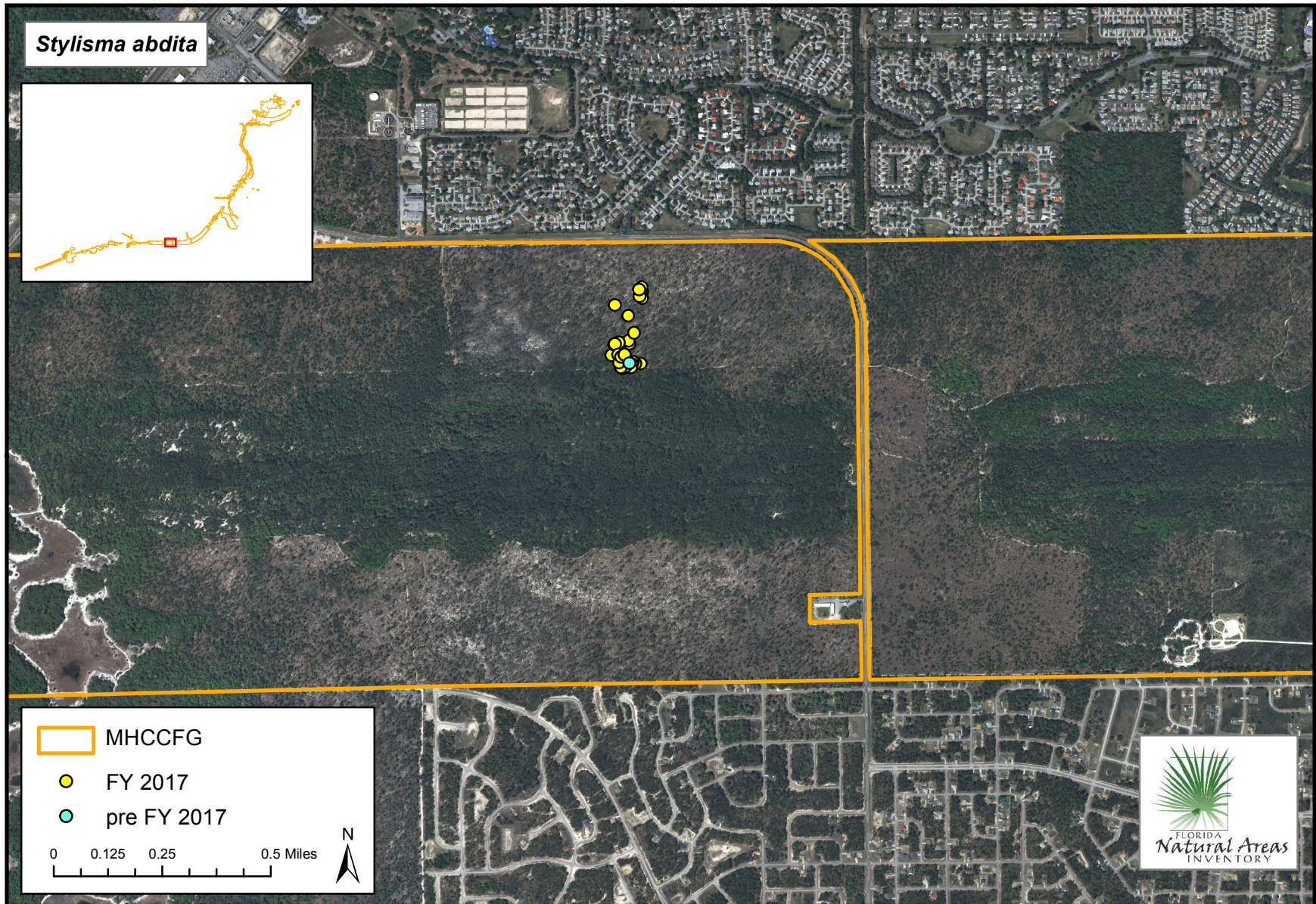


Figure 32. Location map of scrub stylisma (*Stylisma abdita*), state listed as endangered, on MHCCFG.

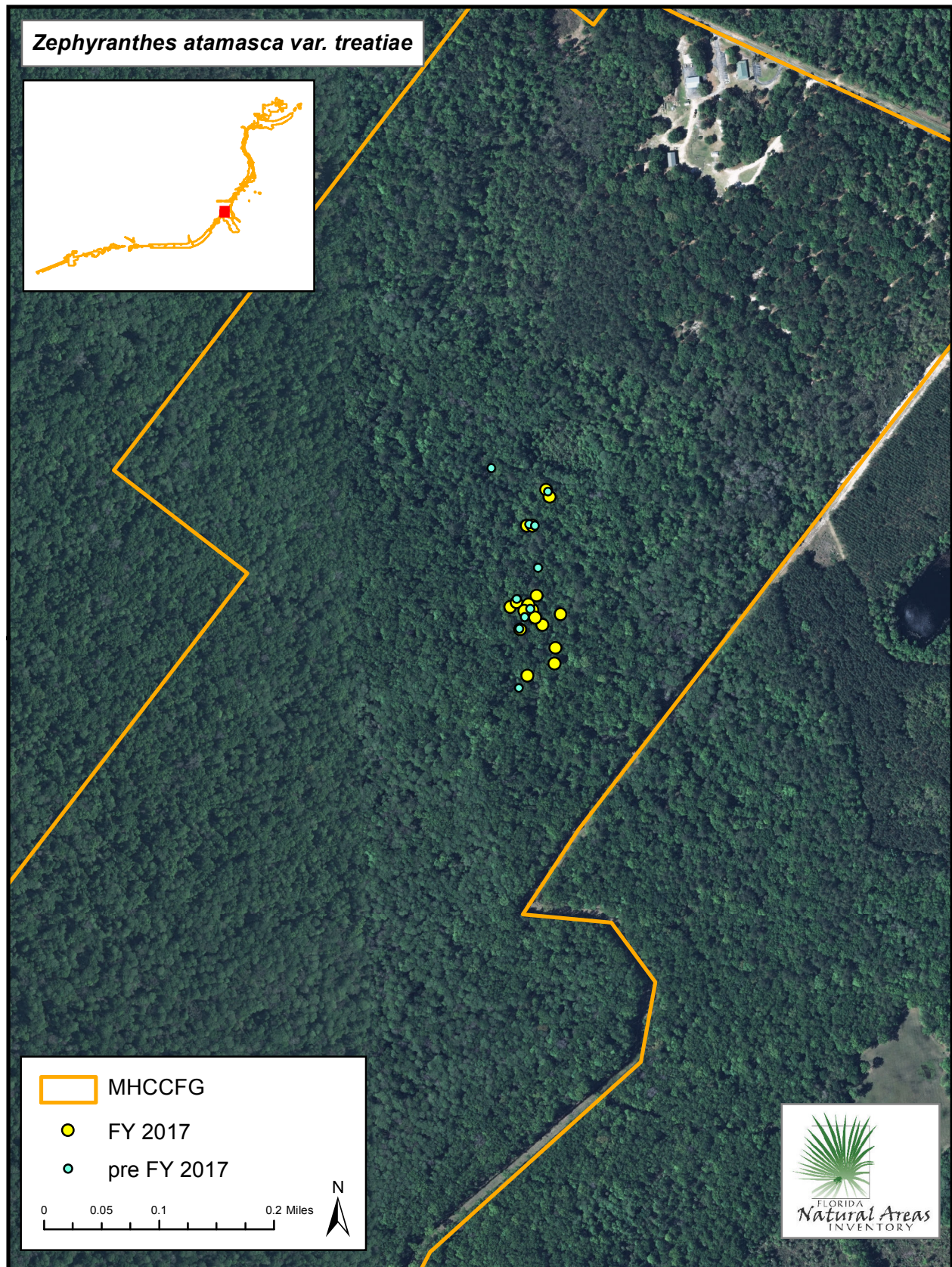


Figure 33. Location map of Treat's zephyrlily (*Zephyranthes atamasca* var. *treatiae*), state listed as threatened, on MHCCFG.

APPENDIX A

DATA ATTRIBUTES, DEFINITIONS, AND VALUES FOR RARE PLANT AND ANIMAL POINTS

<u>ATTRIBUTES</u>	<u>VALUES</u>
SITE	Name of managed area or survey area
SURVEYDATE	Date of data collection.
SURVEYOR	Name of the field surveyor
POINT_ID	Unique number assigned to each point by ArcMap.
FIELD_ID	Number assigned to this point during field work; not necessarily unique.
SPECIES	Scientific name of rare plant occurring at that point.
COMMONNAME	Common name of the rare plant occurring at that point.
ID_CONFIRM	Indicates whether taxonomic identification of the species has been confirmed by a reliable individual. Only use “no” if you have found a plant/animal with questionable ID (not reproductive, etc).
COUNT	Number of individuals physically counted. Count should be a specific number.
ESTIMATE	Estimated number of individuals in the population.
PHENOLOGY (plant only)	Characteristic phenology of the plants. Phenology values: flower/bud flower/fruit fruit sporulating in leaf dormant
OBS_ACTIV (animal only)	Describes the activity of the rare animal (Only used for rare animals). If the animal is doing more than one thing, the secondary activity is described in OTH_OBSDAT. OBS_ACTIV values: <ul style="list-style-type: none">• nesting• foraging• loafing• commuting• burrow• other (described in OTH_OBSDAT)

LOC_USE (migratory animal only)	<p>Describes the observed area of migratory animal species that utilize geographically and seasonally disjunct locations.</p> <ul style="list-style-type: none"> • Not applicable • Breeding • Nonbreeding • Migratory stopover • Migratory corridor • Staging • Hibernaculum • Maternity colony • Bachelor colony • Nonmigratory • Undetermined • Adult foraging area • Nesting area • Juvenile foraging area • Calving area • Nursery area • Wintering site • Roost
OTH_OBSDAT	Other observation data including any observations on the status, distribution, estimated area occupied, management needs, and viability of the population.
FNAI_NC	Type of natural community, using the FNAI classification system (see FNAI website for descriptions of natural community types, www.fnai.org) plus “pine plantation,” “pasture- improved,” “pasture- semi-improved,” and “ruderal”.
DISTURB_1	<p>Describes the primary disturbance in the vicinity of the rare plant or animal population. If there is more than one type of disturbance, the most prevalent form of disturbance is entered here and the lesser disturbance is entered in Disturb_2.</p> <p>Disturbance values:</p> <p>not evident agriculture cattle disturbance clearing (includes dove fields, old fields, and food plots) ditch/canal exotics firebreaks fire suppression forestry operations (e.g., logging, loading areas, bedding, equipment rutting, slash piles, and other mechanical disturbances; does not include burning.) hog digging impoundment (e.g. artificial ponds and lakes, borrow pits, dams, dikes) natural ORV trail road trash dumping woody encroachment cause unknown other (details provided in the COMMENTS field)</p>

DISTURB_2	Describes the secondary disturbance, if any, in the vicinity of the rare plant population. Disturbance values are the same as DISTURB_1.
DISTURB_SEV	Severity of the disturbance(s). Disturbance severity values: none light moderate heavy severe
OTH_DESC	A general description or "word picture" of the area where this occurrence is located (i.e., the physical setting and ecological context), including habitat, dominant plant species, topography, hydrology, soils, adjacent communities, and surrounding land use.
COMMENTS	Comments is an optional field used by the surveyor to provide additional information about the FNAI-tracked plant population.
FNAIGLOBAL	Global rank of the element (in this case the rare plant) assigned by FNAI.
FNAISTATE	State rank of the element (in this case the rare plant) assigned by FNAI.
FEDERAL	Federal legal status.
STATE	State legal status.

APPENDIX B

GLOBAL AND STATE RANKS

Florida Natural Areas Inventory (FNAI) defines an **element** as any rare or exemplary component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. FNAI assigns two ranks to each element found in Florida: the **global rank**, which is based on an element's worldwide status, and the **state rank**, which is based on the status of the element within Florida. Element ranks are based on many factors, including estimated number of occurrences, estimated abundance (for species and populations) or area (for natural communities), estimated number of adequately protected occurrences, range, threats, and ecological fragility.

GLOBAL RANK DEFINITIONS

- G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or human factor.
- G2 Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or human factor.
- G3 Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals), or found locally in a restricted range, or vulnerable to extinction from other factors.
- G4 Apparently secure globally (may be rare in parts of range).
- G5 Demonstrably secure globally.
- GH Occurred historically throughout its range, but has not been observed for many years.
- GX Believed to be extinct throughout range.
- GXC Extirpated from the wild but still known from captivity or cultivation.
- GU Unrankable

STATE RANK DEFINITIONS

State ranks (S#) follow the same system and have the same definitions as global ranks, except they apply only to Florida, with the following additions:

- SA Accidental in Florida and not part of the established biota.
- SE Exotic species established in Florida (may be native elsewhere in North America).
- SX Believed to be extirpated from state.
- SNR Not ranked

FEDERAL AND STATE LEGAL STATUS

Provided by FNAI for information only.
For official definitions and lists of protected species,
consult the relevant state or federal agency.

FEDERAL LEGAL STATUS

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

- E Endangered: species in danger of extinction throughout all or a significant portion of its range.
- T Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
- E(S/A) Endangered due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
- T(S/A) Threatened due to similarity of appearance (see above).
- PE Proposed for listing as Endangered species.
- PT Proposed for listing as Threatened species.
- C Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
- XN Non-essential experimental population.
- MC Not currently listed, but of management concern to USFWS.
- N Not currently listed, nor currently being considered for listing as Endangered or Threatened.

FLORIDA LEGAL STATUSES

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505.

- E Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
- T Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
- CE Commercially exploited: species designated by Florida DOACS in paragraph 5B-40.0055(1)(c), F.A.C.
- N Not currently listed

Animals: Definitions derived from “Florida’s Endangered Species and Species of Special Concern, Official Lists” published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

- C Candidate for listing at the Federal level by the U. S. Fish and Wildlife Service
- FE Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
- FT Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
- FXN Federal listed as an experimental population in Florida
- FT(S/A) Federal Threatened due to similarity of appearance
- ST State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
- SSC Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for *Pandion haliaetus* (Osprey) indicates that this status applies in Monroe county only.)
- N Not currently listed, nor currently being considered for listing.

APPENDIX C

DATA ATTRIBUTES, DEFINITIONS, AND VALUES FOR EXOTIC PLANT POINTS

<u>ATTRIBUTES</u>	<u>VALUES</u>
SURVEYSITE	Name of managed area or survey area.
SURVEYDATE	Date of data collection.
SURVEYOR	Name of the FNAI field surveyor
EVAL_TYPE	Type of visit to site. Valid values: Initial - first observation and assessment of a species in that spot Revisit - observations/assessments on subsequent visits Pre-treatment - only an observation /assessment taken directly before treatment is applied Post-treatment – observation /assessment and evaluation of the targeted invasive species post-treatment
SPECIES	Scientific name of exotic plant occurring at that point.
COMMONNAME	Common name of exotic plant occurring at that point.
FLEPPC_CD	Category of exotic species as determined by the Exotic Pest Plant Council (EPPC 2005 List of Invasive Species). EPPC categories are: <i>Category I:</i> Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. <i>This definition does not relay on the economic severity or geographic range of the problem, but on the documented ecological damage caused.</i> <i>Category II:</i> Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. <i>Not listed:</i> Non-native species not currently listed by EPPC.
DISTRIBUTN	Pattern of plant distribution within the gross acreage. Possible values are: Single plant or clump – One individual plant or one small clump of a single species. Scattered plants or clumps – Multiple individual plants or small clumps of a single species scattered within the gross area infested. Scattered dense patches – Dense patches of a single species scattered within the gross area infested. Dominant cover – Multiple plants or clumps of a single species that occupy a majority of the gross area infested. Dense monoculture – Generally a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.

Linearly scattered – Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.
No live plants – No live plants observed

ACRES	Estimated area of infestation. Valid values are: 0.01 0.10 0.25 0.50 1 2, etc up to 10 Other
SIZE	Estimated area of infestation (with cues to help with visual estimation). Valid values are: 0.001;2 lg desk 0.01;2 car garage 0.1;bball ct 0.25;4 tennis ct 0.5;half fball field 1.0;fball field 2, etc up to 10 Other (in Comments)
PCTCOVER	A visual estimate of the percentage of the area infested that is actually covered by the canopy of the plants. Percent Cover classes are: < 5 % 5 - 25 % 26 - 50 % 51 - 75 % > 75 %
MATURITY	Stage of plant development for the recorded infestation. Possible values are: Mature Immature Both
PHENOLOGY	Characteristic phenology of the plants. Phenology values: flower/bud flower/fruit fruit sporulating in leaf dormant
TREATEDB4	Indication of whether or not plants were previously subject to management efforts. Allowed values are: Yes No Unknown

FNAI_NC	Natural community present in area of invasive plant occurrence.
POLY_SEVER	Severity of the disturbance(s). Disturbance severity values are: none light moderate heavy severe
POLYDIST_1	Describes the primary disturbance in the vicinity. Disturbance values are: not evident agriculture cattle disturbance clearing (includes dove fields, old fields, and food plots that are less than 0.5 acre, i.e. that are not delineated as ruderal polygons) ditch/canal exotics firebreaks fire suppression forestry operations (e.g., logging, loading areas, bedding, equipment rutting, slash piles, and other mechanical disturbances; does not include burning.) hog digging impoundment (e.g. artificial ponds and lakes, borrow pits, dams, dikes) natural ORV trail road trash dumping woody encroachment cause unknown other (details provided in the DISTURBCOM field)
POLYDIST_2	Description of the secondary disturbance, if any, in the vicinity of the rare plant record. Disturbance values are the same as DISTURB 1.
POLYDIST_3	Description of the tertiary disturbance, if any, in the vicinity of the rare plant record. Disturbance values are the same as DISTURB 1.
DISTURBCOM	Comments regarding disturbance
PHOTO_INFO	Observation, Assessment, or Treatment Photos
COMMENTS	Comments is an optional field used by the surveyor to provide additional information about the exotic pest plant population.

APPENDIX D

Rare Plant Description

Global Rank: **G3**
State Rank: **S2**
State Status: **Threatened**
Federal Status: **None**

Agrimonia incisa Torr. & A. Gray.
Common name: incised groove-bur
ROSACEAE

Description: Perennial herb originating from tuberous roots. Stems 50-100 cm tall, simple or branched, with gray to whitish hairs. Leaves divided into 7-9 leaflets with the terminal leaflet usually larger than the rest of the leaves. Leaflets are 1-3 cm long, up to 1.2 cm wide, opposite, sessile, and have widely serrated (incised) margins. Hairs are on both upper and lower surfaces of leaflets and golden, sessile glands are on the lower surface. Flowers occur alternating on stems (spikes) and consist of a green, smooth, glandular hypanthium that has yellow, stiff, hooked bristles on the top, 5 green glandular sepals, and 5 yellow petals up to 3 mm long. A pair of nutlets (to 2.5 mm long), make up the fruit type (FNA 2014, NatureServe 2017b).

Flowering time: Fall

Habitat: Sandhill. No incised groove-bur were found at MHCCFG during the 2016-2017 survey, but several plants were documented in 1975 during the Cross Florida Barge Canal Study (FGFWFC 1976). GPS coordinates were followed from location information provided on a Herbarium voucher collected during the early survey. The voucher site was explored together with other sandhill locations between SR 200 and I-75 in Marion County.

Range: From South Carolina west to Texas. Found in Florida from Hillsborough and Polk counties north to Washington County and skipping over to Escambia County.

Management: Maintain sandhill quality with frequent prescribed fire. Control invasive species.

Distinguishing features: Incised groove-bur can be separated from the other Florida *Agrimonia* species, smallfruit agrimony (*A. microcarpa*), based on the latter lacking glands on its lower leaf surfaces or hypanthium and its occurrence in mesic hammocks.



Photo by FNAI staff



Photo by Brenda Herring, taken at Eglin Air Force Base

References:

(FNA) Flora of North America Editorial Committee. 2014. Flora of North America north of Mexico, Vol. 9: Picramniaceae to Rosaceae. Oxford University Press, New York.

FGFWFC (Florida Game and Fresh Water Fish Commission). 1976. Cross Florida Barge Canal Restudy Report Endangered, threatened, rare, special concern, status undetermined and biologically sensitive species. U. S. Corps of Engineers, Department of the Army, Jacksonville, FL.

NatureServe. 2017b. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. <NatureServe Explorer *Agrimonia incisa* report>. Accessed 8 June 2017.

Global Rank: **G2**
State Rank: **S2**
State Status: **Threatened**
Federal Status: **None**

Arnoglossum diversifolium (Torr. & A. Gray) H. Rob.
Common name: Variable-leaved Indian-plantain
ASTERACEAE

Description: Perennial herb with primarily a single stem extending from 70 to 150 cm tall. Lower portion of stem purplish, angled, ridged or grooved; upper portion of stem green and ribbed. Leaves are in rosettes and on stems, have palmate venation, and are triangular to arrow shaped with squared-off bases (truncate). Rosette and basal leaves to 10 cm long with blades comprising one-third and petioles making up two-thirds of the entire leaf, and margins have a few outward pointing teeth, are shallowly lobed, wavy or smooth. Stem leaves are reduced in size up the stem, with much shorter petioles and the upper-most ranging from subsessile to sessile; stem leaf margins are coarsely toothed and lobed (FNA 2006, Godfrey and Wooten 1981). Flowers born in a flat-topped arrangement (corymb) with few to numerous heads that are enclosed by a series of bracts (involucre) that have winged mid-ribs and five white/cream to lavender petals per head. The fruit is an achene topped with many bristles.

Flowering time: May-August

Habitat: Floodplain forests, floodplain swamps, bottomland forests, hydric hammocks, and along streams and rivers. Variable-leaved Indian-plantain occurs in hydric hammock along Deep Creek on MHCCFG.

Range: Variable-leaved Indian-plantain is known to occur in several Florida panhandle counties and in Levy and Putnam Counties. Populations of variable-leaved Indian-plantain also extend north into southeast Alabama and southwest Georgia.

Management: Avoid alterations to the natural hydrological regime. Monitor populations for invasive species entry such as feral hog (*Sus scrofa*) and taro (*Colocasia esculenta*).

Distinguishing features: *Arnoglossum diversifolium* differs from the other five *Arnoglossum* species that occur in Florida with the following combination of characters: Stem angled or grooved, floral bracts with winged mid-ribs, lower stem leaves triangular to arrow shaped with squared-off bases (truncate), occur in wetlands bordering rivers and streams (FNA 2006, Godfrey and Wooten 1981).



Photo by Brenda Herring

References:

(FNA) Flora of North America Editorial Committee. 2006. Flora of North America north of Mexico, Vol. 20: Magnoliophyta: Asteridae (in part): Asteraceae, part 2. Oxford University Press, New York.

Godfrey, R. K and J. W. Wooten. 1981. Aquatic and wetland plants of the southeastern United States – Dicotyledons. The University of Georgia Press, Athens, GA.

Global Rank: **G5**
State Rank: **S1**
State Status: **Endangered**
Federal Status: **None**

Asplenium pumilum Sw.

Common name: dwarf spleenwort
ASPLENIACEAE

Description: Epipetric, diminutive, delicate fern that grows on limestone. Dwarf spleenwort can grow up to 20 cm tall. Leaves once-pinnate, blades triangular in outline with 3-7 segments up to 12 cm long and 8 cm wide. Petiole to 13 cm long, green on younger plants and green to purple/black on older plants (FNA 1993, Nelson 2000, Wunderlin and Hansen 2000).

Flowering time: Identifiable all year

Habitat: Mesic hammocks and successional hardwood forests. At MHCCFG, dwarf spleenwort was found east of I-75 and west of Santos in successional hardwood forest. Plants were growing on limestone boulders.

Range: Known to occur in a few peninsular Florida counties from Alachua County southwest to Citrus County and southeast to Volusia County. Also known from the West Indies, Mexico, Central America, and South America.

Management: Hand pull exotic species posing threat to dwarf spleenwort: Chinese brake fern (*Pteris vittata*), cogon grass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), and sword fern (*Nephrolepis cordifolia*). Avoid all disturbances to substrate. Maintain hydrological quantity and quality.



Photo by Katy NeSmith

Distinguishing features: Dwarf spleenwort can be distinguished from the 15 other species of *Asplenium*s that occur in Florida based on the following combination of characters: leaves once-pinnate, blades triangular in shape with 3-7 segments that are also triangular in appearance (Nelson 2000).



Photo by Brenda Herring

References:

(FNA) Flora of North America Editorial Committee. 1993. Flora of North America north of Mexico, Vol. 2:pteridophytes and gymnosperms. Oxford University Press, New York.

Nelson, G. 2000. The Ferns of Florida, a reference and field guide. Pineapple Press, Inc. Sarasota, FL.

Wunderlin, R.P., and B.F. Hansen. 2000. Flora of Florida. Volume I. Pteridophytes and Gymnosperms. University Press of Florida, Gainesville.

Global Rank: **G3**
State Rank: **S3**
State Status: **Threatened**
Federal Status: **None**

Carex chapmanii Steud.
Common name: Chapman's sedge
CYPERACEAE

Description: Herbaceous, perennial, herb. The stems are loosely tufted or solitary, ascending or lax, 10 to 30 cm tall, with a horizontal rhizome. The leaf blades are green to yellow-green, flat, glabrous, and 15 to 43 cm long and 12-14 mm wide. The leaf midrib is well developed abaxially and has 2 lateral veins well developed adaxially. Flowers are arranged in 3 to 4 small spikes per stem, the terminal spike having male flowers with yellowish-brown scales, and female flowers are on two to four lower spikes. The fruit is a triangular achene covered by a glabrous sack-like perigynium. The perigynium has a prominent beak to 1.7 mm long that tapers to the base. Each spike has 6-18 perigynia (FNA 2002, Herring and Schultz 2003).

Flowering time: March-May

Habitat: Hydric hammock and bottomland forest; usually on wooded stream banks and in river floodplains. At MHCCFG, Chapman's sedge, was seen in hydric hammock along Deep Creek.

Range: Chapman's sedge is known from Hillsborough, Osceola, and Polk Counties northward in Florida, including the CFG counties of Citrus, Levy, Marion, and Putnam. Its range extends north into Georgia, North Carolina, and South Carolina.

Management: Limit access to maintain quality of site and protect upstream creek and floodplain from disturbances.

Distinguishing features: Over 73 species of *Carex* are known to occur in Florida (Wunderlin et al. 2017). Four *Carex* species are listed: Baltzell's sedge (*Carex baltzellii*), Chapman's sedge (*Carex chapmanii*), sandhill sedge (*Carex tenax*), and small-toothed sedge (*Carex microdonta*). Chapman's sedge is the only listed *Carex* species that occurs in wetlands and occurs primarily east of Jackson County. The other three listed *Carex* species occur from Gadsden County west and occur in drier habitats.

References:

- (FNA) Flora of North America Editorial Committee. 2002. Flora of North America north of Mexico, Vol. 23: Magnoliophyta: Commelinidae (in part): Cyperaceae. Oxford University Press, NY.
- Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, FL.
- Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2017. *Atlas of Florida Plants* (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa. Accessed May 31, 2017.



Photos by Brenda Herring



Global Rank: **G1**
State Rank: **S1**
State Status: **Endangered**
Federal Status: **Endangered**

Dicerandra cornutissima Huck

Longspurred mint
LAMIACEAE/ACEAE

Description: Low shrub that can grow up to 45 cm tall, with numerous stiff, erect, square stems arising from a woody base. Leaves are about 1.5 cm long, opposite, entire, narrow, and needle-like with a minty fragrance. The flowers, grouped in leaf axils, are less than 1.2 cm long and rose-purple with dark purple lines and dots, the throat whitish. The flower tube is sharply bent. The four stamens extend beyond the corolla. The anthers are lavender or white, each anther half with a long pointed spur (Herring and Schultz 2003).

Flowering Time: September-October

Habitat: Sandhill and scrub. Long spurred mint occurs on the MHCCFG in scrub and sandhill in a small area between Interstate-75 and SR 200. The CFG provides critical habitat for this species and contains a significant portion of the known plants.

Range: Only known from Marion and Sumter counties in Florida.

Management: While it is not known how the mint responds to fire, it does appear to favor open areas as evident from its proliferation along roadsides. Other management needs are to control exotic plants (especially natal grass (*Melinis repens*) and cogon grass (*Imperata cylindrica*)) and limit off road activity such as foot, horse, or vehicular traffic.

Distinguishing features: Nine species of *Dicerandra* occur in Florida with six of the nine species listed as endangered or threatened. Only *Dicerandra cornutissima* (with its unique anther spurs) is known to occur on the MHCCFG.

References:

Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, FL.



Photo by Brenda Herring



Photos by Katy NeSmith

Global Rank: **G4**
State Rank: **SNR**
State Status: **Commercially Exploited**
Federal Status: **None**

Epidendrum conopseum R.Br.

Common name: **green fly orchid**
ORCHIDACEAE

Description: This perennial orchid is epiphytic on trees, particularly live oaks (*Quercus virginiana*), and occasionally on limestone rock. Its clusters of dark-green, strap-shaped leaves can be found among the thick growth of resurrection ferns (*Pleopeltis polypodioides*) on tree limbs or trunks near water.

Flowering time: June - January

Habitat: Branches or trunks of trees, especially live oak (*Quercus virginiana*) and southern magnolia (*Magnolia grandiflora*), often near water or in hammocks. Green fly orchid is occasional at MHCCFG in hydric and mesic hammocks.

Range: Southeastern coastal plain from North Carolina to Louisiana; disjunct in eastern Mexico. In Florida, green fly orchid is found from Escambia County south to Brevard, Highlands, and Manatee counties. In the panhandle and north Florida it is the only epiphytic orchid.

Management: Protect from collection.

Distinguishing features: Green fly orchid resembles Florida butterfly orchid (*Encyclia tampensis*) in that both species are epiphytic orchids that have dark green, linear leaves. Florida butterfly orchid has pseudobulbs and larger flowers that range from white-yellow-bronze and have a purplish lip. Green fly orchids lack pseudobulbs, and have smaller white-green flowers with 3-lobed lip.



Photo by Brenda Herring



Photos by Kimberely Gullede (taken at Janet Butterfield Brooks WEA)

Global Rank: **G3G4**
State Rank: **S3S4**
State Status: **Threatened**
Federal Status: **None**

Garberia heterophylla

(W. Bartram) Merr. & F. Harper

Common name: garberia

ASTERACEAE

Description: Small evergreen, aromatic shrub with rounded grayish-green leaves about 2.5 cm long. Flowers pink, resembling those of *Liatris* species, but held in broad, flat-topped clusters at top of the plant.

Flowering time: September- November

Habitat: Dry sandy habitats in sand pine scrub, oak scrub, and sandhill. At MHCCFG, garberia was commonly found in both sandhill and scrub habitats, but also occurred in xeric hammock.

Range: Endemic to Florida from Clay County south to Highlands, Manatee and Brevard counties.

Management: Plants re-sprout after fire and also regenerate strongly from seed after fire (Carrington 1999).

Distinguishing features: This is the only shrubby member of the composite family (Asteraceae) in Florida that has pink tubular flowers resembling blazing star (*Liatris*). Leaves are sticky and aromatic when crushed.

References:

Carrington, M.E. 1999. Post-fire seedling establishment in Florida sand pine scrub. *Journal of Vegetation Science* 10:401-412.



Photo by Brenda Herring

Global Rank: **G2**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Glandularia tampensis
(Nash) Small
Common name: ***Tampa vervain***
VERBENACEAE

Description: *Erect to spreading* perennial herb, with angular stems that can extend to 61 cm in length. Leaves opposite, thin, paper-like, 3-8 cm long, oval-lance shaped, with roughly toothed or incised margins; top of leaves pointed, broadest at base. Petioles 13-25 mm long, continuous with leaf bases from narrow outgrowths (wings). Flowers are arranged on a spike with five-lobed lavender-purple flowers that are up to 15 mm long and have non-glandular, but hairy sepals with bristle tips. Four pitted nutlets approximately 4 mm long comprise the fruit (Chafin 2000, Kral 1983, Umber 1979).

Flowering time: Spring-summer

Habitat: Openings in moist hammocks. At MHCCFG, Tampa vervain has been documented along the ruderal edge of mesic and maritime hammock.



Photo by Brenda Herring

Range: Endemic to Florida. On the west coast, extends from Levy south to Lee County and on the east coast, from Volusia to Indian River County. At the MHCCFG, Tampa vervain occurs both north and south of the former Cross Florida Barge Canal in Citrus County.

Management: Monitor for and hand pull exotic species posing a threat to plants. Avoid utilizing heavy equipment (mowers, vehicles, ATV's, etc.) along road edge where tampa vervain is known to occur.

Distinguishing features: Five *Glandularia* species occur in Florida with three species that are native (two of which are listed as endangered), and two are listed as non-native species (Wunderlin et al. 2017). *Glandularia tampensis* differs in having leaves that are incised to simply divided, and sepals that have no glands, bristle tips and long hairs (Chafin 2000).

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Kral, R. 1983. A report on some rare, threatened, or endangered forest-related vascular plants of the south. Technical Publication R8-TP2. United States Department of Agriculture, Forest Service, Southern Region, Atlanta Georgia.
- Umber, R.E. 1979. The genus *Glandularia* (Verbenaceae) in North America. *Systematic Botany* 4(1): 72-102.
- Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2017. *Atlas of Florida Plants* (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa. Accessed May 31, 2017.

Global Rank: **G5**
State Rank: **SNR**
State Status: **Threatened**
Federal Status: **None**

Gonolobus suberosus (L.) R.Br.

Common name: angle pod
APOCYNACEAE

Synonym: *Matelea gonocarpos* (Walter) Shinnery

Description: Herbaceous, perennial, twining vine with milky sap and opposite, ovate-oblong leaves, 7.5-10 cm long, on leaf stems up to 5 cm long. Leaf bases heart-shaped. Flowers maroon in center and greenish toward tips of the petals, star-shaped, about 1.2 cm long, held in umbels in the axils of the leaves. Fruit a long pod with a smooth surface (Radford et al. 1964).

Flowering time: May - October in Florida.

Habitat: Rich hydric hammocks, upland hardwood forests, and bottomland forests, often where limestone is near the surface. At MHCCFG, angle pod vines, were seen both in flower and fruit in several locations in hydric, mesic, and maritime hammocks, bottomland forests, and in sandhill, upland hardwood forests and upland mixed woodlands. An exemplary display of flowering was observed following prescribed fire on Inglis Island.

Range: Found from Virginia to Mississippi and ranges south to central Florida in Lee and Glades counties.

Management: Plants respond well to fire. Angle pod prefers shaded habitats but requires openings with sunlight in order to flower. Ecotones to hardwood hammocks should be kept open with fire, and hammocks should be protected from canopy disturbance and rooting by feral hogs. Since reproductive individuals are more likely to be found along trails where they may receive more sunlight, care should be taken while maintaining vehicle and foot trails to avoid damage to plants.

Distinguishing features: Fruit capsules without fleshy protuberances (spines) found in similar members of *Matelea*. Flowers also differ from these species in being bi-colored, rather than one solid color throughout. Vegetative plants of *Matelea* and *Gonolobus* are difficult to distinguish, and the state-threatened status of this species is justified by the possibility of confusion between the more common angle pod and the other much rarer *Matelea* species. *Gonolobus* can be distinguished from *Matelea floridana* by having leaves with an odor described by some as burnt popcorn. Smaller leaves of angle pod may also resemble the invasive skunkvine (*Paederia foetida*), but are easily distinguished by their milky sap.



Photos by Brenda Herring

References:

Radford, A. E., H. E. Ahles, and R. Bell. 1964. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press, Chapel Hill, NC.

Global Rank: **G3**
State Rank: **S3**
State Status: **None**
Federal Status: **None**

Gymnopogon chapmanianus Hitchc.

Common name: Chapman's skeletongrass

POACEAE

Description: Short, tufted, perennial grass with broad, strongly distichous leaves and glabrous sheaths. The leaf blades are stiff, flat, to 8.5 cm long and to 8 mm wide. Spikelets have very short to absent awns and two to three florets that are produced on a stiff, wide-spreading inflorescence that is as wide as long.

Flowering time: August-November

Habitat: Dry, sandy flatwoods, dry prairie, and scrub. At MHCCFG, this plant was observed in scrub in transitional ecotones to scrubby flatwoods in the northeastern portions of the Greenway in Putnam County.

Range: Found only in southern Georgia and Florida. In Florida Chapman's skeletongrass is known from Wakulla and Nassau counties south to Collier and Broward counties.

Management: Maintain natural fire intervals in sandhills and mesic flatwoods.

Distinguishing features: The two other species of skeletongrass found in Florida are very similar. However, shortleaf skeletongrass (*G. brevifolius*) is usually found in wet savannas, has stems that are lax and often decumbent, and produces rhizomes. Bearded skeletongrass (*G. ambiguus*) has much longer awns.



Photo by Brenda Herring



Photo by Brenda Herring



Photos by Kimberly Gullede



Global Rank: **G5**
State Rank: **S3**
State Status: **Endangered**
Federal Status: **None**

Hexalectris spicata (Walter) Barnhart

Common name: spiked crested coralroot
ORCHIDACEAE

Description: Terrestrial orchid that is saprophytic (living on decaying organic matter) and has no leaves or chlorophyll. Plants consist of a stout yellowish brown stem up to 60 cm tall topped by a spike of showy yellowish-brown, purple-striped flowers with a red-violet lip.

Flowering time: May to September

Habitat: Dry upland hardwood forests and mesic or maritime hammocks with a well-developed duff layer, often with limestone outcropping near the surface. Often in the vicinity of red cedar (*Juniperus virginiana*), pines (*Pinus* spp.), or oaks (*Quercus* spp.). At MHCCFG, plants were seen in flower and fruit along a recreation trail in the western portion of the property in Citrus County.

Range: Southeastern U.S. west to Texas and northern Mexico. In Florida, from Okaloosa County south to Lee and Indian River counties.

Management: Requires accumulation of leaf litter (i.e. protection from fire).

Distinguishing features: In Florida, spiked crested coralroot is most similar to two other saprophytic orchids

also known as coral-roots: *Corallorhiza ordontorhiza* and *C. wisteriana*. It differs from both of these in having larger flowers (sepals and petals almost an inch long vs. one quarter inch long) with purple striping in the petals, as well as the upper petals being about the same size as the lip and bent back from it (vs. smaller than the lip and bent forward over it). The fruits of *Hexalectris* are also larger than those of *Corallorhiza* (1.6-3 cm long vs. 0.5-1.4 cm long).

References:

Luer, C.A. 1972. The native orchids of Florida. New York Botanical Garden, New York.



Photo by Katy NeSmith



Photo by Katy NeSmith



Photo by Kimberely Gullledge

Global Rank: **G4**
State Rank: **S4**
State Status: **Threatened**
Federal Status: **None**

Lilium catesbaei Walter

Common name: pine lily

LILIACEAE

Description: This lily has large showy orange-red flowers with 6 spotted tepals. It arises from a bulb, and is difficult to see when not in flower.

Flowering time: Summer - fall

Habitat: Pine flatwoods. No pine lilies were found at MHCCFG during the 2016-2017 survey, but several plants were documented during previous surveys in 2003, 2004, and 2007 within mesic and wet flatwoods and wet prairie.

Range: Southeastern United States. Present throughout most of Florida except for the southernmost counties.

Management: This species prefers open areas in pine flatwoods and is often observed along grassy road edges. Continued prescribed burning of mesic and wet flatwoods every 2-3 years should promote the open, grassy habitat that favors pine lilies. Mowing of grassy road edges of pine flatwoods where pine lilies are known to occur should coincide with post-fruiting.

Distinguishing features: The large, erect, spotted flowers of this species are unmistakable.



Photos by Brenda Herring



Global Rank: **G4**
State Rank: **S3S4**
State Status: **Threatened**
Federal Status: **None**

Listera australis Lindl.
Common name: southern twayblade
ORCHIDACEAE

Description: Small, probably over-looked terrestrial orchid. Barely attaining a height of 20 cm tall, southern twayblade has a blue-green stem with one pair of sessile, opposite, oval leaves in the center of the stem. Up to 25 small, red-maroon-green flowers are borne along the upper part of the stem in a raceme. Flowers have a 2-parted lip that average 1 cm long. Petioles of flowers have glands. Fruits are capsules with large seeds (Luer 1972, NatureServe 2017).

Flowering time: Winter-spring

Habitat: Low moist woodlands, ravines, banks of streams, hydric hammocks. Documented on the MHCCFG in hydric hammock in 2015, but not during the 2016-2017 survey.

Range: Distributed from Canadian Provinces of southern Ontario and Quebec south throughout the eastern United States and west through Texas. In Florida, southern twayblade is known to occur as far west as Escambia and south to Sarasota County.

Management: Protect from collection and habitat loss.

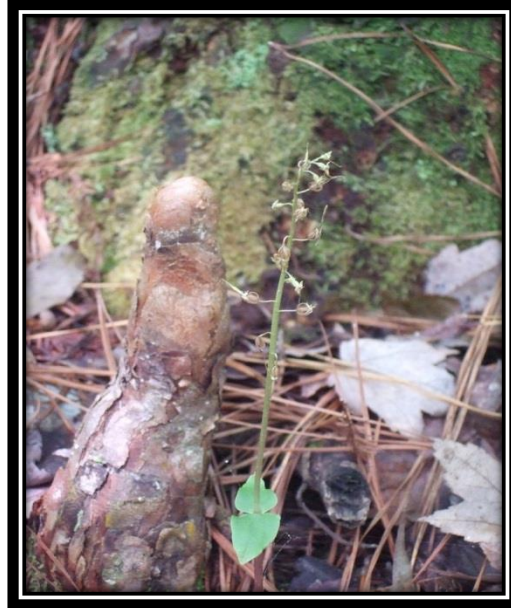


Photo by Brenda Herring

Distinguishing features: Southern twayblade is distinct in having the following combination of characters: small, terrestrial, lack pseudobulbs (have roots), leaves 2, opposite, present at flowering/fruitletting, flowers in raceme at top of stem, floral lip 2-lobed.

References:

Luer, C.A. 1972. The native orchids of Florida. New York Botanical Garden, New York.

NatureServe. 2017. NatureServe Explorer: An online encyclopedia of life [web application].

Version 7.1. <[NatureServe Explorer – *Listera australis* report](#)>. Accessed 01June 2017.

Global Rank: **G2**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Matelea floridana (Vail) Woodson
Common name: Florida spiny-pod
APOCYNACEAE

Description: Perennial, twining vine with large, opposite, leaves with cordate bases. Plants exude a milky sap when injured. Flowers are produced in axillary clusters. Petals are a maroon color, and flowers have a black corona. Fruits are spiny follicles that split open to release seeds with tufts of hair that allow them to be carried away on the wind.

Flowering time: Late spring-summer (fruits present in fall).

Habitat: Sandhill, upland pine, and dry hammocks. Florida spiny-pod was found occasionally throughout MHCCFG in oak/pine dominated hammocks with an exemplary display of flowering displayed in the western diggings.

Range: Near endemic to Florida (a single occurrence known from Georgia).

Management: Ecotones to hardwood hammocks should be kept open with fire, and hammocks should be protected from canopy disturbance and rooting by feral hogs. Since reproductive individuals are more likely to be found along trails where they may receive more sunlight, care should be taken while maintaining vehicle and foot trails to avoid damage to these plants.

Distinguishing features:

Florida spiny-pod is distinguished from the similar angle pod (*Gonolobus suberosus*) by its fruit capsules with fleshy protuberances (spines) and solid color flowers throughout. Vegetative plants of *Matelea* and *Gonolobus* are difficult to distinguish. Smaller leaves may also resemble the invasive skunkvine (*Paederia foetida*), but are easily distinguished by their milky sap and from *Gonolobus* by odorless crushed leaves.



Photos by Katy NeSmith



Global Rank: **G3G4**
State Rank: **S3S4**
State Status: **Endangered**
Federal Status: **None**

Matelea pubiflora (Decne.) Woodson

Common name: sandhill spiny-pod
APOCYNACEAE

Description: Sprawling, vinelike herb with milky sap and opposite, cordate leaves less than 5 cm long. The dull yellowish-brown to purple flowers are borne in axillary clusters. Fruits are spiny follicles that open to release seeds with tufts of hairs.

Flowering time: Spring to summer (fruits are present in the fall, and vegetative plants are easily identifiable).

Habitat: Sandhill. Flowering and fruiting plants were found on the MHCCFG in sandhill north and south of the diggings area.

Range: Restricted to Florida and Georgia. More common in Florida. Extends south to Highlands County.

Management: Plants respond well to fire. Several recently burned areas within the diggings had many plants vigorously growing and flowering. Avoid mechanical disturbances. Carefully treat cogon grass (*Imperata cylindrica*) and natal grass (*Melinis repens*) where it is known to be mingled with sandhill spiny-pod.

Distinguishing features: Distinct from Florida spiny-pod (*Matelea floridana*) and angle pod (*Gonolobus suberosus*) by its sprawling, herbaceous habit and by its smaller leaves.



Photos by Katy NeSmith



Global Rank: **G1**
State Rank: **S1**
State Status: **Endangered**
Federal Status: **None**

Monotropis reynoldsiae

(A. Gray) A. Heller

Common name: *pygmy pipes*

ERICACEAE

Description: *Perennial, non-chlorophyll containing mycotrophic herb. Pygmy pipes obtain its nutrition through an underground fungal intermediary that connects the non-chlorophyll plant with a photosynthetic*

plant's roots. The succulent, off-white to purplish-brown stems are 3-13 cm tall and usually occur in clusters. Leaves are sessile, scale-like, and less than 6.5 mm long. Several nodding flowers (5-6 mm long) are at the top of the stem and may smell like winter-berry. The persistent petals are white to lavender and are united at the base into a bell-shaped tube. Sepals are almost half as long as the corolla. Fruit is a small, dark berry with many seeds (Chafin 2000, Ward 1979).

Flowering time: Winter (December-February)

Habitat: Upland mixed woodlands, mesic and xeric hammocks, scrub. Pygmy pipes were last documented at MHCCFG, in xeric hammock in 2003. According to Dr. Dan Ward, "pygmy pipes are root parasites on flowering dogwood (*Cornus florida*) and possibly other trees in mixed and deciduous woods" (Ward 1979).



Photo by Al Schotz

Range: Endemic to central Florida occurring from St. Johns and Volusia counties west to Marion, Citrus, and south to Hernando counties. At the MHCCFG, pygmy pipes were known to occur in Marion County in the Eureka area, east of the Ocklawaha River (Herring and Schultz 2003).

Management: Avoid all ground disturbance including foot traffic and use of heavy machinery and hand-pull any invasive plant species that grow where pygmy pipes are known to occur.

Distinguishing features: *Monotropis reynoldsiae* differs from the following closely related *mycotrophic* Ericaceae species as follows: common pygmy pipes (*Monotropis odorata*) has sepals as long as the flowers; Indianpipe (*Monotropa uniflora*) has lighter colored-stems, one white flower at top of stem and petals are separated; pinesap (*Monotropa hypopithys*) State-Endangered, has red-pink-yellow stems, several flowers at top of stem and separate petals (Chafin 2000).

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, Florida.
- Ward, D.B. 1979. Rare and Endangered biota of Florida: Vol. 5-plants. University Presses of Florida. Gainesville, Florida.

Global Rank: **G5**
State Rank: **SNR**
State Status: **Commercially Exploited**
Federal Status: **None**

***Osmunda cinnamomea* L.**

Common name: cinnamon fern
OSMUNDACEAE

Description: Terrestrial fern with large pinnate fronds 35.5-73.5 cm long. Each leaf segment with a tuft of light brown hairs where it joins the rachis. Fertile fronds are reduced and densely covered with sporangia.

Flowering time: Identifiable all year

Habitat: Acidic swamps and bogs, mesic and hydric hammocks and flatwoods. At MHCCFG, cinnamon fern was commonly found in floodplain swamps, mesic hammocks, and wet flatwoods.

Range: Found throughout Florida except for the extreme southern peninsula. Also found in the eastern US and Canada ranging south to the West Indies, Mexico, and South America.

Management: Protect from collection.

Distinguishing features: Somewhat similar to other pinnate ferns such as maiden fern (*Thelypteris* spp.) and Virginia chain fern (*Woodwardia virginica*). However, neither of these has differentiated fertile and sterile fronds or a tuft of cinnamon-colored hairs at the base of the leaf segments.



Photo by Brenda Herring

Global Rank: **G5T5**
State Rank: **SNR**
State Status: **Commercially Exploited**
Federal Status: **None**

Osmunda regalis L.
var. *spectabilis* (Willd.) A. Gray
Common name: royal fern
OSMUNDACEAE

Description: Terrestrial fern with large bipinnate fronds. Pinnae of fertile fronds are dimorphic with vegetative pinnae below and fertile, reduced pinnae at apex that are densely covered with sporangia.

Flowering time: Identifiable all year

Habitat: Acidic swamps and bogs, baygall, hydric hammock, wet flatwoods. At MHCCFG, royal fern was occasionally found in baygall, hydric hammock, floodplain swamp, and wet flatwoods.

Range: Found throughout Florida and the eastern United States.

Management: Protect from collection.

Distinguishing features: Royal fern is easily recognized, even in comparison with the other *Osmunda* species in Florida, cinnamon fern (*O. cinnamomea*), which has only once pinnate leaves with and a tuft of cinnamon-colored hairs at the base of the leaf segments and differentiated fertile and sterile fronds.



Photos by Michelle Smith (taken at Platt Branch WMA)

Global Rank: **G3**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Parnassia grandifolia DC.

Common name: Large-leaved grass-of-parnassus
PARNASSIACEAE

Description: Herbaceous, perennial herb with thickened base. Stems up to 75 cm tall, leafless except for one, sessile, roundish bract (up to 4 cm long), that is near the lower third of the stem. Leaves in basal rosettes, on long petioles, oval-round shaped, 2.5-8 cm long and 2-7 cm wide. Each leaf has one main vein in the middle of the leaf with 4 lateral veins paralleling the main vein. Flowers are solitary and terminal on a long stalk and are composed of 5 sepals, and 5 very showy white petals (up to 2 cm long and 1 cm wide) that have 5-9 green veins. Ovary is green and fruit is a capsule that has green sepals reflexed around it (FNA 2016, Herring and Schultz 2003, Chafin 2000, Ward 1979).

Flowering time: Winter (November-January)

Habitat: Wet habitats including open grassy wet prairies and seepage slopes as well as hydric hammocks and edges of swamps along rivers and streams. At MHCCFG, large-leaved grass-of-parnassus, were seen in hydric hammock along Deep Creek.

Range: Extends from Florida north into Virginia and west to Texas and Arkansas. Within Florida, large-leaved grass-of-parnassus is only known to occur in four counties: Marion, Putnam, Franklin, and Liberty.

Management: Limit access to maintain quality of site and protect upstream creek and floodplain from disturbances.

Distinguishing features: Large-leaved grass-of-parnassus, resembles Carolina grass-of-parnassus (*Parnassia caroliniana*) but they can be separated based on the latter has 9-18 yellow-brown-green veins on the petals with the lower-most vein branching and it also has a white ovary.



Photos by Katy NeSmith



References:

Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
(FNA) Flora of North America Editorial Committee. 2016. Flora of North America north of Mexico, Vol. 12: Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.
Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, FL.
Ward, D.B. 1979. Rare and Endangered biota of Florida: Vol. 5-plants. University Presses of Florida. Gainesville, Florida

Global Rank: **G5**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Pecluma plumula
(Humb. & Bonpl. ex Willd.) M.G.Price
Common name: **plume polypody**
POLYPODIACEAE

Description: Epipetric (growing on limestone) to epiphytic fern primarily on live oak (*Quercus virginiana*). Pinnate fronds up to 58 cm long. Appear stiff. Narrow linear pinnae (1.5-2.5 mm wide). Rachis black with conspicuous scales that are bullate (bulging) and not hastate at the base.

Flowering time: Identifiable all year

Habitat: Mesic and hydric hammocks, successional hardwood forests. At MHCCFG, plume polypody was found west of I-75 in the diggings and east of I-75 and west of Santos. Both populations occur in successional hardwood forests and grow on limestone.

Range: Peninsular and south Florida Keys. Also known from the West Indies, Mexico, Central America, and South America.

Management: Hand pull exotic species posing threat to fern: Chinese brake fern (*Pteris vittata*), cogon grass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), and sword fern (*Nephrolepis cordifolia*). Avoid disturbance to substrate. Maintain hydrology quality and quantity.

Distinguishing features: Similar to resurrection ferns (*Pleopeltis polypodioides*), but with longer fronds and with undersides of pinnae not covered with scales. Differs from swamp plume polypody (*Pecluma ptilodon*) in having conspicuous rachis scales. Differs from widespread polypody (*P. dispersa*) in having slightly narrower leaf segments and entire rachis scales (vs. ciliate-lacerate).

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Flora of North America Editorial Committee. 1993. Flora of North America north of Mexico, Vol. 2:pteridophytes and gymnosperms. Oxford University Press, New York.
- Nelson, G. 2000. The Ferns of Florida, a reference and field guide. Pineapple Press, Inc. Sarasota, FL.
- Wunderlin, R.P., and B.F. Hansen. 2000. Flora of Florida. Volume I. Pteridophytes and Gymnosperms. University Press of Florida, Gainesville.



Photo by Brenda Herring

Global Rank: **G5?TNR**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Pecluma ptilodon (Kunze) M.G.Price
var. ***caespitosa*** (Jenman) Lellinger
Common name: **swamp plume polypody**
POLYPODIACEAE

Description: Epiphytic and epipetric (growing on rocks) fern on stumps, tree bases, and rocks. Pinnate fronds up to 89 cm long. Lowest pinnae reduced to zig-zag segments. Rachis brown with no, or only filiform, scales.

Flowering time: Identifiable all year

Habitat: Hydric and mesic hammocks, swamps, and successional hardwood forests. At MHCCFG, swamp plume polypody was found west of I-75 in the diggings, east of I-75 and west of Santos in successional hardwood forests, and within hydric hammock east of the Ocklawaha River. Plants were growing on limerock.

Range: Peninsular Florida from Duval County south to Monroe County. Also known from the West Indies, Mexico, and Central America.

Management: Hand pull exotic species posing threat to swamp plume polypody: Chinese brake fern (*Pteris vittata*), cogon grass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), and sword fern (*Nephrolepis cordifolia*). Avoid disturbances to substrate. Sensitive to fire and dependent on maintenance of natural hydrology.

Distinguishing features: Similar to resurrection ferns (*Pleopeltis polypodioides*), but with longer fronds and with undersides of pinnae not covered with scales. Differs from the two other species of *Pecluma* in Florida in having absent or inconspicuous, filiform scales on the rachis (vs. conspicuous and not filiform).

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Flora of North America Editorial Committee. 1993. Flora of North America north of Mexico, Vol. 2:pteridophytes and gymnosperms. Oxford University Press, New York.
- Nelson, G. 2000. The Ferns of Florida, a reference and field guide. Pineapple Press, Inc. Sarasota, FL.
- Wunderlin, R.P., and B.F. Hansen. 2000. Flora of Florida. Volume I. Pteridophytes and Gymnosperms. University Press of Florida, Gainesville.



Photos by Brenda Herring



Global Rank: **G4T2**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Phyllanthus liebmannianus Mull.Arg. subsp.
platylepis (Small) G.L. Webster
Common name: pinewoods dainties
PHYLLANTHACEAE

Description: Tiny, glabrous perennial herb. Stems are one to several, very slender, erect and to 20 cm tall. The leaves are alternate, sessile, spirally arranged around the stem, widest above the middle, 1-2.5 cm long, dark green above and paler below. Flowers are axillary, nodding on long stalks, with six tiny pale yellow-green sepals. Male and female flowers are found on the same plant, with the female flowers about twice as large as the male flowers. The fruit is a six-lobed, rounded capsule (Chafin 2000, FNA 2016, Herring and Schultz 2003, Ward 1979).



Photos by Brenda Herring

Flowering time: Spring (April to June)

Habitat: In low grassy pinelands and hammocks, floodplain and bottomland forests, associated with limestone. At MHCCFG, pinewoods dainties were seen both in flower and in fruit in openings (road edges) of mesic hammock on Inglis Island.

Range: *Phyllanthus liebmannianus* consist of two subspecies: subspecies *liebmannianus* (occurs in Mexico and Central America) and subspecies *platylepis*, known only to occur in northwestern peninsular Florida in Dixie, Lafayette, Levy, and Taylor counties.

Management: Based on observation, pinewoods dainties prefer openings with sunlight such as road and trail edges. Use and maintenance of roads and trails in which pinewood dainties occur should be carefully managed to avoid damage to these plants. Avoid walking, driving and parking on road edges.



Distinguishing features: Eleven species of *Phyllanthus* are known to occur in Florida (Wunderlin et al 2017). Of the eleven species, only Carolina leaf-flower (*Phyllanthus caroliniensis*) bears any real resemblance to pinewoods dainties. Carolina leaf-flower differs from pinewoods dainties in being an annual, having branches that are long and arching and leaves that are alternate, but occur on both sides of the stem, and male and female flowers are the same size.

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- (FNA) Flora of North America Editorial Committee. 2016. Flora of North America north of Mexico, Vol. 12: Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.
- Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, FL.
- Ward, D.B. 1979. Rare and Endangered biota of Florida: Vol. 5-plants. University Presses of Florida. Gainesville, Florida.

Global Rank: **G4**
State Rank: **S3S4**
State Status: **Threatened**
Federal Status: **None**

Pinguicula caerulea Walter
Common name: blueflower butterwort
LENTIBULARIACEAE

Description: Perennial, carnivorous herb with fleshy, yellow-green leaves, 1-6 cm long forming a basal rosette from 5-10 cm wide. Glandular hairs on the upper leaves, flower stalks, and calyx exude a sticky substance that traps small insects such as ants. Flowers are light to deep purple with darker purple veins and have a diameter of 2-3 cm and a spur that is 5-7 mm long (Godfrey and Wooten 1981). The fruit is a capsule that is approximately 1 cm in diameter.

Flowering time: Late winter to spring

Habitat: Pine flatwoods and wet prairies. At MHCCFG, blueflower butterwort was found primarily along roads in mesic and wet flatwoods.

Range: In Florida from the central Panhandle south to Collier County. This is a Coastal Plain



Photos by Katy NeSmith

species that ranges as far as southern North Carolina.

Management: Butterworts prefer open sunny areas and are sensitive to soil disturbance. Prairies and flatwoods should be burned every 2-4 years and heavy machinery should be excluded from wetlands. Maintenance of natural hydrology is critical.

Distinguishing features: Most butterworts are very similar vegetatively. However, blueflower butterwort is unmistakable in bloom since it is the only Florida butterwort with a large, purple, conspicuously veined flower.



References:

Godfrey, R. K and J. W. Wooten. 1981. Aquatic and wetland plants of the southeastern United States – Dicotyledons. The University of Georgia Press, Athens, GA.

Global Rank: **G4G5**
State Rank: **S3**
State Status: **Threatened**
Federal Status: **None**

Pinguicula lutea Walter
Common name: yellow-flowered butterwort
LENTIBULARIACEAE

Description: Perennial, carnivorous herb with fleshy, yellow-green leaves, forming a basal rosette. Glandular hairs on the upper leaves, flower stalks, and calyx exude a sticky substance that traps small insects such as ants. Flowers are bright yellow with a distinct spur.

Flowering time: Late winter to spring

Habitat: Pine flatwoods and wet prairies. At MHCCFG, yellow-flowered butterwort was found in one area of mesic flatwoods/pine plantation within Putnam County.

Range: Occurs throughout most of Florida. This is a Southeastern Coastal Plain species that ranges to North Carolina and Louisiana.

Management: Burn mesic flatwoods/pine plantations every 2-4 years to reduce shrub cover and promote sunny openings that yellow-flowered butterwort prefers.

Distinguishing features: Most butterworts are very similar vegetatively. Yellow-flowered butterwort is the only Florida butterwort with yellow flowers.



Photo by Katy NeSmith

Photo by Brenda Herring



Global Rank: **G4?**
State Rank: **S3S4**
State Status: **Threatened**
Federal Status: **None**

Platanthera flava (L.) Lindl.
Common name: palegreen orchid
ORCHIDACEAE

Description: Terrestrial orchid from 50-60 cm tall. Two to four lance-shaped leaves that are up to 20 cm long and 4 cm wide sheath the stem. The 10-40 pale yellow to green flowers that are up to 7 mm long with an 8 mm long spur are arranged in a raceme (Brown 2002).

Flowering time: April-July

Habitat: Swamp, hydric hammock. No palegreen orchids were found at MHCCFG during the 2016-2017 survey, but plants were documented during a previous survey in 2003 within hydric hammock in the Deep Creek area.

Range: In Florida, palegreen orchid occurs from the eastern Panhandle south to the central peninsula. Also, throughout the southeastern United States and in southern Nova Scotia (Brown 2002).

Management: Maintain natural hydrology.

Distinguishing features: The common toothpetal false rein orchid (*Habenaria floribunda*) also has greenish flowers and a similar spike, but flowers are whiter and stigmas have two lateral appendages that protrude from the flower.

References:

- Brown, P. M. and S. N. Folsom.
2002. The wild orchids of
Florida. University Presses of
Florida, Gainesville, FL.
- Luer, C.A. 1972. The native orchids of
Florida. New York Botanical
Garden, New York.



Global Rank: **G2G3**
State Rank: **S2**
State Status: **Threatened**
Federal Status: **None**

Pteroglossaspis ecristata (Fernald) Rolfe

Common name: giant orchid
ORCHIDACEAE

Description: Terrestrial orchid producing two to four erect basal leaves each season from underground pseudobulbs. Each plicate (pleated) leaf is 15 to 71 cm long and 2.5 to 4 cm wide, and bears three to five strong pronounced veins. Giant orchid leaves often resemble those of saw palmetto seedlings. The leafless inflorescences may reach nearly five feet (1.5 m) tall, each producing a terminal spike of 5 to 30 yellowish-green flowers with purplish-brown markings.

Flowering time: July-September

Habitat: Sandhill, scrub, pine flatwoods, and occasionally in old fields. At MHCCFG, giant orchid occurred mostly in the diggings area in both high quality sandhills and in successional hardwood forests.

Range: Throughout the southeastern United States and extends into Cuba and Columbia. Throughout the Florida peninsula. Distribution of giant orchid is spotty throughout its range, perhaps owing to its rather inconspicuous habit.

Management: Prescribed fires can help to keep habitat open for giant orchids.

Distinguishing features: Only orchid with 1.5 m tall flowering stalk and yellowish maroon flowers. The related wild coco (*Eulophia alta*), found from Pasco south to Monroe County, has a similar leaf but shorter flowering stalk and its flowers are all maroon (vs. flowers with yellow outside and maroon inside in giant orchid). Fruiting pods of wild coco dangle from the stem in contrast to pods held erect against the stem in giant orchid. Wild coco is found mostly in roadside ditches.

References:

Luer, C. A. 1972. The native orchids of Florida. The New York Botanical Garden.



Photo by Katy NeSmith

Photos by Brenda Herring



Global Rank: **G4**
State Rank: **S4**
State Status: **Commercially Exploited**
Federal Status: **None**

Rhapidophyllum hystrix
(Pursh) H.Wendl. & Drude ex Drude
Common name: needle palm
ARECACEAE

Description: Shrubby palm with long needle-like spines on a trunk that can reach three feet in height but is usually shorter. Leaves are large, with rounded fronds about 45 cm long, shiny green on the upper surface and pale silvery-green beneath. Leaf stalks to two feet long. Fruiting stalks are short and borne on the trunk among the sharp needles.

Flowering time: Spring and summer

Habitat: Rich woods often where limestone is near the surface; slope forest, upland hardwood forest, hydric hammock, mesic hammock, bottomland forest, baygall. Needle palm occurred in baygall in the northern portion of the MHCCFG and further south within bottomland forest and hydric hammocks in the vicinity of the Ocklawaha River.

Range: South Carolina west to Mississippi and south into central Florida to Highlands County.

Management: Requires rich, undisturbed hardwood forests. Maintain hydrology.

Distinguishing features: Sharp needles on trunk; young plants without trunk can be distinguished from saw palmetto (*Serenoa repens*) by a lack of saw teeth on the leaf stems, and from little bluestem (*Sabal minor*) by having a leaf stalk that ends at the base of the leaf blade (rather than continuing partly into the leaf blade).



Photo by Kimberely Gullede



Photo by Brenda Herring

References:

Nelson, G. 1996. Shrubs and woody vines of Florida. Pineapple Press, Sarasota, FL.

Global Rank: **G5**
State Rank: **SNR**
State Status: **Commercially
Exploited**
Federal Status: **None**

Rhododendron canescens (Michx.) Sweet

Common name: mountain azalea
ERICACEAE

Description: Perennial, deciduous shrub. Plants can grow up to 6 m tall. Twigs and petioles are covered with thick, long hairs. Leaves are alternately arranged, oval to elliptic shaped and range from 2-10 cm long. Flowers typically appear before the new leaves develop. Characterized as very fragrant, the flowers are pale pink to almost white, with the tube slightly darker. The flowers range from 1.3-1.7 cm long and have hairs on the outer portions. The fruit is an elliptical to slightly curved capsule (FNA 2009, Godfrey and Wooten 1981, Herring 2005).

Flowering time: Spring

Range: From Texas east to North Carolina with northern-most occurrence in Illinois. In Florida, occurring from Escambia County east to Jefferson County and continuing east from Hamilton County to Nassau County and south through Marion County. Mountain azalea was documented on the MHCCFG in Putnam County in several areas during the 2004, 2007, and 2015 surveys, but not during the 2016-2017 survey.

Habitat: Bay swamps, flatwoods, hammocks, and floodplain forests, often along streams. At the MHCCFG, mountain azalea occurs in baygall, floodplain swamp, mesic hammock, wet flatwoods, and pine plantation.

Management: Protect from collecting. Avoid ground disturbance.

Distinguishing features: Five *Rhododendron* species occur in Florida (Wunderlin et al, 2017). Mountain azalea can be distinguished from the other four species based on the combination of characters of having deciduous leaves, hairy scales on winter buds, flowers light to dark-pink, lacking yellow pigment on upper lobe, and blooming before the leaves appear (Godfrey and Wooten 1981).

References:

- (FNA) Flora of North America Editorial Committee. 2009. Flora of North America north of Mexico, Vol. 8: Magnoliophyta: Paeoniaceae to Ericaceae. Oxford University Press, New York.
- Godfrey, R. K and J. W. Wooten. 1981. Aquatic and wetland plants of the southeastern United States – Dicotyledons. The University of Georgia Press, Athens, GA.
- Herring, B. J. 2005. Rare plant survey of the Marjorie Harris Carr Cross Natural Areas Inventory, Tallahassee, FL. Florida Greenway – Year 2. Unpublished report submitted to the Office of Greenways and Trails. Florida
- Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2017. *Atlas of Florida Plants* (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa. Accessed May 31, 2017.



Photo by Brenda Herring

Global Rank: **G4**
State Rank: **SNR**
State Status: **Threatened**
Federal Status: **None**

Sacoila lanceolata (Aubl.) Garay
var. *lanceolata*

Common name: leafless beaked orchid
ORCHIDACEAE

Description: Terrestrial orchid with large leaves in a basal rosette which are absent at flowering time. Up to 30 flowers are borne in a terminal raceme on a long stalk to 60 cm tall. Flowers are typically red, but white, green, and yellow forms occur.

Flowering time: April to June

Habitat: Roadsides, old fields, flatwoods, sandhills. Plants were not observed during 2016-2017, but several leafless beaked orchids were documented during 2013 in sandhill south of the diggings.

Range: West Indies, Central and South America. In Florida, found more frequently south of Orlando, but documented south to Dade County.



Photo by Kimberly Gullede



Photo by Katy NeSmith

Management: Leafless beaked orchid prefers open habitats and may appear in open pastures, along roadsides, in wet flatwoods or sandhills. Fire exclusion and competition from invasive exotic plants further contribute to the decline of this species. Prescribed burning of pine-dominated communities on a two- to five-year interval will promote the open habitat that this orchid favors.

Distinguishing features: This tall, terrestrial, red-flowered orchid is unmistakable. The two

varieties of *Sacoila lanceolata* can be distinguished based on leaflessness at flowering time. Leaves are usually absent on plants of var. *lanceolata* at flowering time, but present on plants of var. *paludicola*. Although var. *paludicola* is the more rare variety of this species, both are considered threatened by the state.

References:

Brown, P.M. 2002. Wild Orchids of Florida. University Press of Florida, Gainesville.

Global Rank: **G2**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Salix floridana Chapm.
Common name: Florida willow
SALICACEAE

Description: Shrub or small tree. The stems are spindly, 3 to 6 m tall, with gray bark and reddish-brown twigs. The leaves are deciduous, alternate, and have petioles 1.5-2.5 cm long. The broadly lanceolate leaf blades range from 5-16 cm long and 2-5 cm wide. The leaves have glandular serrate margins and are bright green above and grayish-white below. Leaves on young shoots have conspicuous, semicircular stipules. Male and female flowers are found on separate plants, arranged in catkins that are 3-8 cm long. The fruit is a tiny two-valved capsule clustered in the 2-2.5 cm diameter mature catkin. The seeds are minute and bear numerous silky hairs (Chafin 2000, FNA 2010, Godfrey 1988, Herring and Schultz 2003, Ward 1979).

Flowering time: February-April

Habitat: Wet, mucky soils in bottomland forests, floodplains, hydric hammocks, swamps, edges of spring-runs, and streams. At MHCCFG, Florida willow was seen in hydric hammock along Deep Creek.

Range: Florida willow is known from central Florida to south Georgia and Alabama. Lake and Orange counties represent the southernmost Florida populations with the northern-most in Jackson County.

Management: Limit access to maintain quality of site and protect upstream creek and floodplain from disturbances.

Distinguishing features: Six species of *Salix* are known to occur in Florida (Wunderlin et al. 2017). Of the six species, only heart-leaved willow (*Salix eriocephala*) is listed as state endangered and is only known from three northwest Florida counties. Florida willow is recognized based on having leaves that are elliptic to oblong in shape, have glandular serrated margins and lower surface is glaucous.

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Godfrey, R. K. 1988. Trees, shrubs, and woody vines of northern Florida and adjacent Georgia and Alabama. The University of Georgia Press, Athens, Georgia.
- (FNA) Flora of North America Editorial Committee. 2010. Flora of North America north of Mexico, Vol. 7: Magnoliophyta: Salicaceae to Brassicaceae. Oxford University Press, New York.
- Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, Florida.
- Ward, D.B. 1979. Rare and Endangered biota of Florida: Vol. 5-plants. University Presses of Florida. Gainesville, Florida.



Photos by Brenda Herring



Global Rank: **G4**
State Rank: **S4**
State Status: **Threatened**
Federal Status: **None**

Sarracenia minor Walter
Common names: hooded pitcherplant
SARRACENIACEAE

Description: Clumping plant with leaves rolled lengthwise into “pitchers” that trap insects. The top of the leaf is reddish and curved over the top of the pitcher. Leaves also have white, translucent patches on the back of the pitcher opposite the opening. The large, showy flowers are yellow and pendant, appearing umbrella-like.

Flowering time: Spring

Habitat: Mesic and wet flatwoods, marsh ecotones, and wet ditches. At MHCCFG, hooded pitcherplants occurred in the northeastern portion of the site within mesic and wet flatwoods, depression marshes, and roadsides.

Range: Southeast coastalplain from North Carolina to Okeechobee County, Florida.

Management: Maintain natural fire return intervals and allow fires to enter wetlands naturally. Avoid mechanical disturbance of ecotones.

Distinguishing features: Hooded pitcherplant is unmistakable due to its strongly arching hoods.



Photo by Kimberly Gullede



Photo by Katy NeSmith

Global Rank: **G5**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Sideroxylon lycioides L.

Common name: Buckthorn
SAPOTACEAE

Description: Shrub or small tree 10-20 m tall with zig-zag branches with thorns. Leaves alternate, deciduous, elliptic to oblanceolate, from 8 to 14 cm long and widest at or below the middle (1-5 cm wide). The upper and lower surfaces of mature leaves are smooth, mid-rib has white hairs. The small white flowers are borne in umbels on smooth stems. Berries are oval-round, black, and 1-1.5 cm wide.

Flowering time: April-June

Habitat: Floodplain forests, bottomland forests, hydric hammocks, and borders of cypress swamps. In previous surveys at MHCCFG in 2003, buckthorns were found in hydric hammock along Deep Creek and in bottomland forest bordering the Ocklawaha River.

Range: Buckthorn extends north from Florida to Virginia, west to Missouri, and south to Texas. In Florida, buckthorn occurs south to Orange County and west to Escambia County.

Management: Avoid alterations to the natural hydrological regime.

Distinguishing features: *Sideroxylon lycioides* differs from the other six Florida species of *Sideroxylon* with the combination of smooth upper and lower leaf surfaces, smooth stems and leaves that are usually longer than 8 cm (FNA 2009, Godfrey 1988, Nelson 1994).



Photo by Brenda Herring

References:

- (FNA) Flora of North America Editorial Committee. 2009. Flora of North America north of Mexico, Vol. 8: Magnoliophyta: Paeoniaceae to Ericaceae. Oxford University Press, New York.
- Godfrey, R. K. 1988. Trees, shrubs, and woody vines of northern Florida and adjacent Georgia and Alabama. The University of Georgia Press, Athens, GA
- Nelson, G. 1994. The trees of Florida. Pineapple Press, Sarasota, FL

Global Rank: **G2Q**
State Rank: **S2**
State Status: **Endangered**
Federal Status: **None**

Spigelia loganioides (Torr. & A. Gray ex Endl. & Fenzl) A. DC.
Common names: Pinkroot
LOGANIACEAE

Description: Glabrous perennial herb. The erect stems are one to several, sparingly branched, up to 30 cm tall, and slightly woody at the base. The leaves are sessile, opposite, entire, oval to lanceolate, and 13 to 38 mm long and 15 mm wide. Flowers are in a terminal, few-flowered leafy cyme. The corolla is 15 mm long, funnellform with 5 triangular lobes, and white with pale lavender lines. Fruit is a 2-lobed capsule about 5 mm wide (Chafin 2000, Herring and Schultz 2003, NatureServe 2017a, Ward 1979).

Flowering time: Spring (April-June)

Habitat: Bottomland and floodplain forest and hydric and mesic hammock over limestone. At MHCCFG, pinkroot occurs in hydric hammock along the Florida National Scenic Trail in Marshall Swamp and near the Ocklawaha River in the Sharpes Ferry area.

Range: Probably Florida endemic, known from a few central Florida counties (Levy, Marion, Sumter, and Volusia counties).

Management: Protect forests from disturbance by controlling exotic plant species, avoiding soil disturbance, limiting pedestrian and bicycle traffic to designated trails.

Distinguishing features: Pinkroot is distinguished from the other 3 *Spigelia* species that occur in Florida by its white-pink bract-less flowers that are 1.5 cm long that occur in forks of leafy branches and have anthers included in the flower (not exerted), and the middle of the styles are jointed. Gentian pinkroot (*Spigelia gentianoides*) is both Federal and State Listed Endangered and only occurs in a few northwest Florida counties. Similar plants occur in Texas, but are considered to be a separate species –Texas *Spigelia* (*Spigelia texana*) based on differences in flower length and habitat (Gould and Jansen 1999).

References:

- Chafin, L.G. 2000. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Gould, K.R. and R.K. Jansen. 1999. Taxonomy and Phylogeny of a Gulf Coast disjunct group of *Spigelia* (Loganiaceae sensu Lato). *Lundellia* 2:1-13.
- Herring, B. J. and G. E. Schultz. 2003. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway – Year 1. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, Florida.
- NatureServe. 2017a. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. <[NatureServe Explorer – *Spigelia loganioides* report](#)>. Accessed 06 June 2017.3
- Ward, D.B. 1979. Rare and Endangered biota of Florida: Vol. 5-plants. University Presses of Florida. Gainesville, Florida.



Photos by Brenda Herring



Global Rank: **G3**
State Rank: **S3**
State Status: **Endangered**
Federal Status: **None**

Stylisma abdita Myint
Common name: scrub stylisma
CONVOLVULACEAE

Description: Small perennial herb with 30 cm long stems trailing over the ground from a taproot or underground stem; short (<1.2 cm), hairy, linear leaves alternate along the stem; small (1.2 cm), white funnel-shaped flowers are borne individually on short stalks in the axils of the leaves.

Flowering time: March-August

Range: Florida endemic ranging from Clay County south to Collier County.

Habitat: Dry sandy soils in scrub and sandhills. Very inconspicuous plant often hidden by leaf litter or grasses. At MHCCFG, scrub stylisma is only known to occur in high quality sandhill east of SR 200 and south of CR 484.

Management: Inconspicuous plant in open sand may be inadvertently destroyed by management activities. Use prescribed fire to maintain open sand areas. Avoid heavy machinery driving or parking off road.

Distinguishing features: Can be distinguished from coastalplain dawnflower (*Stylisma patens*), which also occurs in sandhills at MHCCFG, by its smaller, more crowded leaves and smaller flowers whose corollas are less than 2X as long as their sepals (vs. more than 2X as long) and from hairy dawnflower (*Stylisma villosa*) by its sessile (vs. stalked) leaves.

References:

- Austin, D.F. and J.N. Burch. 1992. Status of *Stylisma abdita* (Convolvulaceae) in southwestern Florida. Florida Scientist 55 (s): 99-102.
Hoffman, S.J. 2009. Taxonomic and Phylogenetic Evaluation of *Stylisma* (Convolvulaceae). M.S. Thesis University of North Carolina Wilmington
Myint, T. 1966. Revision of the genus *Stylisma* (Convolvulaceae). Brittonia 18 (2): 97-117.



Photo by Brenda Herring



Photos by Katy NeSmith



Photo by Brenda Herring



Global Rank: **GNR**
State Rank: **SNR**
State Status: **Commercially
Exploited**
Federal Status: **None**

Zamia integrifolia L.f.

Common name: Florida arrowroot, coontie

ZAMIACEAE

Synonym: *Zamia pumila* (L.)

Description: Evergreen shrub that resembles palms or ferns and originates from an underground stem. Leaves are leathery, stiff and divided into numerous leaflets much like a feather. Leaves (including the smooth petioles) range from 20 to 80 cm long with leaflets 7-12 cm long. Male and female cones (fruits) are on separate plants, and are borne in the center of the plant. The male (pollen) cones are smaller than the female and are cylindrical with rust-purple hairs. The female (seed) cones are elliptical to round with rusty hairs. The stems of the seed cones are much shorter than the cones. Seeds are 1.5-2 cm long, angled, and have a bright orange or red fleshy/waxy outer layer (FNA 1993, Godfrey 1988, Ward 1979, Wunderlin and Hansen 2000).

Flowering time: Showy, brightly colored seeds are visible during winter-spring.

Habitat: Oak hammocks, pinelands, and shell middens. At MHCCFG, coontie was observed throughout in maritime, mesic, hydric, and xeric hammocks.

Range: Peninsular Florida, Georgia, and the West Indies.

Management: Control invasive species, avoid ground disturbance, and protect from collection.

Distinguishing features: The classification of Florida *Zamia* species has been controversial with the number of Florida species varying from one to six throughout the years. The latest research (Ward 2016) supports that there are two *Zamia* species known to occur in Florida: cardboard palm (*Zamia furfacea*) and *Zamia integrifolia* -with five varieties. Cardboard palm is an introduced species and differs from coontie by having a petiole with prickles, cylindrical seed cones that have gray to brown hairs and the stems of the seed cones are almost as long as the cones (Ward 2016, Wunderlin and Hansen 2000).

References:

- (FNA) Flora of North America Editorial Committee. 1993. Flora of North America north of Mexico, Vol. 2:pteridophytes and gymnosperms. Oxford University Press, New York.
- Godfrey, R. K. 1988. Trees, shrubs, and woody vines of northern Florida and adjacent Georgia and Alabama. The University of Georgia Press, Athens, Georgia.
- Ward, D.B. 2016. Keys to the flora of Florida-32, *Zamia* (Zamiaceae). Phytologia 98:3.
- Ward, D.B. 1979. Rare and Endangered biota of Florida: Vol. 5-plants. University Presses of Florida. Gainesville, Florida.
- Wunderlin, R.P., and B.F. Hansen. 2000. Flora of Florida. Volume I. Pteridophytes and Gymnosperms. University Press of Florida, Gainesville, Florida.



Photo by Michelle Smith at Babcock-Webb WMA

Global Rank: **G4G5T4**
State Rank: **S4**
State Status: **Threatened**
Federal Status: **None**

Zephyranthes atamasca (L.) Herb.

var. *treatiae* (S.Watson) Meerow

Common names: Treat's zephyrlily
AMARYLLIDACEAE

Description: Showy, lily-like flower arising from a perennial underground bulb. The single terminal flower bears 6 large white to pinkish petals. Leaves are linear, arising at the base of the plant, usually 1-3 mm wide.

Flowering time: Spring

Habitat: Bottomland forests, hydric hammocks, wet prairies and flatwoods. At MHCCFG, Treat's zephyrlily occurred along the Florida National Scenic Trail in Marshall Swamp in hydric hammock.

Range: South Georgia to central Florida – Highlands County.

Management: Protect forests from disturbance. Control exotics. Protect from poaching. Avoid soil disturbance, but plants are very tolerant of mowing.

Distinguishing features: Treat's zephyrlily is distinguished from atamasco lily (*Z. atamasca* var. *atamasca*) by its narrower leaves and a perianth tube that is more than one quarter the length of the perianth. It differs from redmargin zephyrlily (*Z. simpsonii*) by having a style and stigma that exceed the anthers.



Photo by Brenda Herring