



Rare Plant Survey of Chassahowitzka Wildlife Management Area Hernando County, Florida

Final Report to the
Florida Fish and Wildlife
Conservation Commission
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Kimberely J. Gullede
Ann F. Johnson
Gary E. Schultz



Cover Photographs:

- top: Scrub stylisma (*Stylisma abdita*) on open sand (Kimberely Gullede)
- center: Blueflower butterwort (*Pinguicula caerulea*) in flower (Kimberely Gullede)
- bottom: Pine pinweed (*Lechea divaricata*) leaves (Kimberely Gullede)

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ABSTRACT

A rare plant survey of Chassahowitzka Wildlife Management Area in Hernando County, Florida, was conducted from October 2010 to May 2011 to establish baseline data for existing 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 14 rare plant species were found during the survey including six state listed endangered species, Curtiss' milkweed (*Asclepias curtissii*), pine pinweed (*Lechea divaricata*), plume polypody (*Pecluma plumula*), swamp plume polypody (*Pecluma ptilodon*), scrub stylisma (*Stylisma abdita*), and spreading air-plant (*Tillandsia utriculata*). Eight state listed threatened plants found were found: garberia (*Garberia heterophylla*), nodding pinweed (*Lechea cernua*), cardinal flower (*Lobelia cardinalis*), angle pod (*Matelea gonocarpos*), blueflower butterwort (*Pinguicula caerulea*), yellow-flowered butterwort (*Pinguicula lutea*), palegreen orchid (*Platanthera flava*), and giant orchid (*Pteroglossaspis ecristata*). Rare plants were found mainly in sandhill, scrub, and hammock natural communities.

ACKNOWLEDGMENTS

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INTRODUCTION

The Chassahowitzka Wildlife Management Area (WMA) is 27,264 acres owned by the State of Florida and managed by the Florida Fish and Wildlife Conservation Commission. It is located in northwestern Hernando County on the Gulf of Mexico coast, just east of the Chassahowitzka National Wildlife Refuge, with access from US 19, which forms most of the eastern boundary of the WMA (Figure 1). The WMA extends from the Hernando/Citrus county line south to the vicinity of the Weeki Wachee River, which flows through the southernmost parcel.

Situated on the transition from the high, sandy Brooksville Ridge to the low, coastal limestone platform, Chassahowitzka WMA contains a variety of plant habitats. Elevations range from 100 ft in the disjunct far northeastern parcel (the “Hammock tract”) to near sea level in the broad coastal hammock of the main tract. Most uplands on the property are from 10 to 60 ft in elevation.

Over 90% of the WMA is in natural condition. In 2003, Florida Natural Areas Inventory created a GIS map which identified and delineated the extent of eighteen natural communities within the boundaries of the WMA (Figure 2). About two thirds of the WMA was mapped as natural wetlands. Natural uplands comprised 27% of the property. Most of the remaining 6% are disturbed uplands (pine plantation, pasture, and ruderal).

Wetlands on Chassahowitzka WMA are composed primarily of a large hydric hammock that occupies the majority of the main tract. The western boundary of the property runs through this hammock which is immediately adjacent to a broad swath of salt marsh fringing the Gulf of Mexico to the west. Soils are of the Aripeka-Okeelanta-Lauderhill association in the western portion of the hammock and of the Okeelanta-Terra Ceia association in the eastern portion. These are poorly drained soils, often overlain with a layer of organic muck. Limestone is close to the surface (within 16 to 36 inches of the surface in Aripeka and Lauderdale soil series; USDA 2007).

The remaining wetlands are mostly isolated depressions occupied by marshes and cypress swamps. These are underlain primarily by Basinger fine sands, which are thicker, more acidic soils than occur in the hydric hammock (USDA 2007).

Sandhill is the major upland community type on Chassahowitzka WMA, mostly underlain by Candler and Taveres soil series. These are deep, acidic, moderately to excessively drained sands. Scrub occupies approximately 444 acres in the southernmost portion of the WMA. Soils are Paola series. The remainder of the natural uplands comprises pine flatwoods underlain by Myakka fine sands, plus about 900 acres of mesic and xeric hammocks (USDA 2007).

The goal of this survey was to identify potential rare plants that might occur on Chassahowitzka WMA, locate likely habitats for those plants, and conduct field work to assess and document their location if present. This data will provide a baseline for future monitoring and management of threatened and endangered plants on Chassahowitzka WMA.

METHODS

Target Rare Species

Rare plants with good potential of occurring on Chassahowitzka WMA were identified using data from the FNAI Rare Species Conservation database (BIOTICS 4.0), as well as plant distribution information gathered from the online Florida Plant Atlas (Wunderlin and Hansen 2008). A list of all plants considered threatened or endangered by either the federal or state government was generated for Hernando County. Similar lists were created for Citrus and Pasco counties since these are near to the study site. Finally, a list of species with occurrences in the BIOTICS database on or within several miles of the site was compiled.

Likely habitats for plant species identified in the previous lists were assessed using a review of rare species habitats (FNAI 1997) and the state tracking list for Florida (Coile and Garland 2003). This habitat information was compared to known conditions at Chassahowitzka WMA. Plants that were not considered likely to occur, either because of a lack of habitat or because the species range was clearly not overlapping with the study site, were removed from the target species list. Information on phenology was collected for each of the target species using multiple sources (FNAI 1997; Wunderlin and Hansen 2003). The final list includes 30 target plant species, and was used to determine best survey dates and habitats (Table 1).

Field Surveys

Maps for survey work were developed from the natural community map of Chassahowitzka WMA (FNAI 2003). FNAI staff searched likely habitats when the target plants were most conspicuous or when reproductive structures necessary for identification were present. High quality uplands were chosen in the field and meandering transects were walked through each area to search for target species. In swamps and hammocks where accessibility was limited, surveyors walked tram roads and short loops off of trams when likely habitat was located.

Surveys took place in 2010 on October 11-21, and in 2011 on March 21-24 and May 5-12. Some additional field data was collected during a gopher tortoise survey conducted by FNAI during the same time period. Data was collected on all 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 or 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 4.10. Data recorded by FNAI during a previous incidental trip to Chassahowitzka WMA were included in the current data in order to present a complete account of occurrences.

The rare plant points were edited in ArcMap 9.3 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	

Three shapefiles are provided with this report:

- Chassahowitzka_rare_plants_201106_v3.shp
- Chassahowitzka_rare_animals_201106_v3.shp - (incidental sightings)
- Chassahowitzka_exotics_201106_v3.shp - (incidental sightings)

All data for rare plants tracked by FNAI were entered as Element Occurrence Records (EOR's) into the FNAI Rare Species Conservation database (BIOTICS 4.0).

Table 1. Potential endangered and threatened plant species on Chassahowitzka WMA. Rank explanations provided in Appendix B.

Scientific Name	Common Name	Survey Season	Probable Habitat	Acres Habitat	Global Rank	State Rank	Federal	State	FNAI Tracked	Notes
<i>Agrimonia incisa</i>	incised groove-bur	Fall	Sandhill	4000	G3	S2	N	LE	Yes	
<i>Asclepias curtissii</i>	Curtiss' milkweed	Spring-Fall	Scrub	444	G3	S3	N	LE	No	
<i>Asplenium erosum</i>	auricled spleenwort	All year	Hydric hammock, basin swamp	16223	G5	S2	N	LE	Yes	
<i>Carex chapmanii</i>	Chapman's sedge	Spring	Hydric hammock	15329	G3	S3	N	LT	Yes	
<i>Centrosema arenicola</i>	sand butterfly pea	Summer-Fall	Sandhill	4000	G2Q	S2	N	LE	Yes	
<i>Chamaesyce cumulicola</i>	sand-dune spurge	Spring-Fall	Scrub	444	G2	S2	N	LE	Yes	
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	Summer-Fall	Marsh edges	276	G3	S3	N	LT	Yes	
<i>Garberia heterophylla</i>	garberia	All year	Sandhill	4000	G3G4	S3S4	N	LT	No	
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	Fall	Sandhill	4000	G3	S3	N	N	Yes	
<i>Harrisella porrecta</i>	needleroot airplant orchid	Summer-Fall	Epiphytic in swamps and hammocks	16223	GU	SNR	N	LT	No	
<i>Hexalectris spicata</i>	spiked crested coralroot	Spring-Summer	Mesic hammock	15697	G5	S3	N	LE	No	
<i>Lechea cernua</i>	nodding pinweed	Summer-Fall	Scrub	444	G3	S3	N	LT	Yes	
<i>Lechea divaricata</i>	pine pinweed	Summer-Fall	Scrub, scrubby flatwoods	461	G2	S2	N	LE	Yes	
<i>Lilium catesbaei</i>	pine lily	Summer-Fall	Pine flatwoods	1769	G4	S4	N	LT	No	
<i>Lobelia cardinalis</i>	cardinal flower	Summer-Fall	Spring-run stream banks	20	G5	SNR	N	LT	No	
<i>Matelea gonocarpos</i>	angle pod	Spring-Summer	Mesic hammock	368	G5	SNR	N	LT	No	
<i>Nolina brittoniana</i>	Britton's beargrass	Spring	Sandhill, scrub	4444	G3	S3	LE	LE	Yes	Poor potential

Scientific Name	Common Name	Survey Season	Probable Habitat	Acres Habitat	Global Rank	State Rank	Federal	State	FNAI Tracked	Notes
<i>Pecluma plumula</i>	plume polypody	Spring-Fall	Mesic hammock	15697	G5	S2	N	LE	Yes	
<i>Pecluma ptilodon</i>	swamp plume polypody	All year	Hydric hammock, basin swamp	16223	G5?	S2	N	LE	Yes	
<i>Peperomia humilis</i>	terrestrial peperomia	Summer	Mesic hammock	368	G5	S2	N	LE	Yes	
<i>Pinguicula caerulea</i>	blueflower butterwort	Winter-Spring	Pine flatwoods	1769	G4	S3S4	N	LT	No	
<i>Pinguicula lutea</i>	yellow-flowered butterwort	Spring	Pine flatwoods	1769	G4G5	S3	N	LT	No	
<i>Platanthera flava</i>	palegreen orchid	Spring-Summer	Swamp	894	G4?	S3S4	N	LT	No	
<i>Pteroglossaspis ecristata</i>	giant orchid	Summer-Fall	Sandhill, xeric hammock	4513	G2G3	S2	N	LT	Yes	
<i>Pycnanthemum floridanum</i>	Florida mountain-mint	Summer-Fall	Sandhill	4000	G3	S3	N	LT	Yes	
<i>Schizachyrium niveum</i>	scrub bluestem	Fall	Scrub	444	G1	S1	N	LE	Yes	Poor potential, but the FNAI database has an old record close to the southern scrub of Chassahowitzka WMA.
<i>Spiranthes tuberosa</i>	little ladies'-tresses	Spring-Summer	Scrubby flatwoods, sandhill, scrub	4461	G5	S3S4	N	LT	No	
<i>Stylisma abdita</i>	scrub stylisma	Spring-Summer	Sandhill, scrub	4444	G3	S3	N	LE	Yes	
<i>Tillandsia utriculata</i>	spreading air-plant	All year	Mesic hammock	368	G5	S3	N	LE	No	
<i>Zephyranthes atamasca</i>	atamasco lily	Spring	Hydric hammock	15329	G4G5	S4	N	LT	No	

RESULTS and RECOMMENDATIONS

Occurrences of 14 rare plant species listed by the state were found on Chassahowitzka WMA. Six of these are state listed as endangered: Curtiss' milkweed (*Asclepias curtissii*), pine pinweed (*Lechea divaricata*), plume polypody (*Pecluma plumula*), swamp plume polypody (*Pecluma ptilodon*), scrub stylisma (*Stylisma abdita*), and spreading air-plant (*Tillandsia utriculata*). Surveyors found a single individual of what is suspected to be the state listed endangered spiked crested coralroot (*Hexalectris spicata*). This plant was observed in fruit, and therefore its identity could not be confirmed. No federally listed rare plants were observed.

Eight of the rare species found are state listed as threatened: garberia (*Garberia heterophylla*), nodding pinweed (*Lechea cernua*), cardinal flower (*Lobelia cardinalis*), angle pod (*Matelea gonocarpos*), blueflower butterwort (*Pinguicula caerulea*), yellow-flowered butterwort (*Pinguicula lutea*), palegreen orchid (*Platanthera flava*), and giant orchid (*Pteroglossaspis ecristata*). One plant species located during the survey, Chapman's skeletongrass (*Gymnopogon chapmanianus*), is tracked by FNAI, but not listed by the state.

Several locations were recorded for four species listed by the state as commercially exploited: Florida butterfly orchid (*Encyclia tampensis*), green fly orchid (*Epidendrum conopseum*), cinnamon fern (*Osmunda cinnamomea*), and needle palm (*Rhapidophyllum hystrix*). A fifth commercially exploited species, royal fern (*Osmunda regalis*), is also known to occur on Chassahowitzka WMA.

Population information for rare species found at Chassahowitzka WMA was summarized and management needs were assessed for each (Table 2). Raw data for all GPS points recorded are provided in Appendix C. Complete descriptions, general species management information, and photographs of rare and commercially exploited species are provided in Appendix D.

The major habitats supporting rare species on Chassahowitzka WMA are sandhill, scrub, and hydric/mesic hammock. Several of the sandhills visited were being actively burned or showed signs of mechanical or chemical hardwood treatment. However, for many sandhills on the WMA, years of oak growth and fire exclusion continue to affect habitat quality. These areas often need shorter fire intervals just to reduce the re-sprouting from established oak clones (Guerin 1993). Sandhills on the main tract are often more susceptible to hardwood invasion because of their low position transitional to flatwoods. The unique quality of these low sandhills is likely conducive to the growth of pine pinweed. This species is frequently found in scrubby flatwoods, but the interface of sandhill and mesic flatwoods on Chassahowitzka seems to offer a similar niche. In contrast, scrub stylisma occupies a very different area of sandhill in the two northeastern parcels. Scrub stylisma benefits from open sand habitats present on more sterile, excessively drained hills. While most plants are concentrated in the Hammock tract to the east, a population was also found in the parcel just south of the main office. The eastern portion of this parcel was recently burned in the spring of 2011. Plants were observed following the fire. Continued burning of the somewhat overgrown compartments to the west could possibly open up new habitat for this species.

Scrub in the southernmost portion of the WMA contained large numbers of nodding pinweed. A single occurrence of Curtiss' milkweed was also found in this scrub in 2008. Both species utilize

the openings along trails and clearings. A dense stand of sand pines (*Pinus clausa*) have been removed within the last decade, and recent mechanical treatment has reduced shrub heights and created more openings that will be beneficial to these two species. As shrubs re-grow, prescribed fire would be highly beneficial in creating more natural openings and structure.

The large hydric hammock that forms the majority of the main tract harbors several endangered and threatened plant species. These are primarily dispersed in slightly higher, or mesic, hammocks and in wetter areas of basin swamp that are embedded in this large wetland. The endangered swamp plume polypody was found mostly in areas with some standing water where old cypress stumps provide suitable habitat. These plants are vulnerable to changes in hydrology and require stumps and fallen logs as platforms. In mesic hammocks, the endangered spreading air-plant could occasionally be found growing on southern magnolia trunks (*Magnolia grandiflora*). The hammock at Chassahowitzka WMA seems to be naturally lacking in the more typical host tree, live oak (*Quercus virginiana*), which was rarely seen in the large coastal hammock. At a single location where several large live oaks were present, however, plume polypody was observed on two trunks. Large live oaks, in particular, need to be protected at Chassahowitzka WMA, as well as other host trees. Fallen and dead trees should be left undisturbed if possible.

The variety of natural communities at Chassahowitzka WMA provides good potential environments for a number of rare plant species. This survey should serve as a baseline to develop a complete picture of rare plant populations that may expand as management efforts continue to improve habitat. Any single year survey is likely to miss some plant occurrences, particularly for species that can remain dormant for long periods of time. Continued survey efforts will build the database, creating a useful management tool for effective stewardship of this valuable conservation land.

Table 2. Summary of rare plant occurrences on Chassahowitzka WMA. EO Number refers to the record number in the FNAI database (BIOTICS).

Scientific Name	State status	# GPS pts	Count	EO Number(s)	Habitat	Area found	Management needs	Notes
<i>Asclepias curtissii</i>	LE	1	1	Not tracked	Scrub	In scrub north of Weeki Wachee Springs State Park (Figure 3)	Plants seem to respond well to minor disturbances that create openings, i.e. trails (Minno 1991)	The occurrence recorded in scrub in 2008 was not re-located during this survey. However, individuals of this species are known to remain dormant in some years (Weekley and Menges 2003)
<i>Garberia heterophylla</i>	LT	156	2700-9,000	Not tracked	Sandhill, scrub, xeric hammock	Scattered in sandhills and xeric hammocks throughout the WMA and in southern scrub parcels (Figure 4)	Plants should respond well to fire and many were seen re-sprouting during the survey.	
<i>Gymnopogon chapmanianus</i>	N	14	25	35 36	Sandhill	Mostly low sandhill in the northeastern corner of the main tract (Figure 5)	Maintain natural fire intervals in pine uplands.	Probably many more individuals on Chassahowitzka WMA, but plants are widely scattered and easily overlooked.
<i>Hexalectris spicata</i>	LE	1	1	N/A	Mesic hammock	Along tram road through mesic hammock on Picnic Grade which runs north/south near the western boundary of the WMA	Careful removal of exotics along tram roads.	Identification not confirmed. Further survey of the mesic hammocks along Picnic Grade might reveal more plants.
<i>Lechea cernua</i>	LT	58	850-1000	194	Scrub	Common along trails and in openings in white sand scrub north of Weeki Wachee Springs State Park (Figure 6)	Mechanical treatment of the scrub will help to keep the habitat open, but fire is preferable to create open, sandy spaces that the plants prefer (Menges and Kohfeldt 1995)	
<i>Lechea divaricata</i>	LE	18	230-260	29 30 31	Sandhill	Almost all plants were found widely scattered in low sandhill on the main tract (Figure 7)	Fire dependency has not been determined for this species, but it seems to prefer openings where competition is reduced. Because this species prefers ecotones between sandhill and flatwoods, fire lanes should not be placed between these communities.	As with other pinweeds, this species is often seen exploiting areas with some clearing that reduces competition. However, heavy disturbance of natural areas would be detrimental.

Scientific Name	State status	# GPS pts	Count	EO Number(s)	Habitat	Area found	Management needs	Notes
<i>Lobelia cardinalis</i>	LT	2	7	Not tracked	Spring-run stream banks	Two locations on the banks of the Weeki Wachee River (Figure 8)	Preservation of springs and protection from poaching	
<i>Matelea gonocarpus</i>	LT	29	60-100	Not tracked	Hydric and mesic hammock	All plants found in large hammock, mostly along tram roads (Figure 9)	Careful removal of exotics along tram roads.	The elevated tram grades provide a protected, mesic environment that angle pod seems to prefer. In some cases, plants were seen scrambling on natural platforms such as fallen logs and old cypress stumps. This is likely a very common plant, but individuals are widely scattered and difficult to spot vegetatively except up close.
<i>Pecluma plumula</i>	LE	2	15-25	28	Mesic and hydric hammock	One location in large hammock epiphytic on large live oaks (Figure 10)	Avoid cutting large live oaks in hammocks, which destroys habitat for these epiphytic ferns. Maintain natural hydrology.	There are very few suitable host trees (live oaks) in the large hammock on Chassahowitzka WMA.
<i>Pecluma ptilodon</i>	LE	7	20-40	15	Hydric hammock, basin swamp	Epiphytic on large cypress stumps in basin swamps within the large hydric hammock in the vicinity of Blind Creek (Figure 11)	Protect cypress stumps from disturbance. Maintain natural hydrology in basin swamps.	There are likely many more swamp polypody ferns throughout the hammock, but inaccessibility and the widely scattered distribution of suitable cypress stumps makes systematic survey impractical.
<i>Pinguicula caerulea</i>	LT	3	250-1000	Not tracked	Wet prairie	Two areas of calcareous wet prairie accessible via Old Bayport Road (Figure 12)	Burn wet prairies on an appropriate fire interval (every 2-3 years). Maintain natural hydrology and avoid using heavy equipment in wet prairie management.	These wet prairies were not part of the WMA boundary when the 2003 FNAI natural community map was completed. The Florida Land Use and Cover Classification System (FLUCCS) identifies these prairies as "freshwater marsh," implying a longer fire interval that would be detrimental to this unique community on the WMA. An updated map that covers the current boundary would be useful in setting management goals for the WMA.

Scientific Name	State status	# GPS pts	Count	EO Number(s)	Habitat	Area found	Management needs	Notes
<i>Pinguicula lutea</i>	LT	2	20-60	Not tracked	Pine flatwoods	Along vehicle trail through mesic flatwoods accessible via Old Bayport Road (Figure 13)	Burn mesic flatwoods every 2-4 years to promote sunny openings. At the time of the survey, these flatwoods were somewhat overgrown, and plants were restricted to trails because of heavy competition from shrubs.	
<i>Platanthera flava</i>	LT	11	23	Not tracked	Basin swamp and hydric hammock	In central part of large hydric hammock (Figure 14)	Maintain natural hydrology on the WMA	
<i>Pteroglossaspis ecristata</i>	LT	4	6	133 134	Sandhill, scrub	Widely scattered in the main tract. Chassahowitzka biologists have more locations (Figure 15)	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.	Probably many more plants than recorded, but only visible during sporadic flowering events that often follow fire.
<i>Stylisma abdita</i>	LE	36	2000-4500	43	Sandhill	Found exclusively on the Hammock tract and the parcel of sandhill near the WMA office (Figure 16)	Use prescribed fire to maintain open sand areas. Burn sandhill on the southernmost portion of the Hammock tract to open up more habitat.	Plants are in high sandhill that naturally has patches of open sand that the plants prefer.
<i>Tillandsia utriculata</i>	LE	16	45-90	Not tracked	Mesic and hydric hammock	Epiphytic mainly on southern magnolia scattered in higher areas throughout large hammock (Figure 17)	Protect large trees in hammocks	

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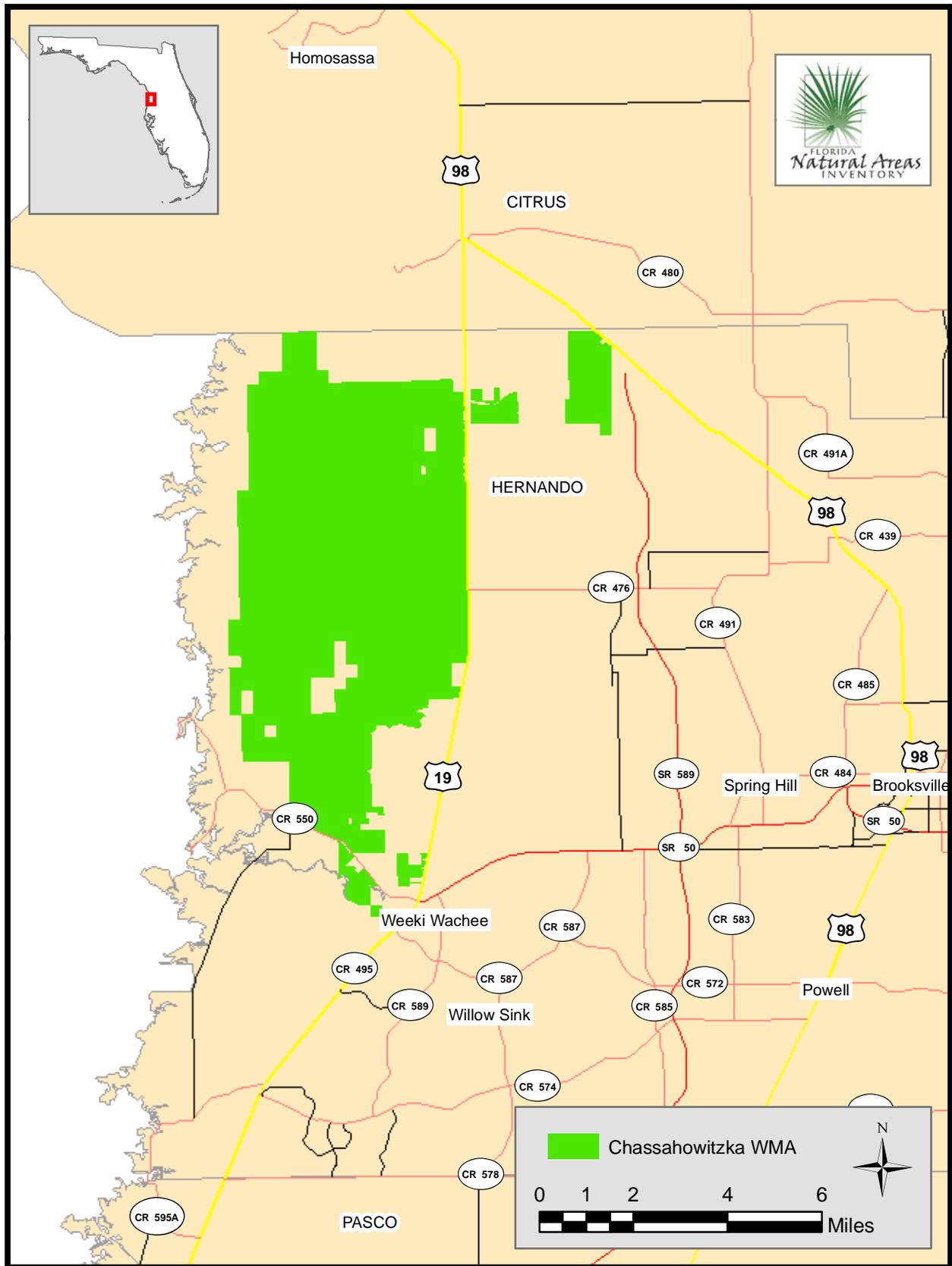


Figure 1. Location map of Chassahowitzka WMA

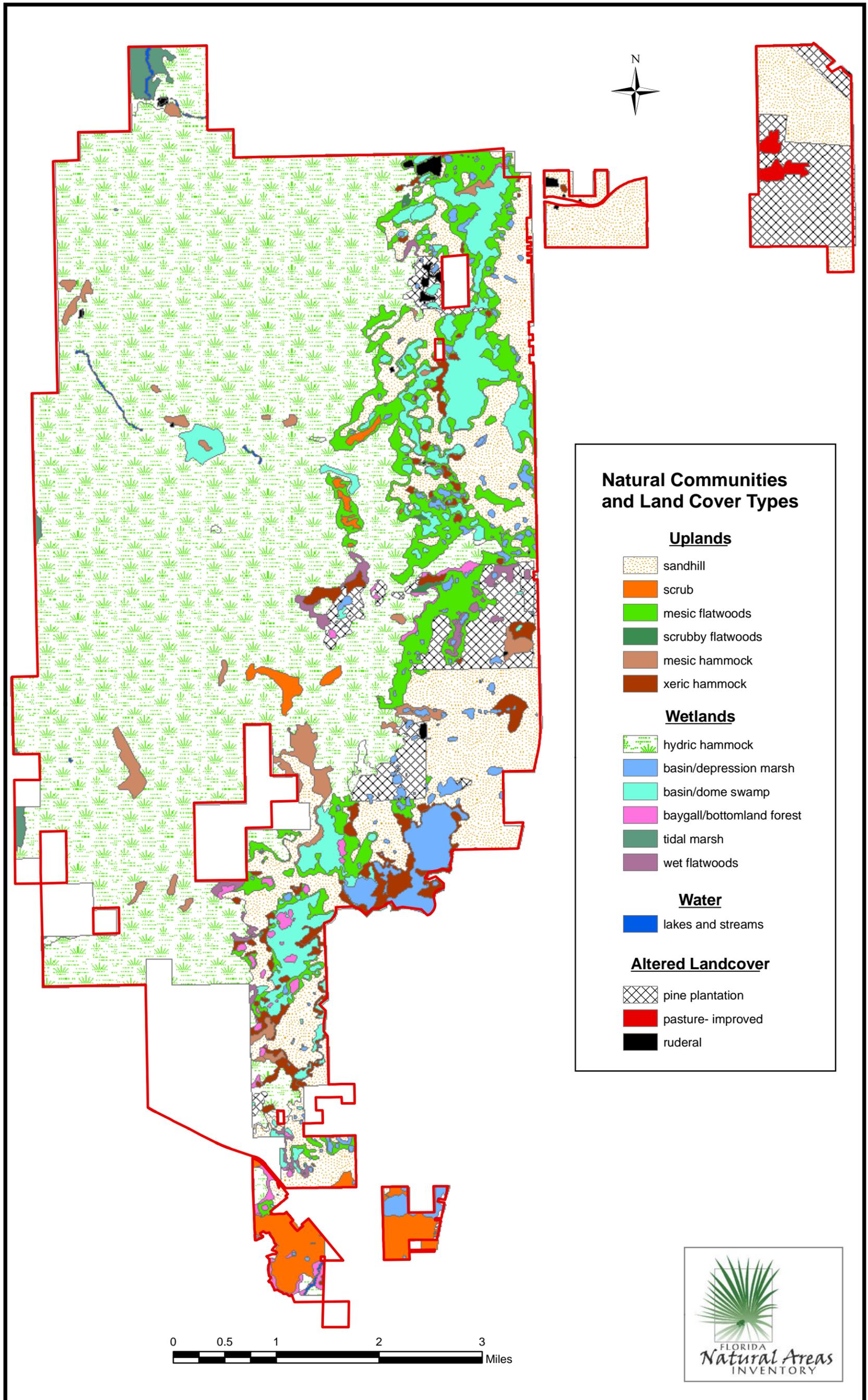


Figure 2. Natural communities and altered landcover types mapped by FNAI in 2003. NOTE: The WMA boundary has expanded since 2003, so some areas are not covered by this map.

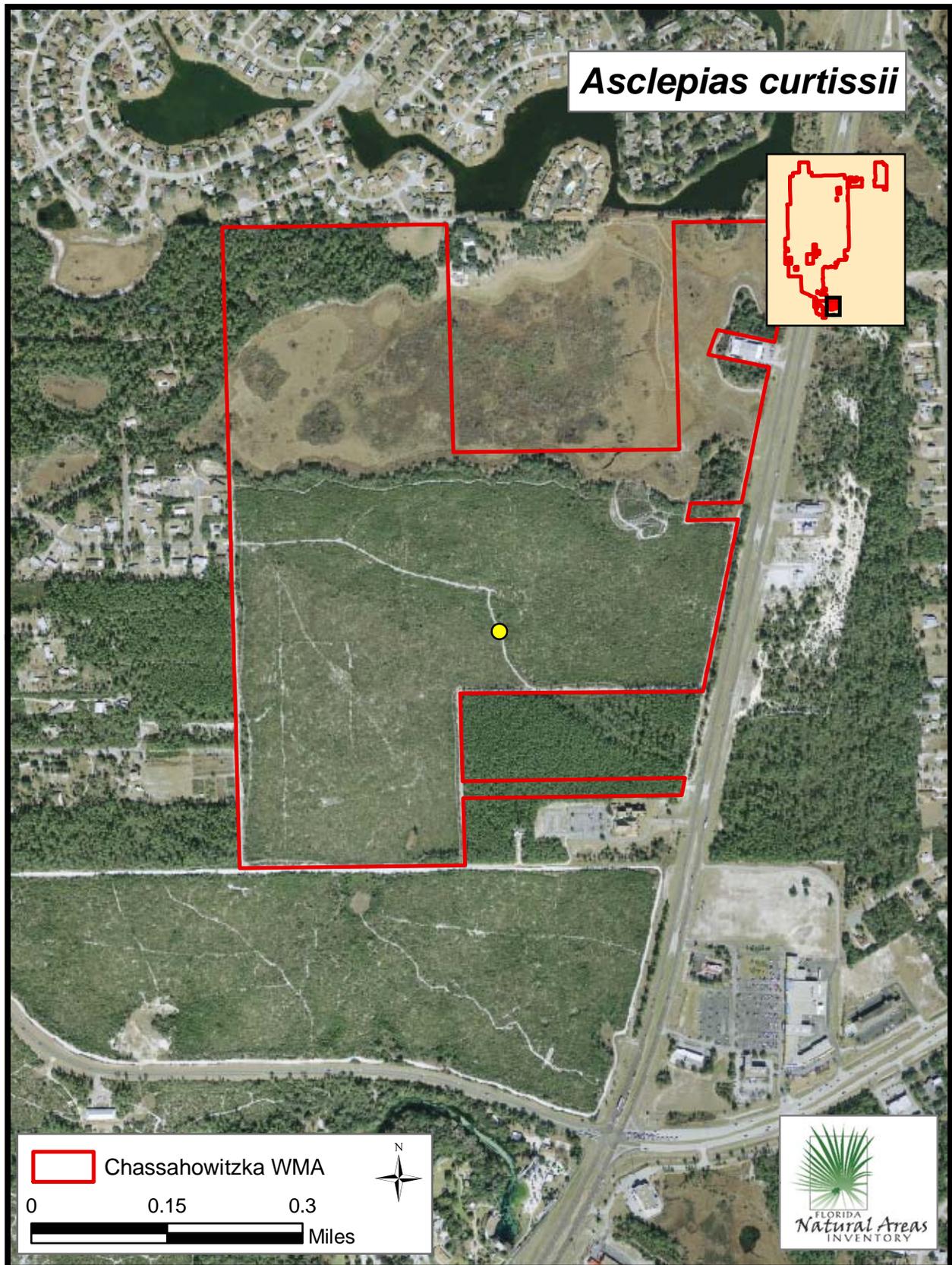


Figure 3. Location map of Curtiss' milkweed (*Asclepias curtissii*), state-listed as endangered, on Chassahowitzka WMA. 2010 high resolution aerial photography.

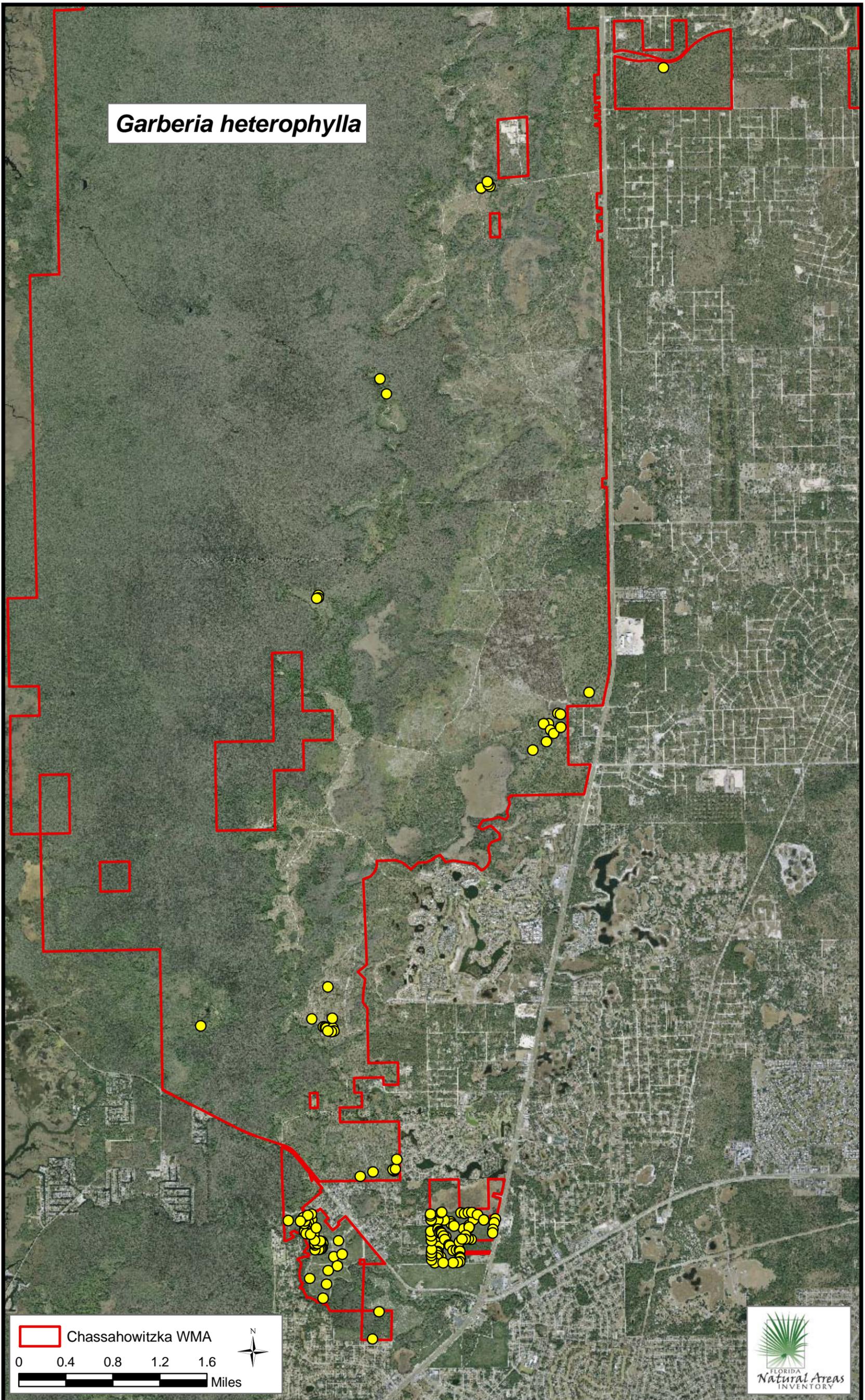


Figure 4. Location map of garberia (*Garberia heterophylla*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

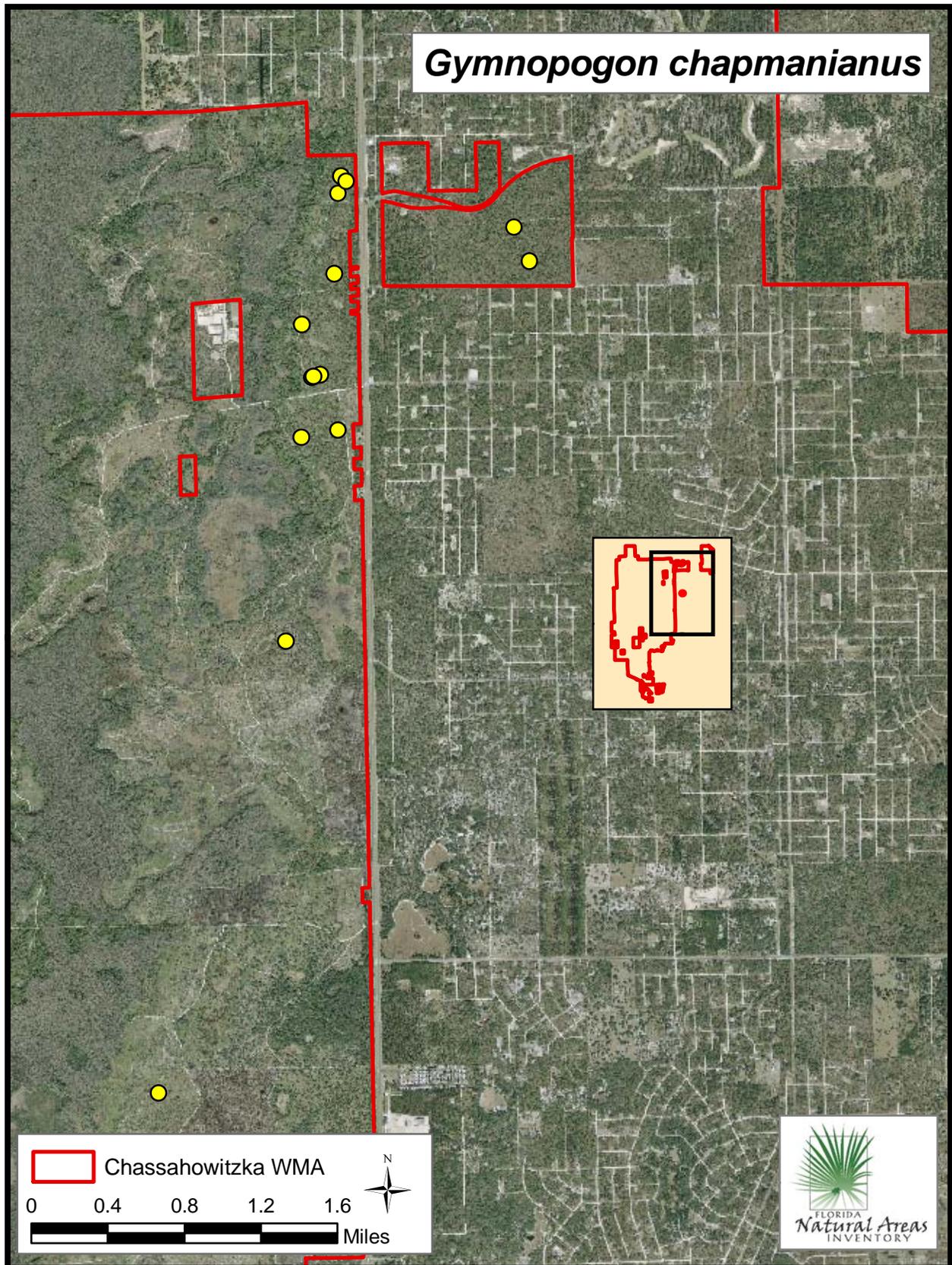


Figure 5. Location map of Chapman's skeletongrass (*Gymnopogon chapmanianus*), tracked by FNAI but not state listed, on Chassahowitzka WMA. 2010 high resolution aerial photography.

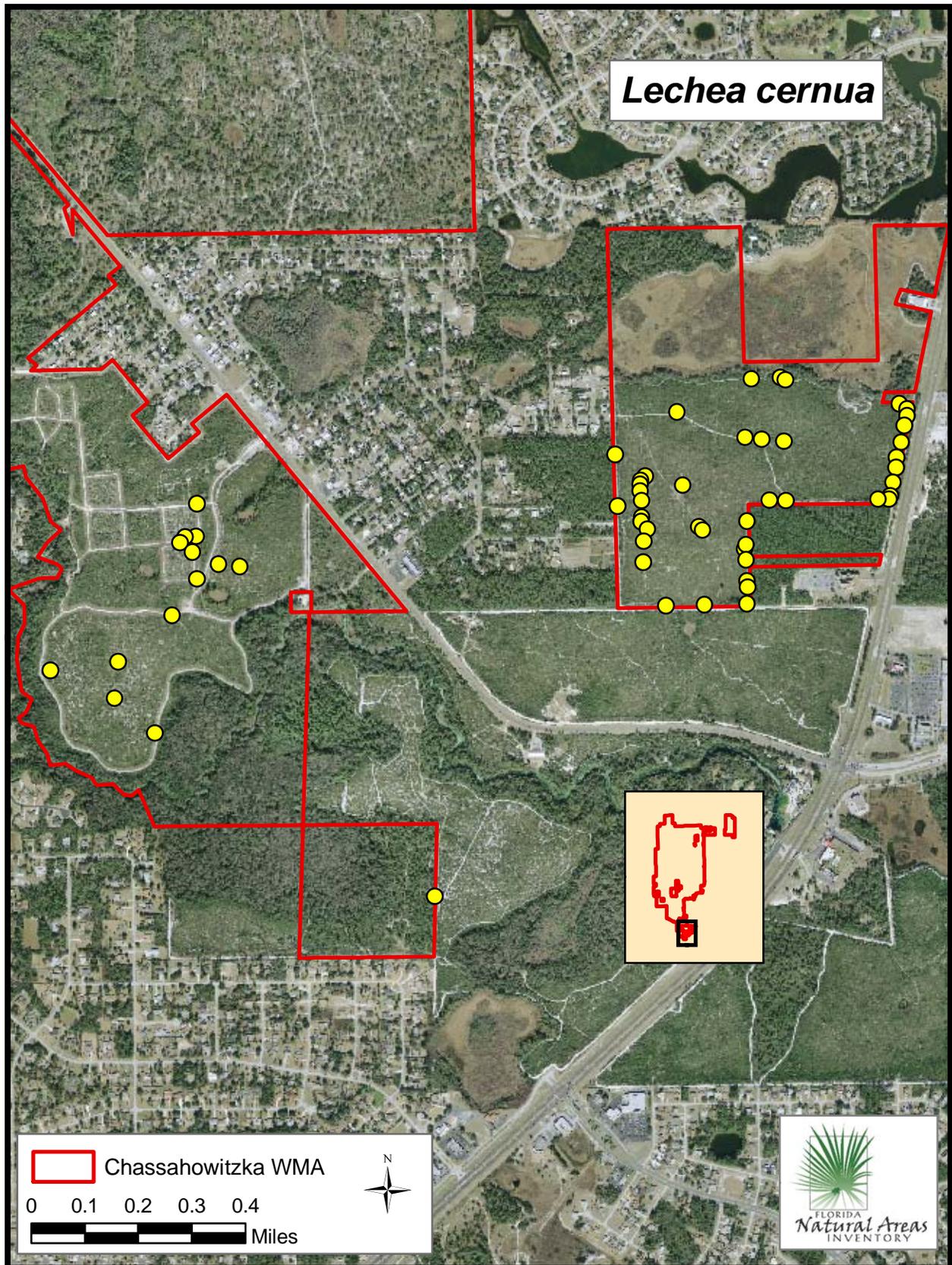


Figure 6. Location map of nodding pinweed (*Lechea cernua*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

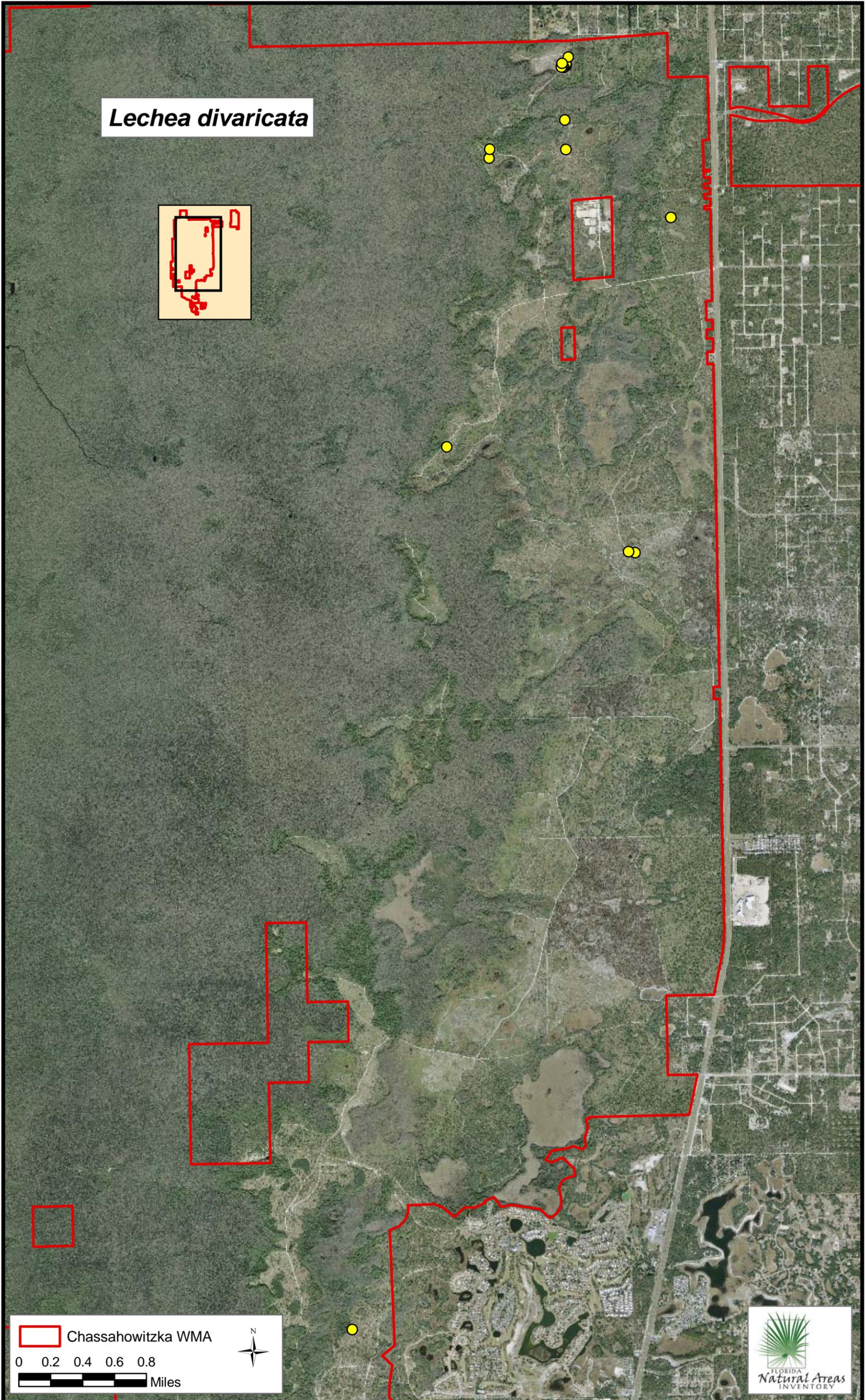


Figure 7. Location map of pine pinweed (*Lechea divaricata*), state listed as endangered, on Chassahowitzka WMA. 2010 high resolution aerial photography.

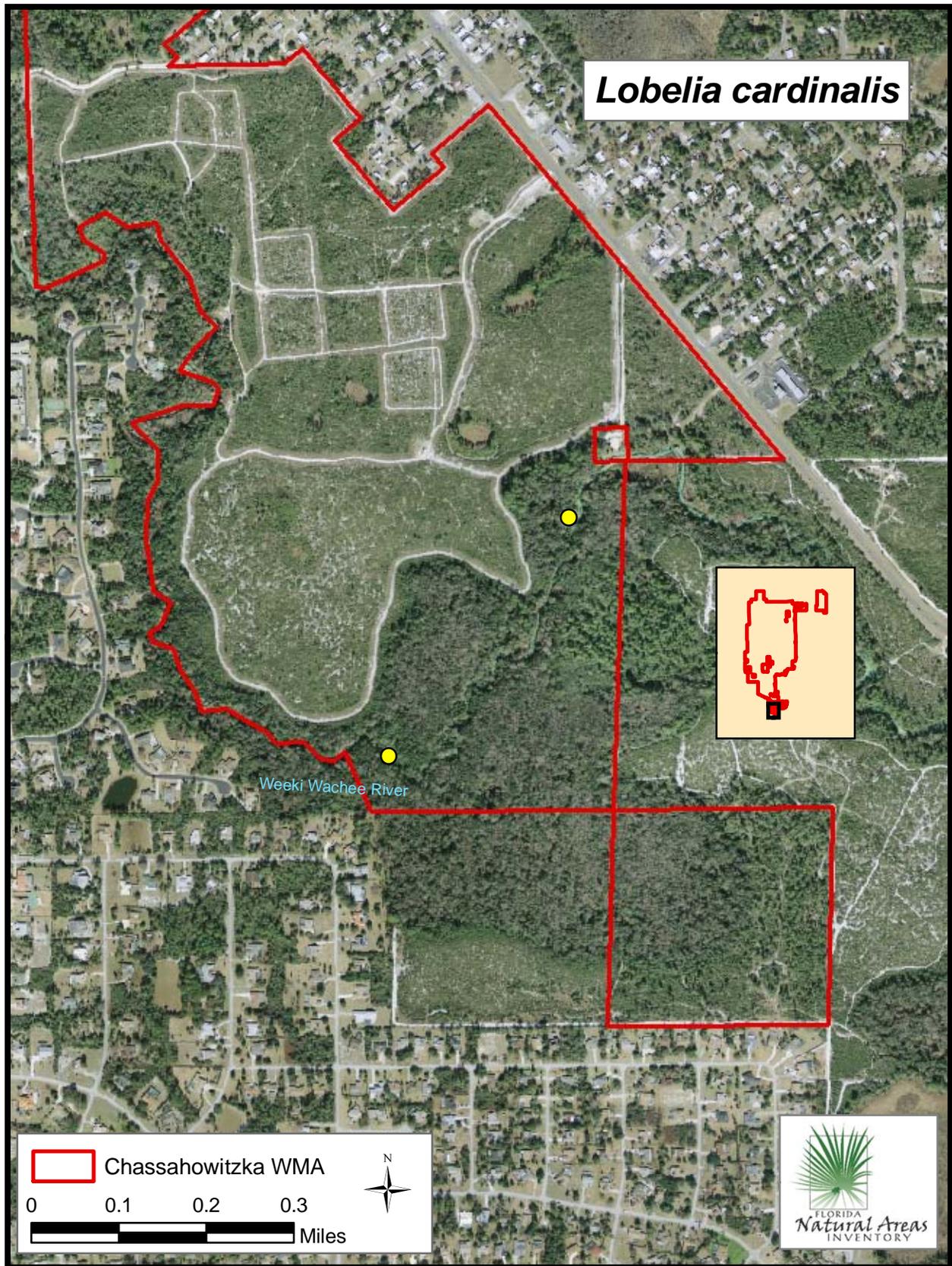


Figure 8. Location map of cardinal flower (*Lobelia cardinalis*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

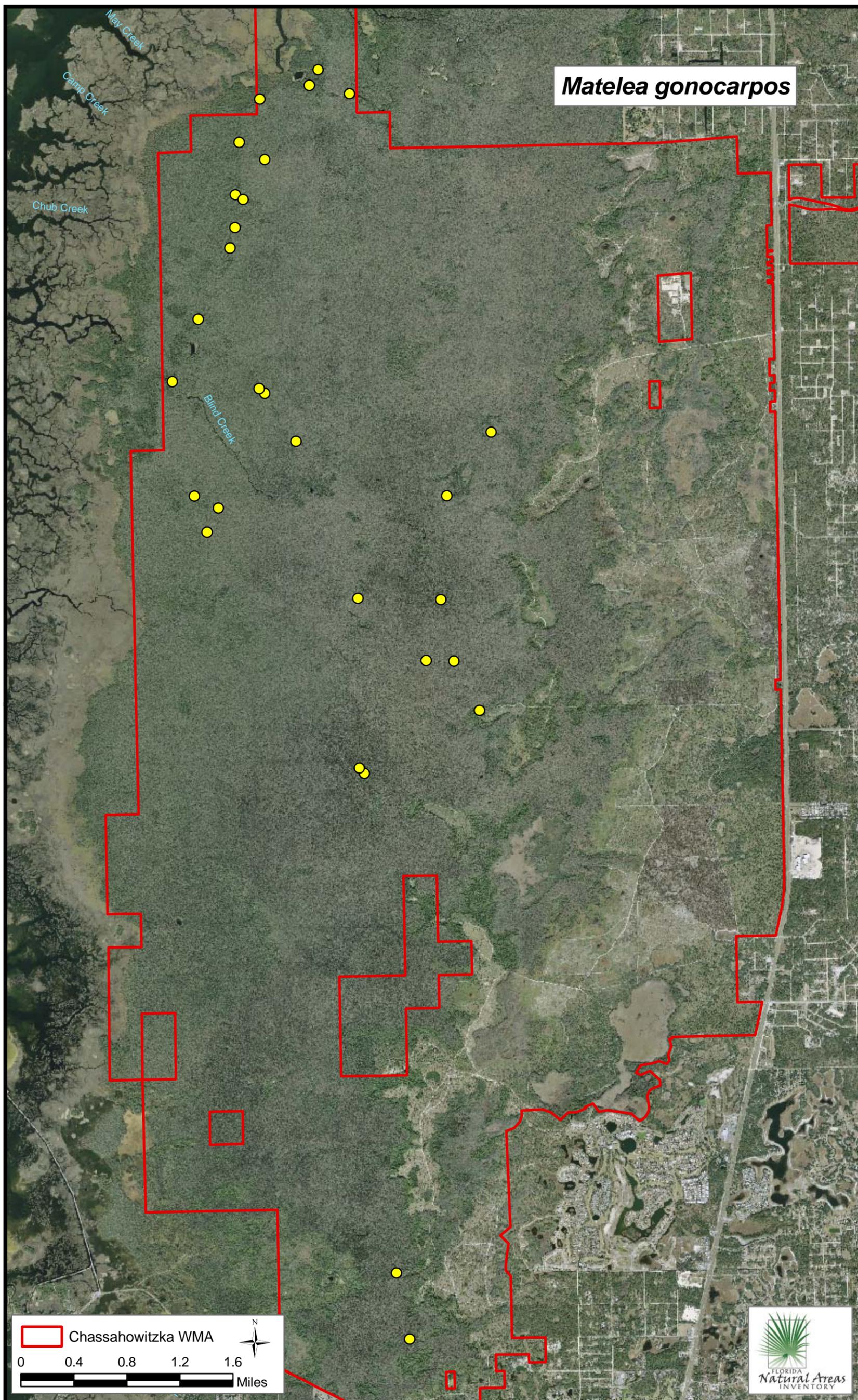


Figure 9. Location map of angle pod (*Matelea gonocarpus*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

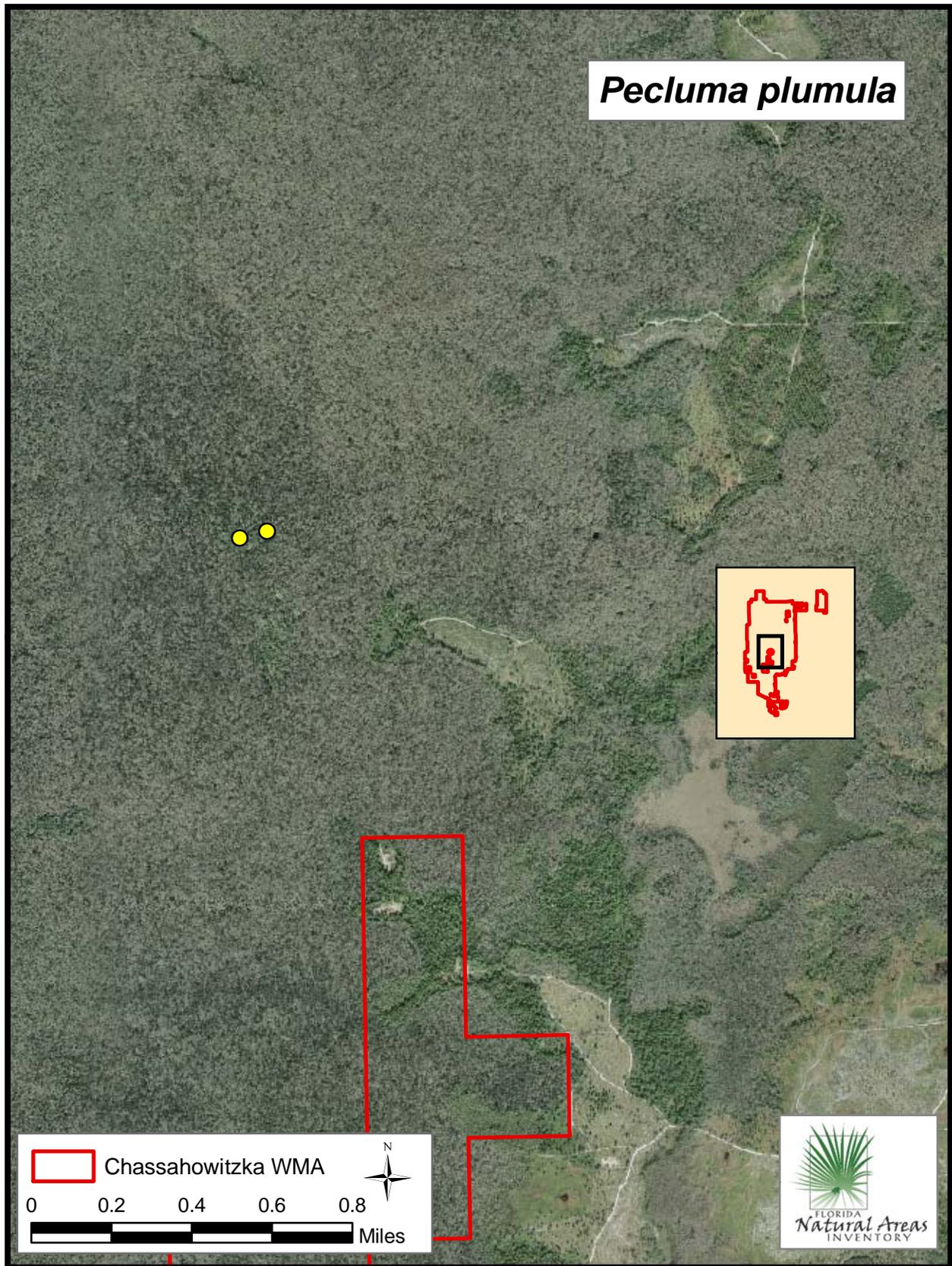


Figure 10. Location map of plume polypody (*Pecluma plumula*), state listed as endangered, on Chassahowitzka WMA. 2010 high resolution aerial photography.

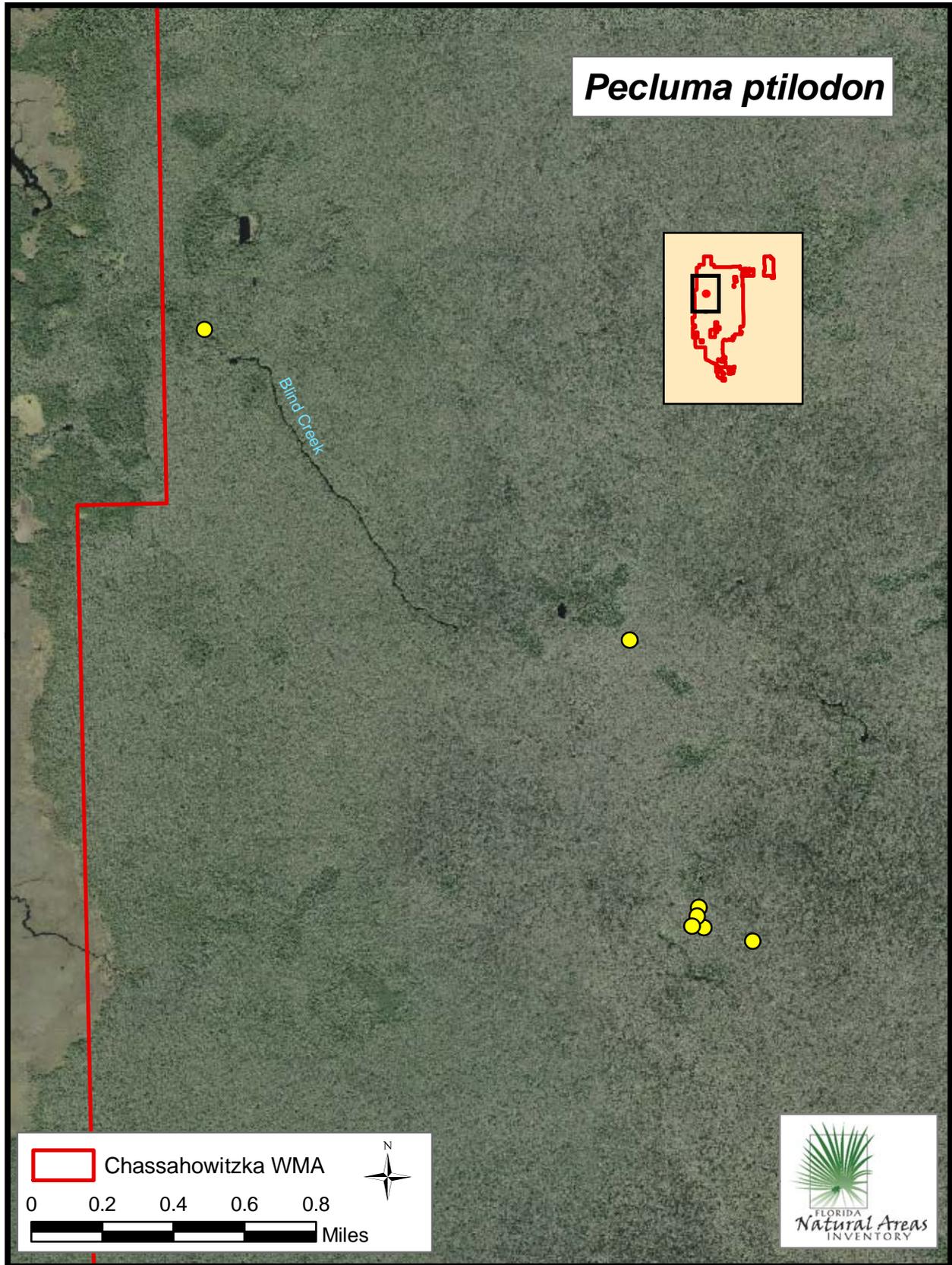


Figure 11. Location map of swamp plume polypody (*Pecluma ptilodon*), state listed as endangered, on Chassahowitzka WMA. 2010 high resolution aerial photography.

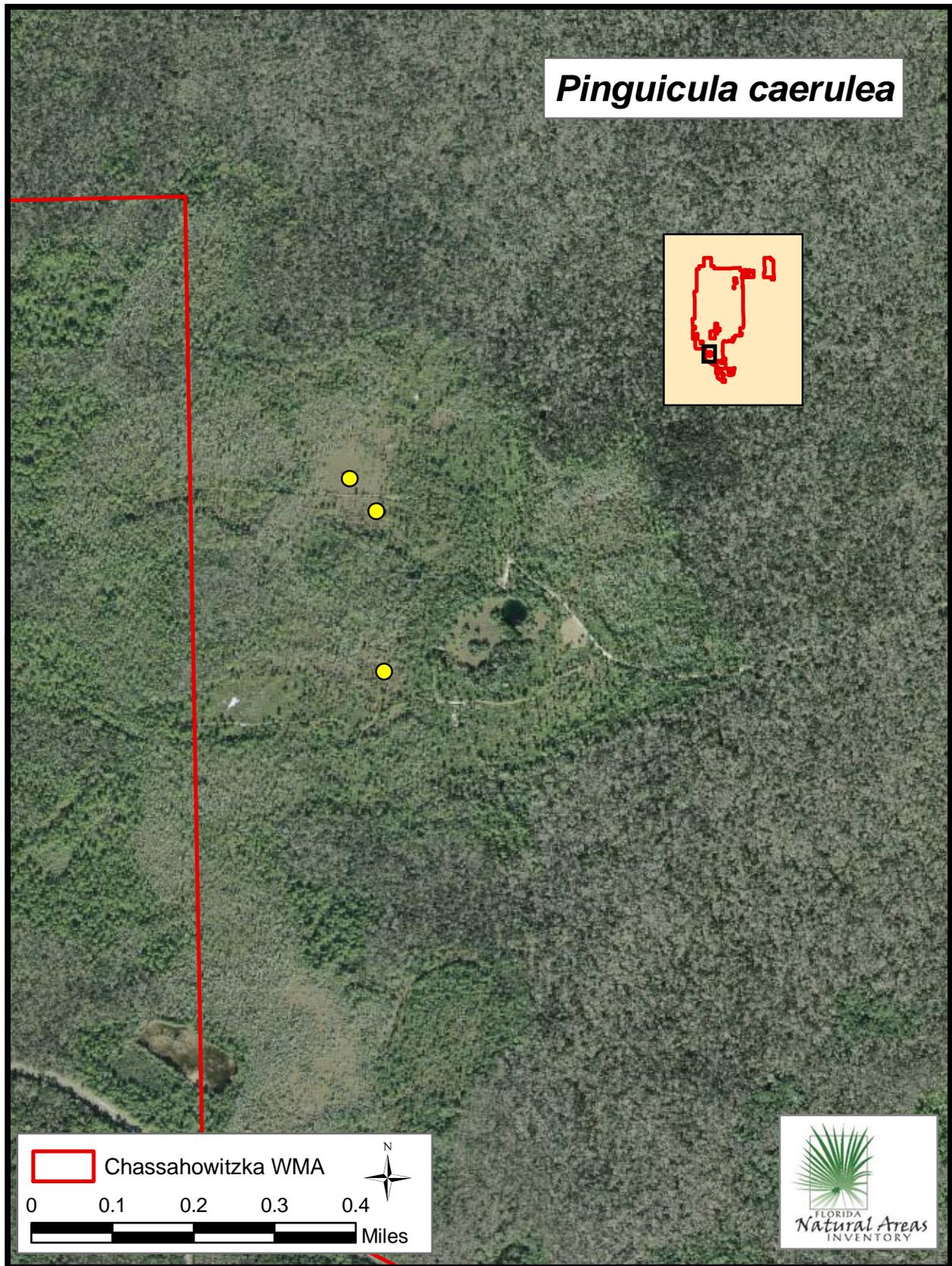


Figure 12. Location map of blueflower butterwort (*Pinguicula caerulea*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

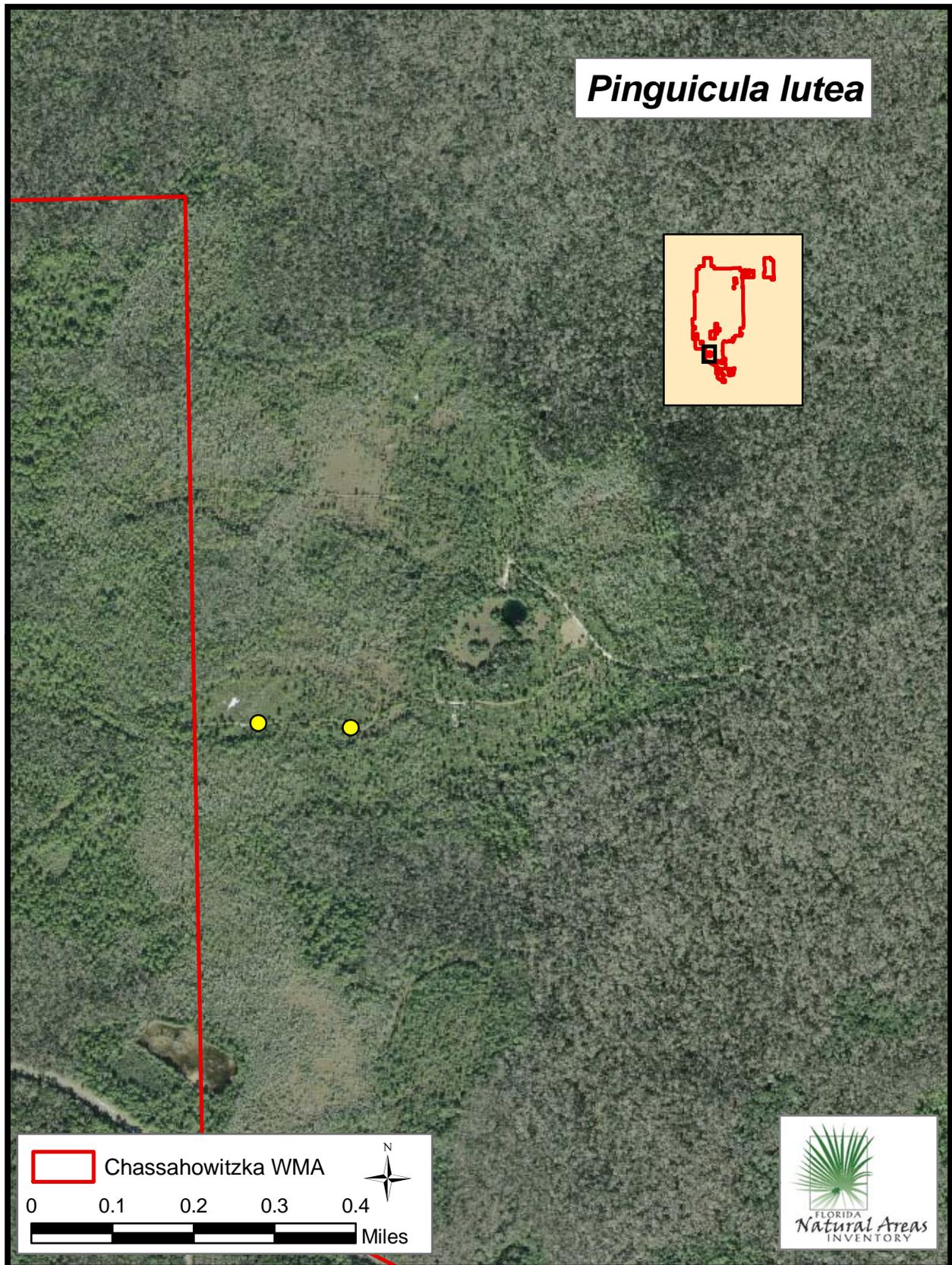


Figure 13. Location map of yellow-flowered butterwort (*Pinguicula lutea*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

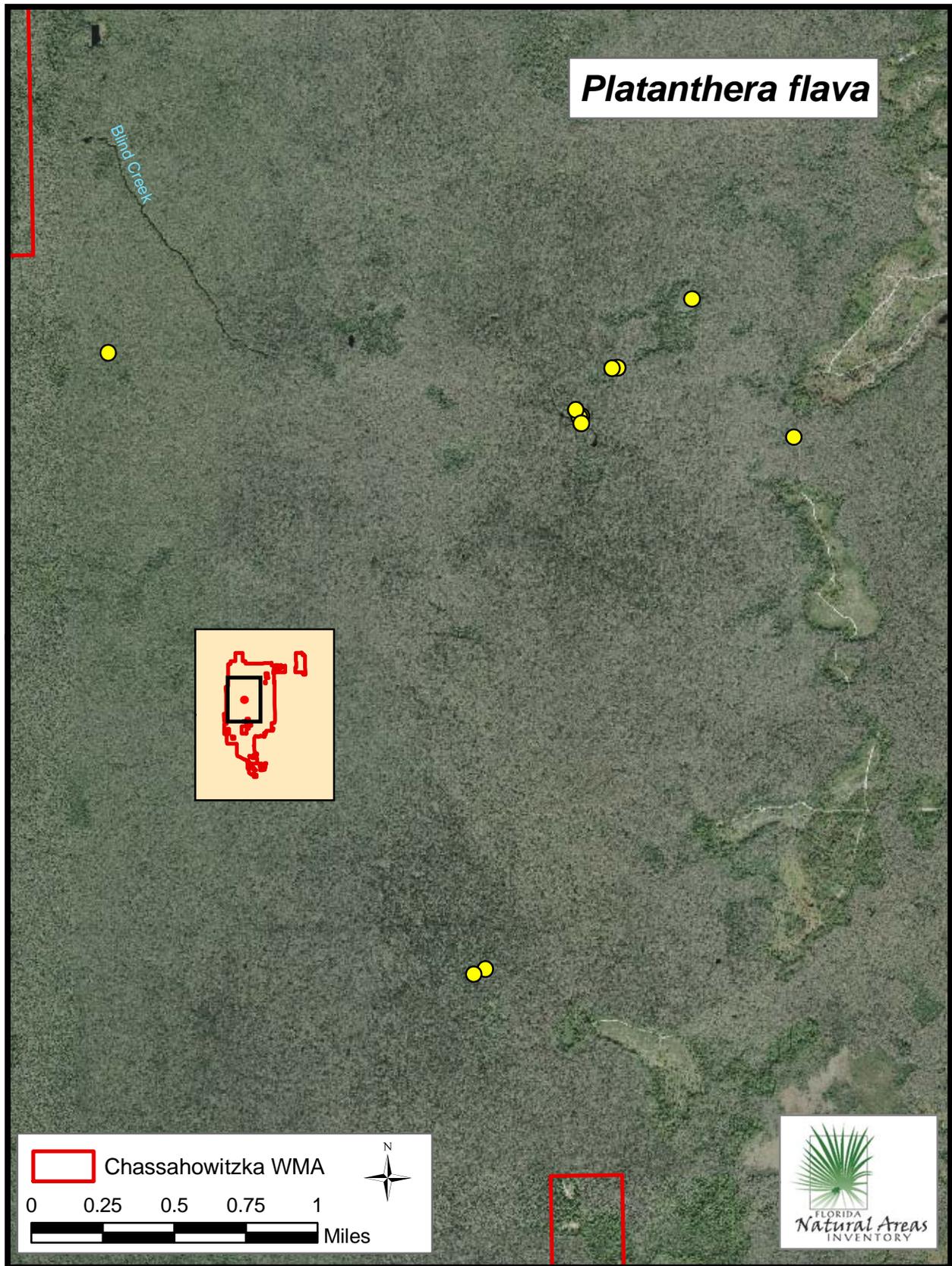


Figure 14. Location map of palegreen orchid (*Platanthera flava*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

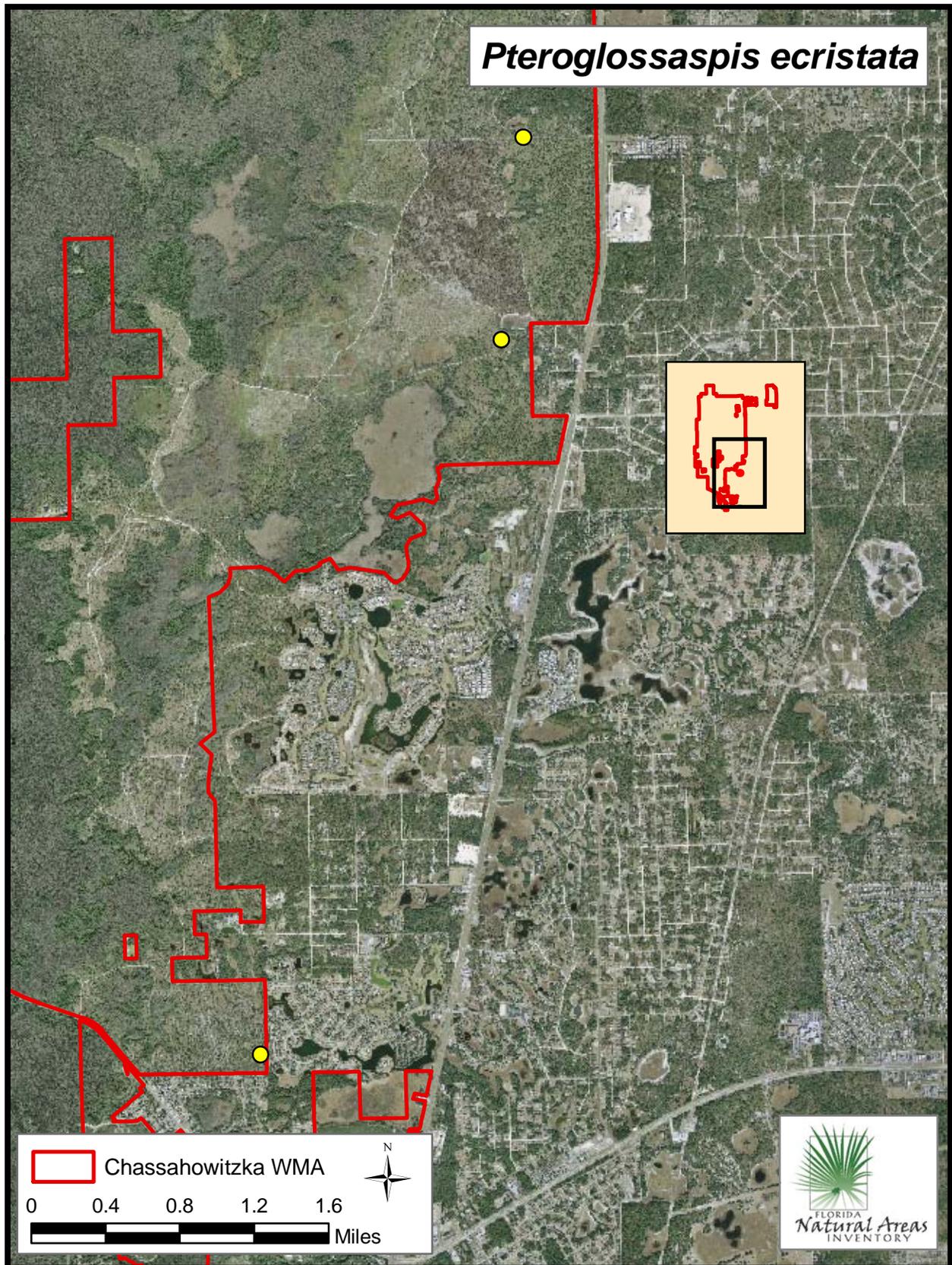


Figure 15. Location map of giant orchid (*Pteroglossaspis ecristata*), state listed as threatened, on Chassahowitzka WMA. 2010 high resolution aerial photography.

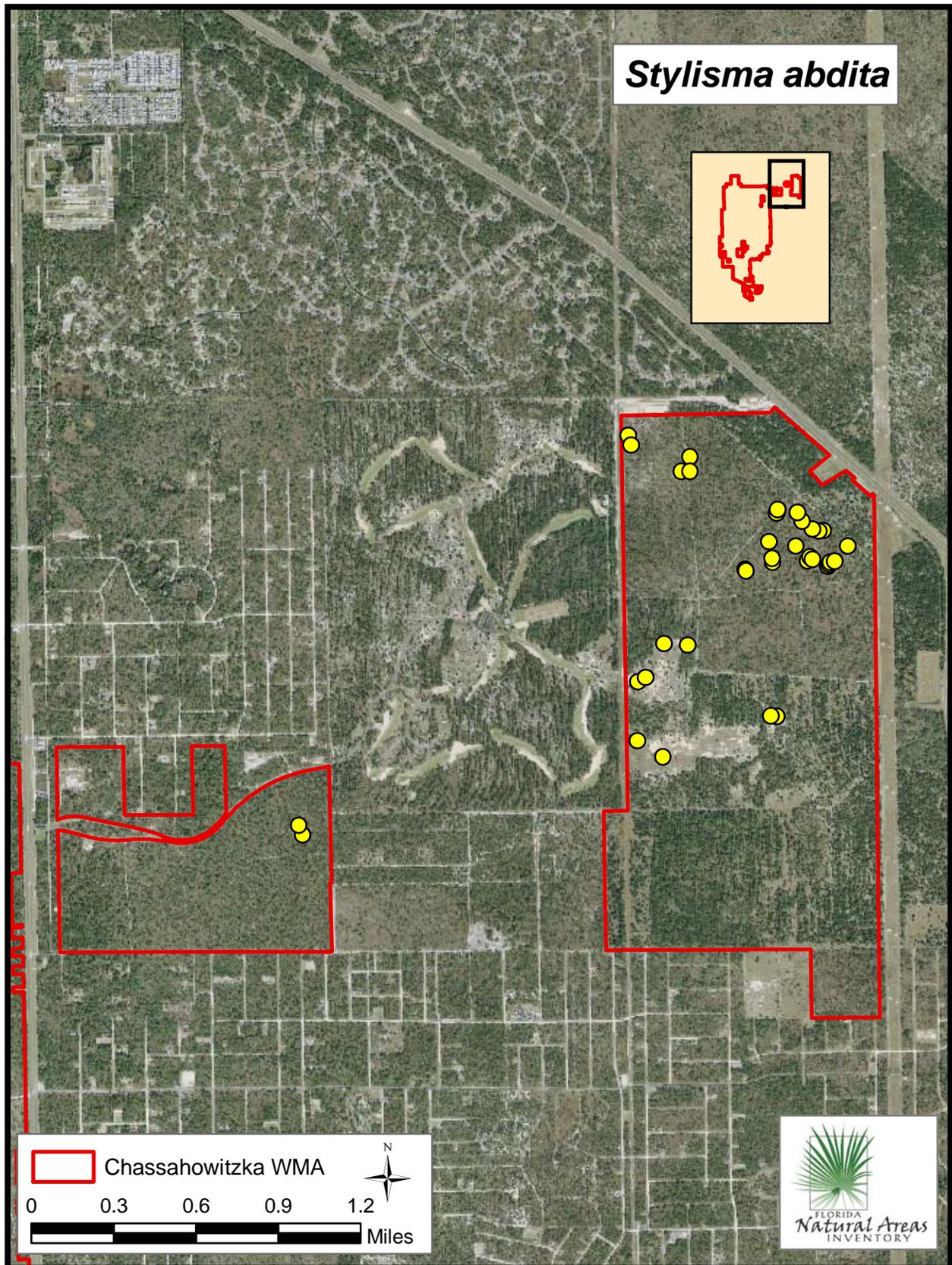


Figure 16. Location map of scrub stylisma (*Stylishma abdita*), state listed as endangered, on Chassahowitzka WMA. 2010 high resolution aerial photography.

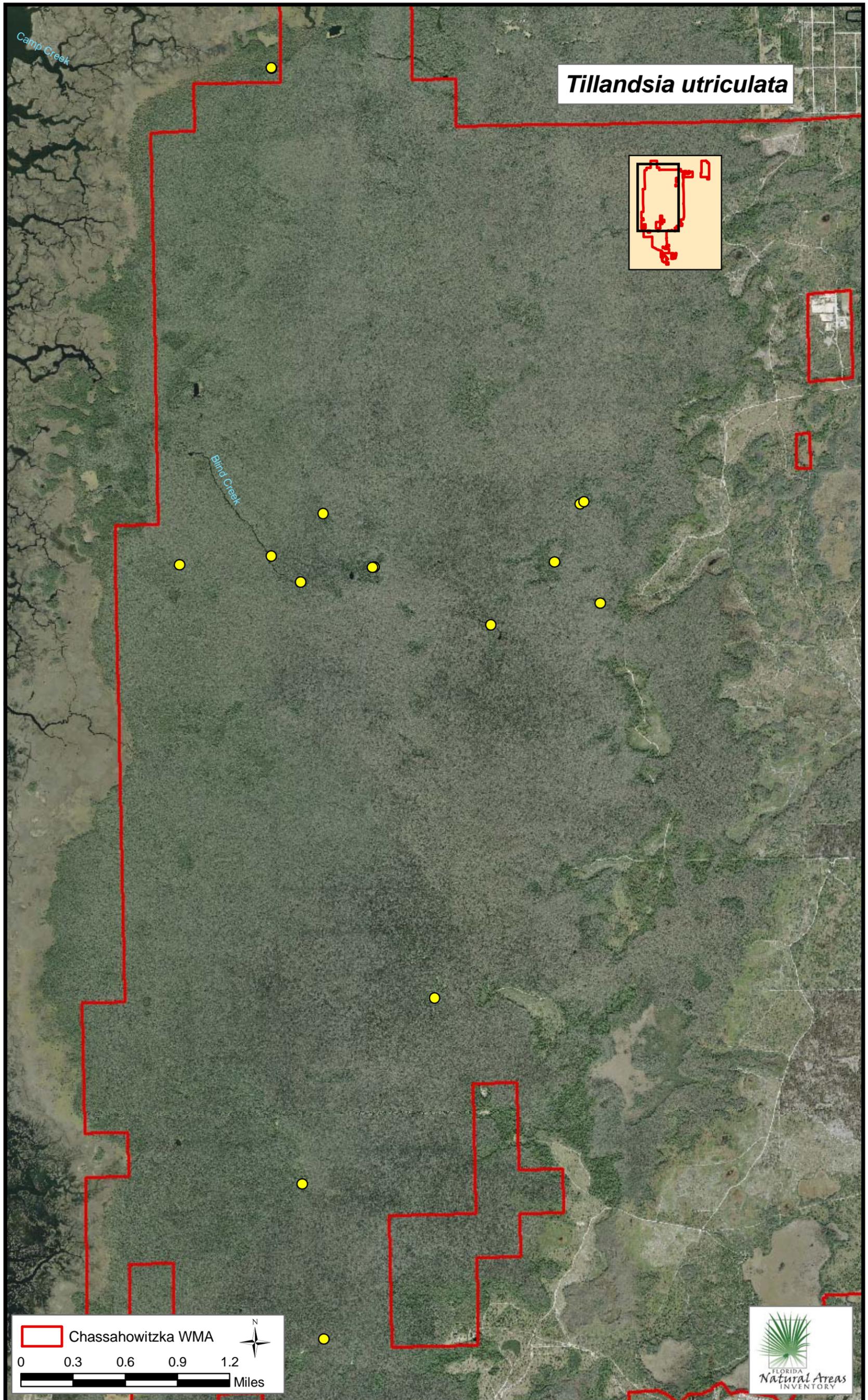


Figure 17. Location map of spreading air-plant (*Tillandsia utriculata*), state listed as endangered, on Chassahowitzka WMA. 2010 high resolution aerial photography.

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 potential natural site
SURVEYDATE	Date of data collection.
SURVEYOR	Name of the field surveyor
FIELD_ID	Number assigned to this point during field work; not necessarily unique.
POINT_ID	Unique number assigned to each point by ArcMap.
SPECIES	Scientific name of rare plant or animal occurring at that point.
COMMONNAME	Common name of the rare plant or animal occurring at that point.
ID_CONFIRM	Indicates whether taxonomic identification of the species has been confirmed by a reliable individual.. ID Confirmed values: Yes No
COUNT	Estimated number of individuals in the population. Count values: 0 1 2-10 11-50 51-100 101-1000 >1000
PHENOLOGY	Characteristic phenology of the plants (<i>Only used for rare plants</i>). Phenology values: flower/bud flower/fruit fruit spore in leaf dormant
EO_TYPE	Describes the activity of the rare animal (<i>Only used for rare animals</i>). If the animal is doing more than one thing, the secondary activity is described in COMMENTS. EO_Type values: nesting foraging loafing commuting burrow other (described in COMMENTS)
OTH_EODATA	Other element occurrence (EO) 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	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. Disturbance values: 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)
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
GEN_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.

- LE Endangered: species in danger of extinction throughout all or a significant portion of its range.
- LT 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.

- LE 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.
- LT 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.
- PE Proposed for listing as Endangered.
- PT Proposed for listing as Threatened.
- N Not currently listed, nor currently being considered for listing

APPENDIX C

Table of rare plant GPS points collected during survey of Chassahowitzka WMA

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
308	<i>Asclepias curtissii</i>	yes	1	flower/fruit	ZZ	scrub	firebreaks	ZZ	moderate	oak scrub with cleared roads/firbreaks. Plant was in abandoned road	-82.57334	28.52697
285	<i>Encyclia tampensis</i>	yes	1	in leaf	Plant 1, on Magnolia grandiflora trunk, 0.2m above ground, west edge of road	mesic hammock	ORV trail	ZZ	moderate	Partially closed canopy Quercus virginiana, Magnolia grandiflora, Quercus hemisphaerica, Sabal palmetto, Carya glabra/Serenoa repens, Sabal palmetto/Smilax pumila	-82.60271	28.60671
325	<i>Encyclia tampensis</i>	yes	2-10	fruit	3 plants	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.62280	28.64030
88	<i>Epidendrum conopseum</i>	yes	2-10	in leaf	vegetative on live oak	hydric hammock	ZZ	ZZ	ZZ	near dry slough- shady	-82.61591	28.57900
100	<i>Epidendrum conopseum</i>	yes	2-10	flower/fruit	Plants 2, on Magnolia grandiflora trunk 2 and 4m above ground flowering	mesic hammock	not evident	ZZ	ZZ	Magnolia grandiflora, Quercus virginiana, Carya glabra, Sabal palmetto/Serenoa repens	-82.59046	28.51765
3	<i>Epidendrum conopseum</i>	yes	1	fruit	on dead sweetbay trunk	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.60779	28.64072
225	<i>Epidendrum conopseum</i>	yes	1	in leaf	on Tilia americana var. caroliniana	hydric hammock	ZZ	ZZ	ZZ	with Tillandsia bartramii	-82.62822	28.65348
230	<i>Epidendrum conopseum</i>	yes	1	in leaf	low on Magnolia grandiflora trunk	hydric hammock	road	ZZ	light	ZZ	-82.61400	28.64806
126	<i>Epidendrum conopseum</i>	yes	11-50	flower/bud	ca. 25 plants on Magnolia grandiflora beside stream; 10 in flower	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.59163	28.51773
273	<i>Epidendrum conopseum</i>	yes	1	in leaf	Plant on Magnolia grandiflora trunk, 3.2m above ground	mesic hammock	not evident	ZZ	ZZ	Magnolia grandiflora, Pinus elliottii, Sabal palmetto, Quercus laurifolia/Serenoa repens	-82.60871	28.57340
274	<i>Epidendrum conopseum</i>	yes	1	in leaf	Plant on Quercus virginiana limb 7m above ground	mesic hammock	ORV trail	ZZ	light	Quercus virginiana, Magnolia grandiflora, Sabal palmetto/Sabal palmetto, Rhipidophyllum hystrix/Thelypteris kunthii	-82.62395	28.57614
265	<i>Epidendrum conopseum</i>	yes	2-10	in leaf	5 clumps on hanging live oak	mesic hammock	ORV trail	ZZ	light	with Pleopeltis polypodioides var. michauxiana and Tillandsia bartramii	-82.61557	28.59102
266	<i>Epidendrum conopseum</i>	yes	2-10	in leaf	at least 7 large clumps low on standing dead tree trunk	mesic hammock	ORV trail	ZZ	light	with Pleopeltis polypodioides var. michauxiana and Tillandsia bartramii	-82.61583	28.59148
268	<i>Epidendrum conopseum</i>	yes	2-10	in leaf	5-6 clumps ca. 9' high in Magnolia grandiflora	mesic hammock	ORV trail	ZZ	light	with Pleopeltis polypodioides var. michauxiana and Tillandsia bartramii	-82.61577	28.59060
281	<i>Epidendrum conopseum</i>	yes	1	in leaf	Plants 2, on fallen Quercus virginiana, 3m above ground	mesic hammock	not evident	ZZ	ZZ	Closed canopy Quercus virginiana, Magnolia grandiflora, Sabal palmetto/Serenoa repens, Sabal palmetto, Rhipidophyllum hystrix/Thelypteris kunthii, Dryopteris ludoviciana	-82.60453	28.60971
282	<i>Epidendrum conopseum</i>	yes	1	in leaf	Plants 2, on Magnolia grandiflora trunk, 1.5m and 3m above ground	mesic hammock	ORV trail	ZZ	moderate	Closed canopy Quercus virginiana, Magnolia grandiflora, Sabal palmetto, Carya glabra/Serenoa repens, Sabal palmetto/Smilax pumila	-82.60282	28.60739
283	<i>Epidendrum conopseum</i>	yes	2-10	in leaf	Plants 6, on Magnolia grandiflora trunk, 1.5m to 3m above ground	mesic hammock	ORV trail	ZZ	moderate	Closed canopy Quercus virginiana, Magnolia grandiflora, Sabal palmetto, Carya glabra/Serenoa repens, Sabal palmetto/Smilax pumila	-82.60297	28.60731
284	<i>Epidendrum conopseum</i>	yes	2-10	in leaf	Plants >10, on leaning Carya glabra trunk, 1.5m to 4m above ground	mesic hammock	ORV trail	ZZ	moderate	Partially closed canopy Quercus virginiana, Magnolia grandiflora, Sabal palmetto, Carya glabra/Serenoa repens, Sabal palmetto/Smilax pumila	-82.60306	28.60680

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
286	Epidendrum conopseum	yes	1	in leaf	Plant 1, small, 4 leaves, on Quercus virginiana trunk, 3m above ground	mesic hammock	not evident	ZZ	ZZ	Open canopy Quercus virginiana, Magnolia grandiflora, Sabal palmetto, Carya glabra/Serenoa repens, Sabal palmetto/Thelypteris kunthii	-82.58807	28.64752
299	Epidendrum conopseum	yes	1	in leaf	1 ft off ground, on Magnolia grandiflora trunk	mesic hammock	ORV trail	ZZ	light	ZZ	-82.60265	28.60668
301	Epidendrum conopseum	yes	2-10	in leaf	on live oak	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.60305	28.60606
303	Epidendrum conopseum	yes	2-10	in leaf	on live oak	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.58704	28.63880
322	Epidendrum conopseum	yes	1	in leaf	on live oak	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.61737	28.68397
370	Epidendrum conopseum	yes	2-10	in leaf	Plants 2, on leaning Quercus virginiana, 1.8m above ground	mesic hammock	ORV trail	ZZ	light	Thelypteris kunthii	-82.62760	28.65422
334	Epidendrum conopseum	yes	1	flower/fruit	on live oak	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.60054	28.55484
357	Epidendrum conopseum	yes	2-10	in leaf	Plants cover 1m2 area on Nyssa biflora burl "shelf" 6m above ground	hydric hammock	forestry operations	ZZ	light	old skidder trail, Rhipidophyllum hystrix, Sabal minor	-82.59725	28.63743
358	Epidendrum conopseum	yes	1	in leaf	Plants 4, on dead Magnolia grandiflora trunk, 0.7-1.8m above ground	mesic hammock	ORV trail	forestry operations	light	ZZ	-82.59073	28.64286
359	Epidendrum conopseum	yes	1	in leaf	Plant on Quercus virginiana 4m above ground	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.58067	28.62161
360	Epidendrum conopseum	yes	1	in leaf	Plant small, on Liquidambar styraciflua horizontal trunk 1.7m above ground	mesic hammock	ZZ	ZZ	ZZ	Thelypteris kunthii	-82.60391	28.61015
128	Garberia heterophylla	yes	2-10	flower/bud	5 clumps in bud ca. 10 meters apart	sandhill	forestry operations	ZZ	moderate	recovering sandhill with mixed age Pinus palustris, abundant Quercus laevis, Serenoa repens, sparse herbs - Aristida stricta var. beyrichiana, Sorghastrum secundum, Stylisma patens	-82.54363	28.67057
80	Garberia heterophylla	yes	11-50	flower/bud	10 x 30m sand opening in sandhill/scrub, 28 plants total	sandhill	ZZ	ZZ	ZZ	sand live oak-15 ft tall downslope-east, rosemary upslope-west	-82.58617	28.53454
81	Garberia heterophylla	yes	2-10	in leaf	10 small seedlings-5 inches tall	scrub	ORV trail	ZZ	light	edge tall sand live oaks and old ORV track	-82.58322	28.53462
82	Garberia heterophylla	yes	2-10	flower/bud	6 mature plants in small 5x5m opening in oak scrub; full exposure to sun	scrub	ORV trail	ZZ	light	assoc-Ilex ambigua, Quercus geminata, Quercus myrtifolia, Pinus clausa-4ft, Aristida stricta var. beyrichiana	-82.58327	28.53470
83	Garberia heterophylla	yes	1	in leaf	in shade of Pinus palustris with wiregrass dominant	sandhill	ZZ	ZZ	light	assoc-Ilex ambigua, Quercus geminata, Quercus myrtifolia, Pinus clausa-4ft, Aristida stricta var. beyrichiana	-82.58339	28.53480
84	Garberia heterophylla	yes	2-10	flower/bud	3 mature herbs 3 ft tall	scrub	clearing	ZZ	light	lot of tall andropogon wth scattered patches scrub oaks	-82.58302	28.53485
86	Garberia heterophylla	yes	11-50	flower/bud	ca 30 mature plants in 40m square area	scrub	clearing	ZZ	light	lot of tall andropogon wth scattered patches scrub oaks and sand pine	-82.58282	28.53609
87	Garberia heterophylla	yes	1	flower/bud	1 mature plant edge large sand live oaks and open turkey oak sandhill	scrub	clearing	ZZ	light	lot of tall andropogon wth scattered patches scrub oaks and sand pine	-82.58796	28.53400
89	Garberia heterophylla	yes	2-10	flower/bud	3 mature plants along road	scrub	clearing	ZZ	light	ZZ	-82.59294	28.60589

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
90	Garberia heterophylla	yes	11-50	flower/bud	ca 20-50 mature plants - chopped scrub	scrub	ZZ	ZZ	light	ZZ	-82.59295	28.60559
93	Garberia heterophylla	yes	51-100	flower/bud	Plants >50, average 1m, largest 1.8m tall, scattered over 0.25ha	sandhill	fire suppression	ORV trail	moderate	Pinus palustris, Pinus clausa open canopy, Aristida stricta var. beyrichiana abundant in groundcover	-82.56087	28.58970
94	Garberia heterophylla	yes	ZZ	flower/bud	west end of population	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56154	28.58971
97	Garberia heterophylla	yes	2-10	flower/bud	plants 8, in bud, to 1.5m tall, within 10m radius	sandhill	fire suppression	forestry operations	light	open sandhill with good groundcover: Aristida stricta var. beyrichiana, Sorghastrum secundum, Pityopsis graminifolia	-82.55953	28.59099
98	Garberia heterophylla	yes	101-1000	flower/bud	plants >100, in bud, seedlings to mature shrubs 1.5m tall, continuing east to boundary	sandhill	fire suppression	forestry operations	light	open sandhill with good groundcover (Aristida stricta, Sorghastrum secundum, Pityopsis graminifolia) grading into xeric hammock to south	-82.55916	28.59087
130	Garberia heterophylla	yes	2-10	flower/bud	ca. 10 plants to 3' tall	sandhill	fire suppression	ZZ	light	edge of xeric hammock downslope from sandhill on ridge; Quercus geminata, Quercus laevis, Aristida stricta var. beyrichiana	-82.56055	28.58891
131	Garberia heterophylla	yes	2-10	flower/bud	6 plants	sandhill	fire suppression	other	light	past hardwood removal;with Pinus palustris, Quercus geminata, Quercus laevis, Aristida stricta var. beyrichiana, Sorghastrum secundum, Croton michauxii, Licania michauxii, Pityopsis graminifolia, Vitis rotundifolia, Smilax auriculata	-82.56013	28.58846
132	Garberia heterophylla	yes	2-10	flower/bud	4	sandhill	firebreaks	ZZ	light	base of slope;with Pinus palustris, Pinus clausa, Serenoa repens, Quercus incana, Quercus laevis, Aristida stricta var. beyrichiana, Pityopsis graminifolia, Sorghastrum secundum	-82.56118	28.58746
133	Garberia heterophylla	yes	101-1000	flower/bud	hundreds under Quercus geminata canopy	xeric hammock	ZZ	ZZ	ZZ	ZZ	-82.55916	28.58926
134	Garberia heterophylla	yes	2-10	flower/bud	3	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56311	28.58647
136	Garberia heterophylla	yes	101-1000	flower/bud	scattered throughout polygon	scrub	ZZ	ZZ	ZZ	with Quercus geminata, Quercus myrtifolia, Pinus clausa, Serenoa repens, Carphophorus odoratissimus, Quercus chapmanii	-82.59315	28.60549
137	Garberia heterophylla	yes	101-1000	flower/bud	hundreds of plants throughout area (at least 50m radius)	scrub	ZZ	ZZ	ZZ	low scrub with Quercus myrtifolia, Osmanthus megacarpus, Lyonia ferruginea, Rhus copallinum	-82.58301	28.63067
138	Garberia heterophylla	yes	101-1000	flower/bud	throughout scrub polygon	scrub	forestry operations	clearing	moderate	cut pine plantation, few mature Pinus elliotii remain	-82.58394	28.63255
4	Garberia heterophylla	yes	2-10	flower/bud	2 large mature plants 3.5 ft tall	scrub	ZZ	ZZ	ZZ	dense diverse oak scrub 5-6 ft tall with young sandpine and much dead wood on ground; Quercus geminata, Quercus myrtifolia, Ilex ambigua, Osmanthus megacarpus, Vaccinium myrsinites, Pinus clausa, Quercus chapmanii, Lyonia ferruginea	-82.57536	28.52830
5	Garberia heterophylla	yes	2-10	flower/bud	2 large mature plants 3.5 ft tall	scrub	ZZ	ZZ	ZZ	dense diverse oak scrub 5-6 ft tall with young sandpine and much dead wood on ground; Quercus geminata, Quercus myrtifolia, Ilex ambigua, Osmanthus megacarpus, Vaccinium myrsinites, Pinus clausa, Quercus chapmanii, Lyonia ferruginea	-82.57526	28.52803
6	Garberia heterophylla	yes	2-10	flower/bud	3 plants along sand road edge- within ca100 yds north and south of point	scrub	ZZ	ZZ	ZZ	dense oaks; Quercus geminata, Quercus myrtifolia, Ilex ambigua, Osmanthus megacarpus, Vaccinium myrsinites, Pinus clausa	-82.57527	28.52802
10	Garberia heterophylla	yes	1	in leaf	1 young plant (1 ft tall) in opening	scrub	ZZ	ZZ	ZZ	10x30m opening in dense oaks- Ceratiola ericoides, Vaccinium myrsinites, Licania michauxii	-82.57295	28.52765

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11	Garberia heterophylla	yes	1	in leaf	1 young plant (6 inch tall) in opening	scrub	ZZ	ZZ	ZZ	edge of small opening in dense oaks-Ceratiola ericoides, Vaccinium myrsinites, Licania michauxii	-82.57288	28.52746
12	Garberia heterophylla	yes	2-10	in leaf	a pair of young 2-ft tall plants along road	scrub	ZZ	ZZ	ZZ	edge of small opening in dense oaks-Ceratiola ericoides, Vaccinium myrsinites, Licania michauxii	-82.57359	28.52741
13	Garberia heterophylla	yes	2-10	flower/bud	2 plants - 1 mature 3-ft tall plant and 1 young in opening in 3-4 ft tall scrub	scrub	ZZ	ZZ	ZZ	edge of small opening in dense oaks-Ceratiola ericoides, Vaccinium myrsinites, Licania michauxii	-82.57273	28.52773
14	Garberia heterophylla	yes	2-10	in leaf	3 plants - 1 mature 3-ft tall; 2 young plants in opening, 3-4 ft scrub	scrub	ZZ	ZZ	ZZ	edge of small opening in dense oaks-Ceratiola ericoides, Vaccinium myrsinites, Licania michauxii	-82.57278	28.52784
15	Garberia heterophylla	yes	1	in leaf	4ft tall vegetative plant in 6ft tall dense oak scrub	scrub	ZZ	ZZ	ZZ	ZZ	-82.57221	28.52854
16	Garberia heterophylla	yes	2-10	in leaf	2 plants in bud, 1 immature	scrub	ZZ	ZZ	ZZ	low open oak scrub	-82.57278	28.52757
17	Garberia heterophylla	yes	1	flower/bud	1 plant in bud	scrub	ZZ	ZZ	ZZ	dense oak scrub	-82.57490	28.52779
18	Garberia heterophylla	yes	1	flower/bud	1 plant in bud	scrub	ZZ	ZZ	ZZ	along sand road	-82.57254	28.52608
19	Garberia heterophylla	yes	2-10	flower/bud	3 mature plants in bud	scrub	ZZ	ZZ	ZZ	along sand road	-82.57292	28.52614
20	Garberia heterophylla	yes	2-10	flower/bud	3 mature plants in bud	scrub	ZZ	ZZ	ZZ	along sand road-2 here and 1 plant 30 ft on NW side road	-82.57328	28.52659
21	Garberia heterophylla	yes	2-10	flower/bud	2 mature plants in bud	scrub	ZZ	ZZ	ZZ	open low oak scrub	-82.57736	28.52778
22	Garberia heterophylla	yes	1	flower/bud	1 mature plant in bud	scrub	ZZ	ZZ	ZZ	old trail in open low oak scrub	-82.57737	28.52749
23	Garberia heterophylla	yes	2-10	flower/bud	3 mature plants in bud	scrub	ZZ	ZZ	ZZ	old trail in open low oak scrub	-82.57738	28.52739
24	Garberia heterophylla	yes	2-10	flower/bud	3 mature plants in bud; 2 young plants	scrub	ZZ	ZZ	ZZ	edge old trail in open low oak scrub	-82.57742	28.52693
25	Garberia heterophylla	yes	11-50	flower/bud	11 immature plants;1 mature in bud	scrub	ZZ	ZZ	ZZ	junction of two old trails in open low oak scrub	-82.57733	28.52686
27	Garberia heterophylla	yes	2-10	flower/bud	5 plants	scrub	ZZ	ZZ	ZZ	open low scrub	-82.57726	28.52676
28	Garberia heterophylla	yes	2-10	flower/bud	3 mature plants near trail and 16 seedlings in trail	scrub	ZZ	ZZ	ZZ	on and near trail	-82.57739	28.52673
33	Garberia heterophylla	yes	11-50	flower/fruit	ca 30 plants in trail- all seedlings	scrub	ZZ	ZZ	ZZ	12 plants on and near trail	-82.57737	28.52603
35	Garberia heterophylla	yes	2-10	flower/bud	9 mature plants near edge trail and in scrub; 2 seedlings	scrub	ZZ	ZZ	ZZ	ZZ	-82.57728	28.52570
37	Garberia heterophylla	yes	11-50	flower/bud	14 mature in and near trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57709	28.52523
40	Garberia heterophylla	yes	2-10	flower/bud	3 mature in and near trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57719	28.52463
41	Garberia heterophylla	yes	2-10	flower/bud	3 mature in and near trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57733	28.52450
43	Garberia heterophylla	yes	2-10	flower/fruit	3 in low open scrub	scrub	ZZ	ZZ	ZZ	ZZ	-82.57685	28.52394
44	Garberia heterophylla	yes	2-10	flower/fruit	3 near trail - mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57721	28.52413
45	Garberia heterophylla	yes	2-10	flower/fruit	10 near trail - mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57732	28.52382
46	Garberia heterophylla	yes	11-50	flower/fruit	18 near road mature-here to curve	scrub	ZZ	ZZ	ZZ	ZZ	-82.57767	28.52327
47	Garberia heterophylla	yes	2-10	flower/fruit	10 near road mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57811	28.52363
48	Garberia heterophylla	yes	2-10	flower/bud	3 near road mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57813	28.52416
49	Garberia heterophylla	yes	2-10	flower/bud	6 near road mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57812	28.52451
50	Garberia heterophylla	yes	2-10	flower/bud	5 near road mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57809	28.52490
52	Garberia heterophylla	yes	2-10	flower/bud	8 near road mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57810	28.52598
53	Garberia heterophylla	yes	2-10	flower/bud	5 near road mature - ca 40 seedlings	scrub	ZZ	ZZ	ZZ	ZZ	-82.57815	28.52656

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54	Garberia heterophylla	yes	2-10	flower/bud	8 near road; mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57817	28.52716
56	Garberia heterophylla	yes	11-50	flower/bud	12 mature;ca 30 young in trail from here to next point to the south	scrub	ZZ	ZZ	ZZ	ZZ	-82.59342	28.52598
57	Garberia heterophylla	yes	ZZ	flower/bud	end of previous point	scrub	ZZ	ZZ	ZZ	ZZ	-82.59333	28.52576
58	Garberia heterophylla	yes	1	flower/bud	in scrub near small opening	scrub	ZZ	ZZ	ZZ	6-8 ft scrub w/scattered Pinus clausa; Liatris sp and Rhynchospora megalocarpa in openings	-82.59357	28.52563
59	Garberia heterophylla	yes	11-50	flower/bud	ca 25 mature plants	scrub	ZZ	ZZ	ZZ	in large opening near trail with dog fennel	-82.59344	28.52525
60	Garberia heterophylla	yes	2-10	flower/bud	6 mature plants with dog fennel	scrub	ZZ	ZZ	ZZ	in large opening near trail with dog fennel	-82.59351	28.52515
61	Garberia heterophylla	yes	2-10	flower/bud	10 mature plants here east to junction	scrub	ZZ	ZZ	ZZ	in large opening near trail with dog fennel	-82.59367	28.52507
62	Garberia heterophylla	yes	ZZ	flower/bud	count in next point (Field ID #60)	scrub	ZZ	ZZ	ZZ	in large opening near trail with dog fennel	-82.59395	28.52502
63	Garberia heterophylla	yes	11-50	flower/bud	30 young; 12 mature - here to previous point (Field ID #59)	scrub	ZZ	ZZ	ZZ	ZZ	-82.59443	28.52499
64	Garberia heterophylla	yes	2-10	flower/bud	8 mature plants between here and previous point (Field ID #60)	scrub	ZZ	ZZ	ZZ	east of limerock trail on disturbed edge	-82.59442	28.52559
65	Garberia heterophylla	yes	11-50	flower/bud	25 mature plants between here and previous point (Field ID #61)	scrub	ZZ	ZZ	ZZ	east of limerock trail on disturbed edge	-82.59444	28.52577
66	Garberia heterophylla	yes	1	flower/bud	scrub opening shrubs well spaced. 6-7 ft tall	scrub	ZZ	ZZ	ZZ	east of limerock trail-disturbed edge	-82.59410	28.52579
67	Garberia heterophylla	yes	2-10	flower/bud	10 mature plants at road junction	scrub	ZZ	ZZ	ZZ	east of limerock trail-disturbed edge	-82.59434	28.52618
68	Garberia heterophylla	yes	11-50	flower/bud	21 mature plants here to at road junction	scrub	ZZ	ZZ	ZZ	east of limerock trail-disturbed edge	-82.59364	28.52610
69	Garberia heterophylla	yes	11-50	flower/bud	32 mature plants here to at road junction to east	scrub	ZZ	ZZ	ZZ	east of limerock trail-disturbed edge	-82.59458	28.52699
70	Garberia heterophylla	yes	51-100	flower/bud	ca 100 plants here to junction to the north	scrub	ZZ	ZZ	ZZ	east of limerock trail-disturbed edge	-82.59446	28.52617
71	Garberia heterophylla	yes	ZZ	flower/bud	start count for garberia along trail	scrub	ZZ	ZZ	ZZ	low open scrub	-82.59482	28.52879
72	Garberia heterophylla	yes	11-50	flower/bud	ca 50 plants here to south road junction	scrub	ZZ	ZZ	ZZ	low open scrub	-82.59488	28.52942
73	Garberia heterophylla	yes	2-10	flower/bud	4 plants	scrub	ZZ	ZZ	ZZ	near trail through low open scrub	-82.59532	28.52833
74	Garberia heterophylla	yes	2-10	flower/bud	9 plants	scrub	ZZ	ZZ	ZZ	near trail through low open scrub	-82.59558	28.52810
75	Garberia heterophylla	yes	2-10	flower/bud	5 plants	scrub	ZZ	ZZ	ZZ	near trail on verge tall sand pine scrub	-82.59583	28.52765
76	Garberia heterophylla	yes	11-50	flower/bud	17 plants	scrub	ZZ	ZZ	ZZ	partially shaded opening in tall sand pine scrub	-82.59586	28.52728
77	Garberia heterophylla	yes	1	flower/bud	count here to next point	scrub	ZZ	ZZ	ZZ	partially shaded trail in tall sand pine scrub	-82.59563	28.52706
78	Garberia heterophylla	yes	11-50	flower/bud	16 here to last point	scrub	ZZ	ZZ	ZZ	partially shaded trail in tall sand pine scrub	-82.59502	28.52695
79	Garberia heterophylla	yes	2-10	flower/bud	3 plants	scrub	ZZ	ZZ	ZZ	low open scrub	-82.59589	28.52830
99	Garberia heterophylla	yes	11-50	flower/bud	Plants to 2m tall, in bud	scrub	fire suppression	firebreaks	moderate	sand pine scrub: mature Pinus clausa over dense 3m high Quercus geminata, Quercus myrtifolia, Quercus chapmanii, Lyonia ferruginea, Asimina obovata	-82.58651	28.51392
101	Garberia heterophylla	yes	101-1000	flower/bud	Plants >100, all ages, to 1.2m tall, in bud	scrub	fire suppression	ZZ	moderate	Pinus clausa older mature, Quercus geminata, Quercus myrtifolia, Quercus chapmanii, Ceratiola ericoides	-82.58556	28.51726
140	Garberia heterophylla	yes	2-10	flower/bud	4	scrub	ORV trail	ZZ	light	along trail and in opening	-82.57627	28.52851
141	Garberia heterophylla	yes	1	in leaf	1 foot tall plant	scrub	ZZ	ZZ	ZZ	ZZ	-82.57714	28.52855
142	Garberia heterophylla	yes	2-10	flower/bud	3 plants	scrub	ORV trail	clearing	moderate	in cleared opening near trail	-82.57810	28.52853
143	Garberia heterophylla	yes	2-10	flower/bud	7 adults and ca. 40 seedlings	scrub	ZZ	ZZ	ZZ	in opening between firebreaks	-82.57818	28.52902

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144	Garberia heterophylla	yes	2-10	flower/bud	2	scrub	firebreaks	ZZ	light	ZZ	-82.57818	28.52927
145	Garberia heterophylla	yes	1	in leaf	one 1.5' tall plant	scrub	firebreaks	ZZ	light	on edge of firebreak under shade of tall Quercus myrtifolia	-82.57675	28.52940
146	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	under small Pinus clausa at edge of firebreak	-82.57658	28.52949
147	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	edge of firebreak	-82.57393	28.52939
149	Garberia heterophylla	yes	2-10	flower/bud	2	scrub	ZZ	ZZ	ZZ	in small openings near firebreak	-82.57341	28.52928
151	Garberia heterophylla	yes	2-10	flower/bud	3	scrub	firebreaks	ZZ	light	edge of firebreak	-82.57288	28.52938
153	Garberia heterophylla	yes	2-10	flower/bud	6	ruderal	firebreaks	ZZ	light	in firebreak and edge of scrub	-82.57241	28.52939
154	Garberia heterophylla	yes	11-50	flower/bud	16	scrub	firebreaks	ZZ	light	ZZ	-82.57163	28.52910
155	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	ZZ	-82.57071	28.52847
158	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	in opening beside firebreak	-82.56912	28.52856
160	Garberia heterophylla	yes	2-10	flower/bud	5	scrub	firebreaks	ZZ	light	ZZ	-82.56924	28.52810
163	Garberia heterophylla	yes	2-10	flower/bud	5	scrub	firebreaks	trash dumping	light	ZZ	-82.56945	28.52728
166	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	ZZ	-82.56951	28.52687
172	Garberia heterophylla	yes	11-50	flower/bud	ca. 20	scrub	firebreaks	ZZ	light	ZZ	-82.57332	28.52611
174	Garberia heterophylla	yes	2-10	flower/bud	2	scrub	ZZ	ZZ	ZZ	fairly open scrub; mechanical treatment in past	-82.57713	28.52740
175	Garberia heterophylla	yes	2-10	flower/bud	2	scrub	ZZ	ZZ	ZZ	nice open scrub;some Lupinus nearby	-82.57693	28.52712
176	Garberia heterophylla	yes	2-10	flower/bud	2	scrub	ZZ	ZZ	ZZ	ZZ	-82.57696	28.52699
177	Garberia heterophylla	yes	2-10	flower/bud	4 plants, probably more scattered in the open scrub	scrub	ZZ	ZZ	ZZ	ZZ	-82.57678	28.52701
178	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	ZZ	ZZ	ZZ	ZZ	-82.57662	28.52687
180	Garberia heterophylla	yes	1	in leaf	ZZ	scrub	ZZ	ZZ	ZZ	ZZ	-82.57605	28.52646
181	Garberia heterophylla	yes	2-10	flower/bud	3	scrub	ZZ	ZZ	ZZ	ZZ	-82.57642	28.52652
182	Garberia heterophylla	yes	2-10	flower/bud	5	scrub	ZZ	ZZ	ZZ	ZZ	-82.57624	28.52609
184	Garberia heterophylla	yes	2-10	flower/bud	5	scrub	ZZ	ZZ	ZZ	in mechanical opening and nearby open scrub	-82.57565	28.52542
185	Garberia heterophylla	yes	2-10	flower/bud	7	scrub	ZZ	ZZ	ZZ	in mechanical opening and nearby open scrub	-82.57553	28.52529
187	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	ZZ	ZZ	ZZ	ZZ	-82.57509	28.52474
188	Garberia heterophylla	yes	2-10	flower/bud	9	scrub	ZZ	ZZ	ZZ	ZZ	-82.57460	28.52478
189	Garberia heterophylla	yes	2-10	flower/bud	2	scrub	firebreaks	ZZ	light	along old firebreak	-82.57420	28.52479
193	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	along boundary road	-82.57417	28.52578
194	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	along boundary road	-82.57382	28.52611
195	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	along boundary road	-82.57413	28.52463
197	Garberia heterophylla	yes	1	flower/bud	ZZ	scrub	firebreaks	ZZ	light	along boundary road	-82.57412	28.52393
200	Garberia heterophylla	yes	2-10	flower/bud	4	scrub	firebreaks	ZZ	light	along boundary road	-82.57409	28.52376
201	Garberia heterophylla	yes	2-10	flower/bud	4	scrub	firebreaks	ZZ	light	along boundary road	-82.57414	28.52333
203	Garberia heterophylla	yes	2-10	flower/bud	4	scrub	firebreaks	ZZ	light	along boundary road under sand pines	-82.57450	28.52328
204	Garberia heterophylla	yes	2-10	flower/bud	7 between here and point to east	scrub	firebreaks	ZZ	light	along boundary road under sand pines	-82.57511	28.52321
206	Garberia heterophylla	yes	11-50	flower/bud	ca. 30, many are seedlings	scrub	firebreaks	ZZ	light	along boundary road	-82.57648	28.52326
209	Garberia heterophylla	yes	101-1000	flower/bud	plants are common along firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59111	28.52610
215	Garberia heterophylla	yes	101-1000	flower/bud	common along all firebreaks walked	scrub	firebreaks	ZZ	light	ZZ	-82.59182	28.52413

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216	Garberia heterophylla	yes	11-50	flower/bud	ca. 15 plants on trail concentrated to southwest of point	scrub	firebreaks	ZZ	light	ZZ	-82.59419	28.52774
217	Garberia heterophylla	yes	11-50	flower/bud	ca. 25 plants in east/west firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59580	28.52861
218	Garberia heterophylla	yes	2-10	flower/bud	5 plants along north/south firebreak and just into scrub on eastern side	scrub	firebreaks	ZZ	light	ZZ	-82.59600	28.52900
219	Garberia heterophylla	yes	11-50	flower/bud	14 along firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59539	28.52926
220	Garberia heterophylla	yes	11-50	flower/bud	30 along trail and just into scrub	scrub	firebreaks	ZZ	light	scrub has been mown near the road; tall and thick further north	-82.59643	28.52858
221	Garberia heterophylla	yes	2-10	flower/bud	7 along trail and just into scrub	scrub	firebreaks	ZZ	light	scrub has been mown near the road; tall and thick further north	-82.59810	28.52866
264	Garberia heterophylla	yes	51-100	in leaf	ca. 70 plants total	sandhill	woody encroachment	ZZ	moderate	recently burned; Quercus geminata resprouting; Pinus palustris, Aristida stricta var. beyrichiana, Pityopsis graminifolia, Chamaecrista fasciculata, Serenoa repens, Quercus laevis	-82.55512	28.59353
119	Garberia heterophylla	yes	11-50	flower/bud	ZZ	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56942	28.65599
271	Garberia heterophylla	yes	2-10	fruit	Plants to 1.6m tall, few old fruit	scrub	ORV trail	fire suppression	moderate	Pinus elliotii/Quercus geminata, Quercus myrtifolia, Lyonia ferruginea, Serenoa repens/Rhynchospora megalocarpa	-82.61011	28.55287
312	Garberia heterophylla	yes	11-50	in leaf	25 plants	sandhill	ZZ	ZZ	ZZ	disturbed area with Sabal palmetto	-82.56819	28.65617
313	Garberia heterophylla	yes	11-50	in leaf	resprout	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56843	28.65643
314	Garberia heterophylla	yes	11-50	in leaf	resprout	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56855	28.65678
340	Garberia heterophylla	yes	51-100	in leaf	seems to be invading here	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59181	28.55195
328	Garberia heterophylla	yes	51-100	in leaf	all along this side of road	scrub	ZZ	ZZ	ZZ	mowed roadside; also scattered back in scrub	-82.59065	28.52443
332	Garberia heterophylla	yes	11-50	in leaf	scattered throughout	scrub	ZZ	ZZ	ZZ	openings	-82.59524	28.52148
335	Garberia heterophylla	yes	101-1000	in leaf	ca 200 seedlings	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59292	28.55255
336	Garberia heterophylla	yes	1	in leaf	1 medium shrub	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59265	28.55250
337	Garberia heterophylla	yes	ZZ	in leaf	begin count - mature shrubs	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59252	28.55242
338	Garberia heterophylla	yes	101-1000	in leaf	end count - 268 plants between here and previous point (Field ID #11) in 40m wide band plus many seedlings	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59157	28.55239
339	Garberia heterophylla	yes	2-10	in leaf	ca. 10 mature and more than 100 seedlings	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59139	28.55204
341	Garberia heterophylla	yes	ZZ	in leaf	here to point #14 to east - both sides of road	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59229	28.55203
371	Garberia heterophylla	yes	11-50	in leaf	Plants scattered throughout scrub	scrub	forestry operations	fire suppression	light	Shrubs 1 to 3m tall, Pinus clausa saplings to 4m tall	-82.59133	28.52298
373	Garberia heterophylla	yes	11-50	in leaf	Plants to 1m tall, occasional throughout scrub	scrub	forestry operations	fire suppression	light	Shrubs 1 to 3m tall, dense	-82.59263	28.52242
374	Garberia heterophylla	yes	11-50	in leaf	Plants to 1m tall, occasional throughout scrub	scrub	forestry operations	fire suppression	light	Shrubs 1 to 3m tall	-82.59339	28.51901

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376	Garberia heterophylla	yes	11-50	in leaf	Plants to 1m tall occasional throughout scrub	scrub	forestry operations	fire suppression	light	Shrubs 2 to 4m tall, occasional Pinus clausa to 15m	-82.59288	28.52075
380	Garberia heterophylla	yes	2-10	in leaf	Plants 5, to 1m tall	sandhill	fire suppression	road	moderate	most oaks chopped down in last few years	-82.59452	28.55355
381	Garberia heterophylla	yes	11-50	in leaf	Plants >20, to 1m tall	sandhill	fire suppression	ZZ	moderate	most oaks chopped down in last few years	-82.59164	28.55359
382	Garberia heterophylla	yes	2-10	in leaf	Plants 6, to 1.2m tall	sandhill	fire suppression	ZZ	moderate	most oaks chopped down in last few years	-82.59221	28.55748
91	Gymnopogon chapmanianus	yes	1	flower/fruit	plant single clump, in flower	sandhill	fire suppression	fire suppression	moderate	Pinus palustris, Quercus laevis, Aristida stricta var. beyrichiana	-82.53912	28.66994
129	Gymnopogon chapmanianus	yes	1	in leaf	needs confirmation	sandhill	fire suppression	ZZ	light	ZZ	-82.53783	28.66737
108	Gymnopogon chapmanianus	yes	1	flower/fruit	Plant with 9 stems, 8 with inflorescences	sandhill	woody encroachment	fire suppression	light	sandhill with open Pinus palustris/Quercus laevis, Quercus incana, Pinus palustris/Serenoa repens, Quercus laevis/Aristida stricta var. beyrichiana	-82.55432	28.67267
109	Gymnopogon chapmanianus	yes	1	flower/fruit	Plant with >40 stems, almost all with inflorescences	sandhill	woody encroachment	fire suppression	light	open sandhill with Pinus palustris/Quercus laevis, Quercus incana, Pinus palustris/Serenoa repens, Quercus laevis/Aristida stricta var. beyrichiana	-82.55404	28.67399
110	Gymnopogon chapmanianus	yes	1	flower/fruit	Plant with >20 stems, all with inflorescences	sandhill	firebreaks	woody encroachment	light	open sandhill with Pinus palustris canopy and diverse groundcover	-82.55355	28.67360
111	Gymnopogon chapmanianus	yes	1	flower/fruit	Plant with 11 stems, 9 with inflorescences	sandhill	firebreaks	woody encroachment	light	open sandhill with Pinus palustris canopy and diverse groundcover	-82.55469	28.66658
112	Gymnopogon chapmanianus	yes	2-10	fruit	Plants 2, stems 8 and >30, in 1m2 area, awns short	sandhill	firebreaks	ZZ	light	sandhill/mesic flatwoods mosaic, with Pinus palustris canopy and diverse groundcover	-82.55757	28.66276
113	Gymnopogon chapmanianus	yes	1	flower/fruit	Plant flowering, stems 2	sandhill	fire suppression	woody encroachment	moderate	occasional old growth Pinus palustris, numerous Quercus geminata, Quercus laevis in subcanopy, diverse groundcover	-82.55771	28.65420
114	Gymnopogon chapmanianus	yes	1	flower/fruit	Plant flowering, stem 1	sandhill	fire suppression	woody encroachment	moderate	occasional old growth Pinus palustris, numerous Quercus geminata, Quercus laevis in subcanopy, diverse groundcover	-82.55454	28.65469
257	Gymnopogon chapmanianus	yes	1	flower/bud	ZZ	sandhill	ZZ	ZZ	ZZ	in low sandhill somewhat intermediate with flatwoods; Pinus palustris, Serenoa repens, Lechea sessiliflora, Quercus geminata, Aristida stricta var. beyrichiana, Pterocaulon pycnostachyum, Quercus incana, Dichantherium sp., Pityopsis graminifolia	-82.55663	28.65879
116	Gymnopogon chapmanianus	yes	2-10	fruit	Plants 3, stems 21, 23, and 28, almost all stems with inflorescence	sandhill	forestry operations	ZZ	light	Open sandhill with mature to old growth Pinus palustris	-82.57069	28.60452
260	Gymnopogon chapmanianus	yes	1	flower/bud	plant with 6 flowering stems	sandhill	ZZ	ZZ	ZZ	recently burned; Pinus palustris, Quercus laevis, Quercus geminata, Quercus incana, Aristida stricta var. beyrichiana, Dyschoriste oblongifolia, Sericocarpus tortifolius, Phoebanthus grandiflorus	-82.55926	28.63874
117	Gymnopogon chapmanianus	yes	2-10	flower/fruit	6 plants, only 2 reproductive	sandhill	ZZ	ZZ	ZZ	with Pinus palustris, Aristida stricta var. beyrichiana, Liatris tenuifolia, Pityopsis graminifolia, Dichantherium sp.	-82.55675	28.65872

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118	Gymnopogon chapmanianus	yes	2-10	flower/fruit	4	sandhill	ZZ	ZZ	ZZ	ZZ	-82.55604	28.65894
1	Hexalectris spicata	no	1	fruit	along tram road through mesic hammock	mesic hammock	ZZ	ZZ	ZZ	leafless fruiting stem	-82.62441	28.66017
7	Lechea cernua	yes	2-10	flower/fruit	3 plants along sand road edge	scrub	ZZ	ZZ	ZZ	dense oaks; Quercus geminata, Quercus myrtifolia, Ilex ambigua, Osmanthus megacarpus, Vaccinium myrsinites, Pinus clausa	-82.57414	28.52780
8	Lechea cernua	yes	2-10	flower/fruit	2 plant in openings near sand road edge	scrub	ZZ	ZZ	ZZ	dense oaks; Quercus geminata, Quercus myrtifolia, Ilex ambigua, Osmanthus megacarpus, Vaccinium myrsinites, Pinus clausa	-82.57363	28.52775
9	Lechea cernua	yes	2-10	flower/fruit	2 plants in opening	scrub	ZZ	ZZ	ZZ	10x30m opening in dense oaks- Ceratiola ericoides, Vaccinium myrsinites, Licania michauxii	-82.57295	28.52769
26	Lechea cernua	yes	2-10	flower/bud	10 plants	scrub	ZZ	ZZ	ZZ	old trail	-82.57724	28.52679
29	Lechea cernua	yes	11-50	flower/bud	12 plants on and near trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57738	28.52667
30	Lechea cernua	yes	1	flower/fruit	in trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57739	28.52657
31	Lechea cernua	yes	11-50	flower/fruit	14 in trail - all fruiting	scrub	ZZ	ZZ	ZZ	ZZ	-82.57739	28.52638
32	Lechea cernua	yes	51-100	flower/fruit	ca 100 plants in trail- all fruiting	scrub	ZZ	ZZ	ZZ	ZZ	-82.57734	28.52612
34	Lechea cernua	yes	2-10	flower/fruit	8 plants in trail-all fruiting	scrub	ZZ	ZZ	ZZ	ZZ	-82.57735	28.52567
36	Lechea cernua	yes	11-50	flower/bud	17 fruiting in trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57738	28.52556
38	Lechea cernua	yes	2-10	flower/fruit	8 mature in trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57719	28.52535
39	Lechea cernua	yes	2-10	flower/bud	5 mature in and near trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57730	28.52501
42	Lechea cernua	yes	2-10	flower/fruit	3 in trail	scrub	ZZ	ZZ	ZZ	ZZ	-82.57733	28.52445
51	Lechea cernua	yes	11-50	flower/fruit	25 near road mature	scrub	ZZ	ZZ	ZZ	ZZ	-82.57809	28.52598
55	Lechea cernua	yes	11-50	flower/fruit	12 near road	scrub	ZZ	ZZ	ZZ	ZZ	-82.57816	28.52739
102	Lechea cernua	yes	51-100	fruit	Plants >50, plus seedlings, fruits mature, new basal shoots	scrub	clearing	fire suppression	moderate	abandoned road; Pinus clausa older mature, Quercus geminata, Quercus myrtifolia, Quercus chapmanii, Ceratiola ericoides	-82.58388	28.51545
139	Lechea cernua	yes	11-50	fruit	ca. 30 plants	scrub	ORV trail	ZZ	light	in white sand opening along road with Ilex ambigua, Pinus clausa, Quercus myrtifolia, Garberia heterophylla, Rhynchospora megalocarpa, Ceratiola ericoides	-82.57624	28.52852
148	Lechea cernua	yes	2-10	fruit	4	ruderal	firebreaks	ZZ	light	in old firebreak near edge of scrub and marsh	-82.57392	28.52938
150	Lechea cernua	yes	2-10	fruit	7	ruderal	firebreaks	ZZ	light	ZZ	-82.57303	28.52942
152	Lechea cernua	yes	2-10	fruit	9	ruderal	firebreaks	ZZ	light	ZZ	-82.57288	28.52936
156	Lechea cernua	yes	2-10	fruit	3	ruderal	firebreaks	ZZ	light	on bank between scrub and plowline	-82.56937	28.52867
157	Lechea cernua	yes	2-10	fruit	10 plants;robust	scrub	firebreaks	ZZ	light	in opening beside firebreak	-82.56913	28.52853
159	Lechea cernua	yes	2-10	fruit	3 plants	scrub	firebreaks	ZZ	light	ZZ	-82.56914	28.52835
161	Lechea cernua	yes	2-10	fruit	6	scrub	firebreaks	ZZ	light	ZZ	-82.56923	28.52808
162	Lechea cernua	yes	2-10	fruit	3	scrub	firebreaks	ZZ	light	ZZ	-82.56932	28.52762
164	Lechea cernua	yes	1	fruit	ZZ	scrub	firebreaks	ZZ	light	ZZ	-82.56947	28.52722
165	Lechea cernua	yes	2-10	fruit	2	scrub	firebreaks	ZZ	light	ZZ	-82.56949	28.52695
167	Lechea cernua	yes	2-10	fruit	5	scrub	firebreaks	ZZ	light	ZZ	-82.56959	28.52654
168	Lechea cernua	yes	2-10	fruit	2	scrub	firebreaks	ZZ	light	ZZ	-82.56969	28.52617
169	Lechea cernua	yes	11-50	fruit	20-30	ruderal	clearing	ZZ	moderate	cleared area at property corner	-82.56973	28.52608

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170	Lechea cernua	yes	11-50	fruit	plants continue on roadside and in clearing; ca. 30 more	scrub	firebreaks	ZZ	light	ZZ	-82.57006	28.52608
171	Lechea cernua	yes	2-10	fruit	4	ruderal	firebreaks	clearing	moderate	ZZ	-82.57290	28.52607
173	Lechea cernua	yes	1	fruit	ZZ	ruderal	firebreaks	ZZ	light	ZZ	-82.57342	28.52609
179	Lechea cernua	yes	2-10	fruit	10	scrub	ZZ	ZZ	ZZ	in opening created by mechanical treatment	-82.57608	28.52652
183	Lechea cernua	yes	2-10	fruit	5	scrub	ZZ	ZZ	ZZ	in mechanical opening	-82.57561	28.52540
186	Lechea cernua	yes	2-10	fruit	4	scrub	ZZ	ZZ	ZZ	in mechanical opening	-82.57548	28.52530
190	Lechea cernua	yes	1	fruit	ZZ	scrub	firebreaks	ZZ	light	along old firebreak	-82.57420	28.52477
191	Lechea cernua	yes	2-10	fruit	2	scrub	firebreaks	ZZ	light	along boundary road	-82.57414	28.52489
192	Lechea cernua	yes	11-50	fruit	ca. 15 plants	scrub	firebreaks	ZZ	light	along boundary road	-82.57411	28.52554
196	Lechea cernua	yes	2-10	fruit	5	scrub	firebreaks	ZZ	light	along boundary road	-82.57415	28.52449
198	Lechea cernua	yes	2-10	fruit	2	scrub	firebreaks	ZZ	light	along boundary road	-82.57412	28.52390
199	Lechea cernua	yes	11-50	fruit	ca. 25	scrub	firebreaks	ZZ	light	along boundary road	-82.57412	28.52374
202	Lechea cernua	yes	2-10	fruit	6	scrub	firebreaks	ZZ	light	along boundary road	-82.57414	28.52330
205	Lechea cernua	yes	51-100	fruit	dozens along entire southern fence line	scrub	firebreaks	ZZ	light	ZZ	-82.57545	28.52328
207	Lechea cernua	yes	51-100	fruit	ca. 60	scrub	firebreaks	ZZ	light	along boundary road	-82.57664	28.52327
208	Lechea cernua	yes	2-10	fruit	3 in firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59107	28.52618
210	Lechea cernua	yes	1	fruit	ZZ	scrub	firebreaks	ZZ	light	ZZ	-82.59111	28.52528
211	Lechea cernua	yes	11-50	fruit	ca. 25 in firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59144	28.52528
212	Lechea cernua	yes	51-100	fruit	ca. 70 in firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59160	28.52513
213	Lechea cernua	yes	51-100	fruit	ca. 100 in firebreak with a few more scattered just in the treated scrub	scrub	firebreaks	ZZ	light	ZZ	-82.59123	28.52487
214	Lechea cernua	yes	11-50	fruit	dozens in firebreak	scrub	firebreaks	ZZ	light	ZZ	-82.59109	28.52414
329	Lechea cernua	yes	ZZ	in leaf	scattered throughout this block	scrub	ZZ	ZZ	ZZ	ZZ	-82.59042	28.52454
330	Lechea cernua	yes	2-10	in leaf	2 plants	scrub	ZZ	ZZ	ZZ	Rhynchospora megalocarpa, Asimina obovata	-82.58976	28.52445
331	Lechea cernua	yes	11-50	in leaf	scattered throughout	scrub	ZZ	ZZ	ZZ	openings in dense scrub with Ceratiola ericoides, Garberia heterophylla	-82.59565	28.52170
333	Lechea cernua	yes	2-10	in leaf	3 plants	scrub	ZZ	ZZ	ZZ	ZZ	-82.59356	28.52191
372	Lechea cernua	yes	2-10	in leaf	Plants 2, 40cm tall. In mown firebreak	scrub	forestry operations	fire suppression	light	Shrubs 1 to 3m tall, Pinus clausa saplings to 4m tall	-82.59186	28.52315
375	Lechea cernua	yes	2-10	in leaf	Plants 2, to 25cm tall. Beside mown firebreak	scrub	forestry operations	fire suppression	light	Shrubs 2 to 3m tall in scrub	-82.59244	28.51996
377	Lechea cernua	yes	2-10	in leaf	Plants 3, to 25cm tall, in open sand gap	scrub	forestry operations	fire suppression	light	Shrubs 2 to 3m tall, infrequent Pinus clausa to 15m	-82.59368	28.52092
256	Lechea divaricata	yes	11-50	fruit	ca. 15 plants in 10 square meter area; fruiting and basal stems present	sandhill	firebreaks	ZZ	light	in low sandhill somewhat intermediate with flatwoods; Pinus palustris, Serenoa repens, Lechea sessiliflora, Vaccinium myrsinites, Aristida stricta var. beyrichiana, Pterocaulon pycnostachyum, Palafoxia integrifolia, Serenoa repens, Liatris tenuifolia	-82.55677	28.66281

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258	Lechea divaricata	yes	1	fruit	ZZ	sandhill	ZZ	ZZ	ZZ	Quercus laevis woodland with a few Pinus palustris, Serenoa repens, Aristida stricta var. beyrichiana, Balduina angustifolia, Quercus incana, Dichantherium sp., Pityopsis graminifolia, Gratiola hispida	-82.56760	28.67180
259	Lechea divaricata	yes	2-10	fruit	10 seen in small area beside road	sandhill	ZZ	ZZ	ZZ	edge of firebreak/road with Aristida stricta var. beyrichiana, Croton michauxii, Quercus geminata, Dichantherium sp., Stillingia sylvatica, Quercus incana, Dichantherium sp., Pityopsis graminifolia, Gratiola hispida	-82.56756	28.66910
316	Lechea divaricata	yes	2-10	in leaf	3 plants	sandhill	clearing	ZZ	ZZ	ZZ	-82.56745	28.67671
317	Lechea divaricata	yes	11-50	in leaf	40 plants	sandhill	clearing	ZZ	ZZ	ZZ	-82.56742	28.67684
318	Lechea divaricata	yes	2-10	in leaf	9 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56745	28.67689
319	Lechea divaricata	yes	2-10	in leaf	7 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56719	28.67751
320	Lechea divaricata	yes	2-10	in leaf	4 plants	sandhill	ZZ	ZZ	ZZ	mature flat-topped longleaf pines	-82.57551	28.66838
321	Lechea divaricata	yes	1	in leaf	1 large plant	sandhill	ZZ	ZZ	ZZ	ZZ	-82.57542	28.66920
362	Lechea divaricata	yes	2-10	in leaf	Plants 5, in 10m2 area	sandhill	clearing	forestry operations	moderate	natural groundcover sparse, weedy	-82.56765	28.67658
363	Lechea divaricata	yes	51-100	in leaf	Plants >50, in 100 square meter area	sandhill	clearing	forestry operations	moderate	natural groundcover sparse, weedy	-82.56771	28.67670
364	Lechea divaricata	yes	2-10	in leaf	Plants 6, in 10m2 area	sandhill	clearing	forestry operations	moderate	natural groundcover sparse, scattered Aristida stricta	-82.56793	28.67667
365	Lechea divaricata	yes	2-10	in leaf	Plants 5, in 2m2 area	sandhill	clearing	forestry operations	moderate	natural groundcover sparse, scattered Aristida stricta	-82.56793	28.67660
366	Lechea divaricata	yes	2-10	in leaf	Plants 10, in 2 square meter area	sandhill	clearing	forestry operations	moderate	natural groundcover sparse, scattered Aristida stricta	-82.56783	28.67696
388	Lechea divaricata	yes	2-10	in leaf	5 plants seen	sandhill	ZZ	ZZ	ZZ	ZZ	-82.59107	28.56171
394	Lechea divaricata	yes	11-50	in leaf	ca. 50 healthy plants counted	sandhill	ZZ	ZZ	ZZ	near ecotone to marsh; plants are concentrated around edges of Serenoa repens patches; also with Quercus geminata, Vaccinium myrsinites, Asimina reticulata, Aristida stricta	-82.56084	28.63228
395	Lechea divaricata	yes	1	in leaf	ZZ	sandhill	ZZ	ZZ	ZZ	ZZ	-82.56153	28.63237
393	Lechea divaricata	yes	2-10	in leaf	2 plants seen	sandhill	ZZ	ZZ	ZZ	under Quercus laevis in sandhill	-82.58022	28.64210
124	Lobelia cardinalis	yes	2-10	flower/fruit	4 flowering stems	spring-run stream	not evident	ZZ	ZZ	on edge in 6" water;with Cladium jamaicense and Salix caroliniana	-82.59212	28.51833
125	Lobelia cardinalis	yes	2-10	flower/fruit	3 flowering stems;some stems look eaten	spring-run stream	ZZ	ZZ	ZZ	on edge just out of water;with Panicum sp.	-82.58868	28.52226
104	Matelea gonocarpos	yes	1	in leaf	Plant climbing 2m high on Carpinus caroliniana	hydric hammock	not evident	ZZ	ZZ	closed canopy of mature Magnolia virginiana, Sabal palmetto, Juniperus virginiana, Liquidambar styraciflua/Rhapidophyllum hystrix, Sabal palmetto	-82.61953	28.67386
222	Matelea gonocarpos	yes	1	in leaf	on Sabal palmetto	hydric hammock	ORV trail	ZZ	light	with Sabal palmetto, Ulmus americana, Quercus laurifolia, Acer rubrum, Thelypteris sp., Psychotria nervosa	-82.61632	28.68432
223	Matelea gonocarpos	yes	2-10	in leaf	2 large plants;4 seedlings	hydric hammock	ORV trail	ZZ	light	with Sabal palmetto, Ulmus americana, Quercus laurifolia, Acer rubrum, Thelypteris sp., Psychotria nervosa, Rhaphidophyllum hystrix	-82.62026	28.66803

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224	Matelea gonocarpus	yes	2-10	in leaf	3 plants growing on Juniperus virginiana	hydric hammock	ORV trail	ZZ	light	with Sabal palmetto, Quercus laurifolia, Acer rubrum, Thelypteris sp., Psychotria nervosa, Rhipidophyllum hystrix	-82.62429	28.66025
226	Matelea gonocarpus	yes	1	in leaf	on Myrica cerifera	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.62761	28.65343
227	Matelea gonocarpus	yes	1	in leaf	on fallen cypress	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.61610	28.65202
231	Matelea gonocarpus	yes	1	in leaf	growing up Carpinus caroliniana	hydric hammock	road	ZZ	light	ZZ	-82.61680	28.65254
232	Matelea gonocarpus	yes	1	in leaf	small plant	hydric hammock	road	ZZ	light	ZZ	-82.61852	28.67331
121	Matelea gonocarpus	yes	1	in leaf	on base of Quercus laurifolia	hydric hammock	road	ZZ	light	ZZ	-82.59448	28.62914
123	Matelea gonocarpus	yes	2-10	in leaf	on edge of tram road climbing smilax vine and Persea palustris	basin swamp	road	ZZ	light	ZZ	-82.60479	28.62939
272	Matelea gonocarpus	yes	1	in leaf	Plant 1m tall, climbing Ilex coriacea	hydric hammock	forestry operations	ZZ	light	Pinus elliottii/Quercus laurifolia, Quercus virginiana, Sabal palmetto	-82.59943	28.54803
290	Matelea gonocarpus	yes	2-10	in leaf	2 plants that are 1' tall and sprawling on the ground	hydric hammock	ZZ	ZZ	ZZ	with Sabal palmetto, Juniperus virginiana, Myrica cerifera, Rapanea punctata, Thelypteris sp., Psychotria nervosa	-82.61012	28.68578
292	Matelea gonocarpus	yes	2-10	in leaf	9; starting to climb Juniperus virginiana; on both sides of tram	hydric hammock	ORV trail	ZZ	light	with Juniperus virginiana, Quercus laurifolia, Pteris vittata, Thelypteris sp., Sabal palmetto, Dichantheium sp.	-82.61894	28.67960
275	Matelea gonocarpus	yes	2-10	in leaf	Plants 2, 30cm tall	hydric hammock	road	ZZ	light	Closed canopy Sabal palmetto, Quercus laurifolia, Carpinus caroliniana, Juniperus virginiana, Magnolia grandiflora/Sabal palmetto, Rhipidophyllum hystrix, Ilex vomitoria/Thelypteris kunthii	-82.60512	28.68479
276	Matelea gonocarpus	yes	1	in leaf	Plant climbing to 1.3m tall	hydric hammock	not evident	ZZ	ZZ	Closed canopy Sabal palmetto, Quercus virginiana, Juniperus virginiana, Quercus laurifolia/Sabal palmetto, Myrica cerifera, Ilex vomitoria, Psychotria nervosa/Cladium jamaicense, Solidago sempervirens, Thelypteris kunthii	-82.60901	28.68745
277	Matelea gonocarpus	yes	2-10	in leaf	Plants 2, 30cm tall, west edge of road	hydric hammock	road	ZZ	light	Closed canopy hydric hammock	-82.61959	28.67022
293	Matelea gonocarpus	yes	2-10	in leaf	5 plants; largest climbing to 6' on Juniperus virginiana	hydric hammock	road	ZZ	light	ZZ	-82.61580	28.67767
295	Matelea gonocarpus	yes	2-10	in leaf	scrambling on old log	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.61229	28.64670
307	Matelea gonocarpus	yes	2-10	in leaf	6 plants on ground, scrambling	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.58797	28.64748
287	Matelea gonocarpus	yes	2-10	in leaf	Plants climbing to 1m high	hydric hammock	ORV trail	ZZ	light	Quercus virginiana, Quercus laurifolia, Magnolia virginiana closed canopy	-82.58981	28.61695
288	Matelea gonocarpus	yes	1	in leaf	Plant climbing to 1.6m high on dead cypress	basin swamp	ORV trail	ZZ	light	Taxodium distichum, Magnolia virginiana, Fraxinus pennsylvanica closed canopy	-82.59290	28.62238
289	Matelea gonocarpus	yes	1	in leaf	Plant climbing to 1.6m high on Persea palustris	basin swamp	ORV trail	ZZ	light	Taxodium distichum, Magnolia virginiana, Fraxinus pennsylvanica, Liquidambar styraciflua closed canopy	-82.59640	28.62248
324	Matelea gonocarpus	yes	1	in leaf	on Sabal minor	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.62349	28.63684

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367	Matelea gonocarpus	yes	1	in leaf	10 cm tall	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.62205	28.63947
368	Matelea gonocarpus	yes	1	in leaf	Plant climbing 1m high. West side of tram	hydric hammock	ORV trail	ZZ	moderate	Sabal palmetto	-82.62503	28.64081
379	Matelea gonocarpus	yes	1	in leaf	Plant 25cm tall	hydric hammock	road	ZZ	light	muck	-82.60094	28.55529
349	Matelea gonocarpus	yes	1	in leaf	on base fallen red cedar	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.60423	28.61017
350	Matelea gonocarpus	yes	1	in leaf	near creek	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.60487	28.61076
354	Matelea gonocarpus	yes	2-10	in leaf	Plants 2, to 65cm tall	hydric hammock	forestry operations	ZZ	light	old skidder trail	-82.59360	28.64055
309	Osmunda cinnamomea	yes	11-50	spore	ZZ	ruderal	road	ZZ	moderate	along road into hydric hammock	-82.60070	28.55483
298	Pecluma plumula	yes	11-50	in leaf	on lower portion of fallen yet living live oak	mesic hammock	not evident	ZZ	ZZ	with Pleopeltis polypodioides var. michauxiana; hammock of closed canopy Quercus virginiana, Magnolia grandiflora, Sabal palmetto/Serenoa repens, Sabal palmetto, Rhapidophyllum hystrix/Thelypteris kunthii, Dryopteris ludoviciana	-82.60441	28.60976
361	Pecluma plumula	yes	2-10	in leaf	Plants 5, on dead Quercus virginiana trunk, 2m above ground	hydric hammock	ZZ	ZZ	ZZ	Rhapidophyllum hystrix	-82.60329	28.61000
2	Pecluma ptilodon	yes	1	in leaf	on sweet bay hummock in standing water	hydric hammock	ZZ	ZZ	ZZ	several fronds-very wet area- standing water	-82.62692	28.65298
229	Pecluma ptilodon	yes	1	in leaf	on old cypress stump	basin swamp	road	ZZ	light	ZZ	-82.60733	28.64010
122	Pecluma ptilodon	yes	2-10	spore	on base of two Acer rubrum over drainage area under tram	hydric hammock	road	ZZ	light	ZZ	-82.60427	28.62917
296	Pecluma ptilodon	yes	2-10	spore	several clumps on old cypress stump; most fronds shriveled	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.60434	28.62882
297	Pecluma ptilodon	yes	2-10	in leaf	4 small clumps on old cypress stump; most fronds shriveled	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.60459	28.62839
279	Pecluma ptilodon	yes	2-10	spore	Plants 5+, leaves shriveled, on ancient cypress stump	basin swamp	not evident	ZZ	ZZ	Taxodium distichum, Fraxinus pennsylvanica, Acer rubrum to 30m tall	-82.60403	28.62833
280	Pecluma ptilodon	yes	1	in leaf	plant on cypress stump, leaves 2, to 30cm long	basin swamp	not evident	ZZ	ZZ	ZZ	-82.60177	28.62775
269	Pinguicula caerulea	yes	11-50	flower/bud	Plants >11, one third in flower	wet prairie	ORV trail	fire suppression	moderate	Pinus elliottii/Stillingia aquatica/Schoenus nigricans, Cladium jamaicense	-82.61190	28.55672
270	Pinguicula caerulea	yes	101-1000	flower/bud	Plants >200, most in flower	wet prairie	ORV trail	fire suppression	moderate	Pinus elliottii/Serenoa repens, Stillingia aquatica/Schoenus nigricans, Cladium jamaicense (sparse), Muhlenbergia capillaris	-82.61243	28.55730
378	Pinguicula caerulea	yes	2-10	in leaf	Plants with basal rosette of leaves	wet prairie	fire suppression	ZZ	light	Schoenus nigricans, Linum medium, Dichromena colorata, Calopogon tuberosus, Asclepias lanceolatus	-82.61177	28.55385
310	Pinguicula lutea	yes	2-10	flower/bud	5 in flower	ruderal	ORV trail	ZZ	light	adjoining mesic flatwoods that is overgrown; plants exploiting sunny patch along road	-82.61247	28.55285
311	Pinguicula lutea	yes	11-50	flower/bud	ZZ	mesic flatwoods	ORV trail	ZZ	light	ZZ	-82.61435	28.55295
326	Platanthera flava	yes	2-10	flower/bud	2 plants	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.62448	28.64090

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
343	Platanthera flava	yes	1	flower/bud	on root	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.59725	28.63741
344	Platanthera flava	yes	1	flower/bud	on Magnolia virginiana root	basin swamp	ZZ	ZZ	ZZ	near Blind Creek	-82.59735	28.63737
345	Platanthera flava	yes	2-10	in leaf	2 vegetative plants	basin swamp	ZZ	ZZ	ZZ	along Blind Creek	-82.59755	28.63774
346	Platanthera flava	yes	1	flower/bud	photo-plants scattered throughout swamp	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.59726	28.63707
348	Platanthera flava	yes	1	flower/bud	with old flowering stalk	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.59078	28.64329
351	Platanthera flava	yes	1	flower/bud	on roots of sweetbay	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.60314	28.60942
352	Platanthera flava	yes	2-10	flower/bud	4 more seen - widely scattered throughout swamp	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.60379	28.60915
353	Platanthera flava	yes	2-10	flower/bud	7 plants	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.58497	28.63622
355	Platanthera flava	yes	2-10	flower/bud	Plants 2, 40cm tall, one plant has 25 flowers, terminal 5 not open yet	hydric hammock	forestry operations	ZZ	light	old skidder trail, Rhipidophyllum hystrix abundant	-82.59512	28.63985
356	Platanthera flava	yes	1	flower/bud	Plant 1, 30cm tall, flowers 15, terminal 3 not open yet	hydric hammock	forestry operations	ZZ	light	old skidder trail, Rhipidophyllum hystrix abundant	-82.59541	28.63982
85	Pteroglossaspis ecristata	yes	1	flower/fruit	1 healthy fruiting plant with leaf - in midst of Smilax auriculata, Quercus myrtifolia	scrub	clearing	ZZ	light	lot of tall andropogon wth scattered patches scrub oaks	-82.58292	28.53494
95	Pteroglossaspis ecristata	yes	2-10	fruit	plants 2, with green capsules	sandhill	fire suppression	forestry operations	light	open sandhill with good groundcover	-82.56080	28.59059
96	Pteroglossaspis ecristata	yes	2-10	in leaf	plants 2, sterile	sandhill	fire suppression	forestry operations	light	open sandhill with good groundcover	-82.56078	28.59058
115	Pteroglossaspis ecristata	yes	1	fruit	Plant 1m tall, 6 capsules not yet dehisced	sandhill	firebreaks	forestry operations	light	Open sandhill with old growth Pinus palustris and diverse groundcover	-82.55865	28.60640
261	Rhipidophyllum hystrix	yes	2-10	in leaf	3 small plants on slope to artificial pond/swamp; pre-reproductive	ruderal	clearing	impoundment	heavy	with Paederia foetida, Oplismenus hirtellus, Thelypteris sp., Callicarpa americana	-82.55553	28.61178
262	Rhipidophyllum hystrix	yes	1	in leaf	small plant just outside of artificial pond; pre-reproductive	ruderal	clearing	impoundment	heavy	with Paederia foetida, Smilax bona-nox, Sabal palmetto, Juniperus virginiana	-82.55622	28.61222
263	Rhipidophyllum hystrix	yes	2-10	in leaf	7 small plants scattered just outside of artificial pond; plants pre-reproductive	ruderal	clearing	impoundment	heavy	with Smilax bona-nox, Myrica cerifera, , Sabal palmetto, Juniperus virginiana	-82.55647	28.61198
127	Rhipidophyllum hystrix	yes	101-1000	in leaf	plants scattered through hammock in this area	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.60104	28.55492
120	Rhipidophyllum hystrix	yes	101-1000	in leaf	large area of scattered plants	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.58697	28.62861
315	Rhipidophyllum hystrix	yes	101-1000	in leaf	abundant here	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.58075	28.66883
342	Rhipidophyllum hystrix	yes	51-100	in leaf	abundant here with Platanthera flava	basin swamp	ZZ	ZZ	ZZ	Magnolia virginiana, Acer rubrum, Carpinus caroliniana, Taxodium distichum	-82.59532	28.63989
92	Stylisma abdita	yes	101-1000	in leaf	plants in 10m by 10m area, leaves to 7mm long	sandhill	fire suppression	forestry operations	moderate	Pinus palustris, Quercus laevis, Aristida stricta var. beyrichiana	-82.53576	28.67166

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
105	Stylisma abditata	yes	2-10	in leaf	Plants 7, stems 7-10mm long, clumped in 5m2 area, open sand between Aristida stricta clumps	sandhill	ORV trail	ZZ	light	open sandhill with few older mature Pinus palustris	-82.51272	28.69065
106	Stylisma abditata	yes	101-1000	fruit	Plants >100, stems up to 15mm long, clumped, area 100m2, open sand between Aristida stricta clumps	sandhill	ORV trail	ZZ	light	open sandhill with older mature Pinus palustris/Aristida stricta	-82.51589	28.69258
107	Stylisma abditata	yes	11-50	in leaf	Plants >40, stems up to 10mm long, in area 100m2, between Aristida stricta clumps	sandhill	ORV trail	ZZ	light	open sandhill with older mature Pinus palustris/Aristida stricta	-82.51571	28.69205
233	Stylisma abditata	yes	2-10	in leaf	9 plants; leaves to 1.5cm long; silvery, prostrate	sandhill	ZZ	ZZ	ZZ	in open sand with Stylisma patens, Cyperus sp., Palafoxia integrifolia, Stillingia sylvatica	-82.50895	28.68543
234	Stylisma abditata	yes	101-1000	in leaf	scattered throughout small patch; ca. 100 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50889	28.68535
235	Stylisma abditata	yes	11-50	in leaf	ca.25 plants in two patches	sandhill	ZZ	ZZ	ZZ	with Pityopsis graminifolia, Balduina angustifolia, Polygonella robusta, Phoebanthus grandiflorus, Asimina obovata, Quercus laevis	-82.50729	28.68579
236	Stylisma abditata	yes	2-10	in leaf	10 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50731	28.68600
237	Stylisma abditata	yes	11-50	in leaf	30 plants	sandhill	ZZ	ZZ	ZZ	with Aristida stricta var. beyrichiana, Pityopsis graminifolia, Paspalum setaceum, Stillingia sylvatica, Eriogonum tomentosum	-82.50750	28.68686
238	Stylisma abditata	yes	11-50	in leaf	12	sandhill	ZZ	ZZ	ZZ	patches of young Quercus laevis and Quercus geminata; plants half buried in oak litter	-82.50700	28.68839
239	Stylisma abditata	yes	11-50	in leaf	16 total seen in three small patches	sandhill	ZZ	ZZ	ZZ	patches of young Quercus laevis and Quercus geminata	-82.50695	28.68858
240	Stylisma abditata	yes	11-50	in leaf	ca. 30	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50588	28.68662
241	Stylisma abditata	yes	101-1000	in leaf	around 100-150 plants in a fairly contiguous patch from here to point to north	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50519	28.68585
242	Stylisma abditata	yes	ZZ	in leaf	patch stretches to south	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50504	28.68605
243	Stylisma abditata	yes	11-50	in leaf	patch stretches to here as well; add 50 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50490	28.68592
244	Stylisma abditata	yes	11-50	in leaf	ca. 50 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50397	28.68555
245	Stylisma abditata	yes	11-50	in leaf	ca. 20 plants	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50389	28.68564
246	Stylisma abditata	yes	101-1000	in leaf	100-200	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50381	28.68574
247	Stylisma abditata	yes	101-1000	in leaf	at least 200	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50355	28.68580
248	Stylisma abditata	yes	11-50	fruit	ca. 45 in two small patches	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50420	28.68743
249	Stylisma abditata	yes	101-1000	fruit	plants common on hillside; 50 counted	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50449	28.68741
250	Stylisma abditata	yes	101-1000	fruit	scattered on open sand; probably over 300	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50486	28.68751
251	Stylisma abditata	yes	101-1000	fruit	plants still common	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50548	28.68795
252	Stylisma abditata	yes	101-1000	fruit	at least 200 in area	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50576	28.68842

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
253	<i>Stylisma abditata</i>	yes	51-100	fruit	at least 50 in area	sandhill	ZZ	ZZ	ZZ	ZZ	-82.50277	28.68659
254	<i>Stylisma abditata</i>	yes	11-50	in leaf	ca. 15 in small patch; not locally common	sandhill	ZZ	ZZ	ZZ	with <i>Aristida stricta</i> var. <i>beyrichiana</i> , <i>Stylisma patens</i> , <i>Diospyros virginiana</i> , <i>Smilax auriculata</i> , <i>Pityopsis graminifolia</i> , <i>Pinus palustris</i> , <i>Quercus laevis</i> , <i>Croton argyranthemus</i>	-82.51219	28.69142
255	<i>Stylisma abditata</i>	yes	2-10	in leaf	4 scattered in small area	sandhill	ZZ	ZZ	ZZ	with <i>Aristida stricta</i> var. <i>beyrichiana</i> , <i>Liatris tenuifolia</i> , <i>Pityopsis graminifolia</i>	-82.51220	28.69065
383	<i>Stylisma abditata</i>	yes	51-100	in leaf	dozens	sandhill	ZZ	ZZ	ZZ	ZZ	-82.53598	28.67216
384	<i>Stylisma abditata</i>	yes	2-10	in leaf	3 plants on open sand	pasture - improved	other	ZZ	ZZ	plants occupy the edges of large sand pits with signs of ORV use	-82.51550	28.67954
385	<i>Stylisma abditata</i>	yes	51-100	in leaf	ca. 70 on open sand	pasture - improved	other	ZZ	ZZ	plants occupy the edges of large sand pits with signs of ORV use	-82.51556	28.67643
386	<i>Stylisma abditata</i>	yes	11-50	in leaf	15	pasture - improved	other	ZZ	ZZ	plants occupy the edges of large sand pits with signs of ORV use	-82.51402	28.67556
387	<i>Stylisma abditata</i>	yes	51-100	in leaf	ca. 60 in open sand pit	pasture - improved	other	ZZ	ZZ	plants occupy the edges of large sand pits with signs of ORV use	-82.51502	28.67977
391	<i>Stylisma abditata</i>	yes	11-50	in leaf	ca. 20 styabd; in pine needle duff	pine plantation	forestry operations	fire suppression	heavy	ZZ	-82.51248	28.68145
392	<i>Stylisma abditata</i>	yes	2-10	in leaf	9	pasture - improved	other	ZZ	ZZ	plants occupy the edges of large sand pits with signs of ORV use	-82.51389	28.68154
389	<i>Stylisma abditata</i>	yes	ZZ	in leaf	plants present; abundance not assessed	pine plantation	ZZ	ZZ	ZZ	ZZ	-82.50717	28.67762
390	<i>Stylisma abditata</i>	yes	ZZ	in leaf	plants present; abundance not assessed	pine plantation	ZZ	ZZ	ZZ	ZZ	-82.50752	28.67766
135	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	2 large plants ca. 25-30' up on <i>Magnolia grandiflora</i> trunk; 1 on <i>Quercus virginiana</i> ; 1 on cut tree	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.61394	28.57761
103	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	Plants 2, on <i>Magnolia grandiflora</i>	mesic hammock	not evident	ZZ	ZZ	ZZ	-82.60830	28.64203
228	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	4 high in large live oak; plus two dead	mesic hammock	road	ZZ	light	open hammock with <i>Quercus virginiana</i> , <i>Tillandsia bartramii</i> , <i>Juniperus virginiana</i> , <i>Sabal palmetto</i> , <i>Carya glabra</i> , <i>Carpinus caroliniana</i> , <i>Callicarpa americana</i>	-82.60849	28.64201
291	<i>Tillandsia utriculata</i>	yes	11-50	in leaf	15-20' up in <i>Quercus virginiana</i> and <i>Juniperus virginiana</i>	hydric hammock	road	ZZ	light	ZZ	-82.61750	28.68379
278	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	Plants 2, on <i>Quercus virginiana</i> trunk 12m above ground, and on adjacent <i>Magnolia grandiflora</i>	mesic hammock	road	ZZ	light	Closed canopy	-82.61310	28.64656
294	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	head high on <i>Ulmus americana</i> beside spring; 2nd one on <i>Ilex cassine</i> hanging low over spring	hydric hammock	ZZ	ZZ	ZZ	ZZ	-82.61532	28.64085
267	<i>Tillandsia utriculata</i>	yes	1	in leaf	high in large <i>Magnolia grandiflora</i> ; one dead nearby	mesic hammock	ORV trail	ZZ	light	with <i>Pleopeltis polypodioides</i> var. <i>michauxiana</i> and <i>Tillandsia bartramii</i>	-82.61581	28.59058
300	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	6 plants; 1 - 20' up in live oak; more in <i>Magnolia grandiflora</i>	mesic hammock	ORV trail	ZZ	light	ZZ	-82.60303	28.60599
302	<i>Tillandsia utriculata</i>	yes	2-10	in leaf	on live oak	mesic hammock	ORV trail	ZZ	light	ZZ	-82.58691	28.63880

Point_ID	Species	ID_Confirm	Count	Phenology	Oth_EOdata	FNAI_NC	Disturb_1	Disturb_2	DisturbSev	Gen_Desc	Longitude	Latitude
304	Tillandsia utriculata	yes	1	in leaf	on live oak; dying; nearby airplant might be Tillandsia fasciculata	mesic hammock	ORV trail	clearing	moderate	ZZ	-82.59120	28.64229
305	Tillandsia utriculata	yes	1	in leaf	on Magnolia grandiflora	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.58870	28.64710
306	Tillandsia utriculata	yes	2-10	in leaf	3 on Magnolia grandiflora with Tillandsia bartramii	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.58834	28.64728
323	Tillandsia utriculata	yes	2-10	in leaf	4 plants on red cedar	mesic hammock	ZZ	ZZ	ZZ	ZZ	-82.61753	28.68382
327	Tillandsia utriculata	yes	2-10	in leaf	2 plants low on Sabal palmetto above creek	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.61805	28.64306
369	Tillandsia utriculata	yes	1	flower/bud	Plant in bud, on Magnolia virginiana leaning on Ulmus americana, 7m above ground	hydric hammock	ORV trail	ZZ	moderate	ZZ	-82.62677	28.64239
347	Tillandsia utriculata	yes	1	flower/bud	on ground- flowering stalk present- photo taken	basin swamp	ZZ	ZZ	ZZ	ZZ	-82.59731	28.63709

APPENDIX D

Rare Plant Descriptions

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

Asclepias curtissii A.Gray
Common name: Curtiss' milkweed
APOCYNACEAE

Description: Erect to decumbent perennial milkweed growing on dry white sand areas. Stems are densely clothed with broad, oblong, wavy-edged, opposite leaves and topped by one to three rounded dense umbels of flowers with pale pinkish-white hoods and pale green reflexed petals.

Flowering time: June -September

Habitat: Found in oak scrub, sand pine scrub, and scrubby flatwoods, usually in open sand; plants often widely scattered on any given site. Most often found along sand roads where there has been some soil disturbance, rather than back in among other vegetation (Minno 1991). Found at Chassahowitzka WMA in scrub just north of Weeki Wachee Springs State Park.

Range: Endemic to Florida in scrubs from Clay County south to Collier and Broward counties.

Management: In one study plants were found to re-sprout after fire but in lower numbers than before the fire (Weekley and Menges 2003). However, planted specimens also do not appear every year but may stay dormant in some years which may account for the low numbers following fire. Planted specimens have lived over 25 years (Minno 1991). Flowers are pollinated by skipper and hairstreak butterflies and have low seed production relative to other milkweeds (Minno 1991).



Photo by Paul Russo

Distinguishing features: Most similar in overall appearance to pineland milkweed (*Asclepias obovata*) and velvet leaf milkweed (*A. tomentosa*), which also occur in dry sandy sites within its range. Differs from these species in having inflorescences borne on long stems (rather than being sessile on the main stem).

References:

Minno, M. 1991. The natural history and ecology of *Asclepias curtissii* Gray (Apocynaceae), a rare scrub endemic from Florida. Master Thesis, University of Florida, Gainesville, Florida.

Weekley, C.W., and E.S. Menges. 2003. Species and vegetation responses to prescribed fire in a long-unburned, endemic-rich Lake Wales Ridge scrub. *Journal of the Torrey Botanical Society* 130:265-282.

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

Encyclia tampensis (Lindl.) Small
Common name: Florida butterfly orchid
ORCHIDACEAE

Description: This epiphytic orchid forms clusters of pseudobulbs, each with one to three long, narrow, rigid leaves. Flowers are yellow-brown with a white and purple lip, and are borne on a long inflorescence.

Flowering time: Spring - Summer.

Habitat: Epiphytic in hammocks and swamps. Two locations of Florida butterfly orchid were found at Chassahowitzka WMA, one in mesic hammock and one in hydric hammock .

Range: Northern peninsula of Florida south to the Bahamas. One of the most common epiphytic orchids in Florida.

Management: Protect from collection.

Distinguishing features: Green fly orchid (*Epidendrum conopseum*) is the only other leafy epiphytic orchid occurring in Hernando County, but has smaller, drooping leaves and no pseudobulbs.



Photo by Pete Diamond (taken in Orange County)

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*), near water or in floodplain swamps or hydric hammocks. Green fly orchid is common at Chassahowitzka WMA, particularly in the mesic hammocks within the large coastal hydric hammock. They were noted primarily on southern magnolias (*Magnolia grandiflora*) and live oaks.

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 that occurs.

Management: Protect from collection.

Distinguishing features: Green fly orchid is easily distinguished from the only other leafy epiphytic orchid occurring in Hernando County, butterfly orchid (*Encyclia tampensis*), by its small, pale yellow flowers which contrast with the larger brown and pink flowers of the butterfly orchid. In the vegetative state, green fly orchid's drooping leaves (about 6 inches long) can be distinguished from those of butterfly orchid, which are rigid, spreading, and about 1 foot long.



Photo by Kimberly Gullede

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 1 inch long. Flowers pink, resembling those of *Liatris* species, but in 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 Chassahowitzka WMA, garberia was commonly found in both sandhill and scrub habitats, and even formed a dense understory in one 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 Kimberly Gullede

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: October-November

Habitat: Dry, sandy flatwoods, dry prairie, and scrub. At Chassahowitzka WMA, this plant was observed in sandhill and in sandhill transitional to pine flatwoods mostly in the northern portions of the management area.

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.



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 2 ft 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 Chassahowitzka WMA, a single plant was seen in fruit along Picnic Grade, an old logging tram through the northwest corner of the property.

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 Kimberely Gullede

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

Lechea cernua Small
Common name: nodding pinweed
CISTACEAE

Description: Perennial herb less than a foot tall, with densely leafy shoots from a woody base; leaves ovate to elliptic, up to ½ inch long, gray-green and densely hairy on both surfaces. Flowering branches consist of sprays of small, round, pinhead-like, non-showy flowers, borne on branching shoots that become woody and leafless by the time the small (<1/8 inch long,) round capsular fruits are ripe (Hodgdon 1938).

Flowering time: July-September (fruits present October-March). Basal rosettes of unbranched, leafy vegetative shoots present in winter.

Habitat: Open, unshaded white sands of scrub and scrubby flatwoods. Often associated with Florida rosemary (*Ceratiola ericoides*). At Chassawhowitzka WMA, nodding pinweed was found exclusively in white sand scrub in the southern parcels of the property.

Range: Endemic to Florida from Lake County south to Broward and Collier counties.

Management: Reacts to fire by both re-sprouting and increased seed production. Nodding pinweed prefers open, sandy spaces formed when scrub stands are burned (Menges and Kohfeldt 1995). Plants often found along sandy trails.

Distinguishing features: Nodding pinweed is easily distinguished from all other species of pinweed in Florida by the relatively large leaves present at flowering time that are densely hairy on both surfaces.



Photo by Ann F. Johnson



Photo by Kimberely Gullledge

References:

- Hodgdon, A.R. 1938. A taxonomic study of *Lechea*. *Rhodora* 40:29-69, 87-131.
- Menges, E.S., and N. Kohfeldt. 1995. Life history strategies of Florida scrub plants in relation to fire. *Bulletin of the Torrey Botanical Club* 122:282-297.

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

Lechea divaricata Shuttlew. ex Britton

Common name: pine pinweed
CISTACEAE

Description: Perennial herb with widely branched stems up to 2 ft tall from a woody base. Flowering shoots have divergent hairs along the stem and are densely to sparsely covered with small, broad, alternate leaves ca. ¼ inch long and hairy on the undersides. The capsules are exserted from the persistent calyx (Hodgdon 1938).

Flowering time: July to September. Plants are most identifiable in the fall when they are in fruit.

Habitat: Dry sandy soils in openings, mainly in scrubby flatwoods. At Chassahowitzka WMA, plants were found in sandhill transitional to flatwoods with saw palmetto (*Serenoa repens*) common.

Range: Endemic to central and southern Florida, from Citrus and Volusia counties south to Dade and Collier counties.

Management: Reaction to fire is unknown, but likely re-sprouts based on reactions described for similar species of *Lechea* that grow in scrubby habitats, i.e. *L. deckertii* and *L. cernua* (Menges and Kohfeldt 1995). Prefers ecotones between sandhill and flatwoods, so fire lanes should not be placed in these areas.

Distinguishing features: Distinct among pinweeds in having an indehiscent fruit as opposed to the fruit splitting open to release the seeds. Differs from the somewhat similar nodding pinweed (*L. cernua*) in having capsules that are well-exserted from the calyx.

References:

Hodgdon, A.R. 1938. A taxonomic study of *Lechea*. Rhodora 40:29-69, 87-131.

Menges, E.S., and N. Kohfeldt. 1995. Life history strategies of Florida scrub plants in relation to fire. Bulletin of the Torrey Botanical Club 122:282-297.



Photos by Kimberely Gullede

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

Lobelia cardinalis L.
Common name: cardinal flower
CAMPANULACEAE

Description: Herbaceous perennial up to 4 ft tall, distinguished by a raceme of brilliant red, 2-lipped tubular flowers, each over 1 inch long and having a broad, 3-lobed lower lip and narrow upper portions.

Flowering time: August - September

Habitat: Streambanks, hydric hammocks, and swamps, often in standing water. At Chassahowitzka WMA, cardinal flower was seen still blooming in early November along the banks of the Weeki Wachee River in shallow water.

Range: Throughout the eastern and southwestern United States south to central Florida as far as Hillsborough, Polk and Indian River counties.

Management: Requires wet sites and is thus vulnerable to hydrological disturbance. Showy flowers may encourage poaching.

Distinguishing features: Large, brilliant red, two-lipped flowers on a tall stem.



Photo by Gary Schultz

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

Matelea gonocarpos (Walter) Shinnars

Common name: angle pod

APOCYNACEAE

Synonym: *Gonolobus suberosus* (L.) R.Br.

Description: Herbaceous, perennial, twining vine with milky sap and opposite, ovate-oblong leaves, 3-4 inches long, on leaf stems up to 2 inches long. Leaf bases heart-shaped. Flowers maroon in center and greenish toward tips of the petals, star-shaped, about ½ inch long, held in umbels in the axils of the leaves. Fruit a long pod with a smooth surface (Radford et al. 1968).

Flowering time: June – October in Florida.

Habitat: Rich hydric hammocks, upland hardwood forests, and bottomland forests, often where limestone is near the surface. At Chassahowitzka WMA, angle pod vines were seen commonly along old narrow gage rail trams through the hydric hammock where plants could exploit the elevated, less frequently flooded tram edges. All plants seen were vegetative and assumed to be *M. gonocarpos*. Mid-summer surveys would be required to verify this identification, although plants in shade often do not flower.

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

Management: Angle pod prefers shaded habitats but requires openings with sunlight in order to flower. Exotic plants along tram roads are a potential threat, but treatment should be careful to avoid harming rare species.

Distinguishing features: Fruit capsules without fleshy protuberances (spines) found in other members of *Matelea*. Flowers also differ from these species in being bi-colored, rather than one solid color throughout. Vegetative plants of *Matelea* 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. Smaller leaves of angle pod may also resemble the invasive skunkvine (*Paederia foetida*), but are easily distinguished by their milky sap and odorless crushed leaves.



Photo by Ann F. Johnson (taken at Lafayette Forest Mitigation Park)

References:

- Radford, A.E., H.E. Ahles, and C.R. Bell. 1968. Manual of the vascular flora of the Carolinas. University of North Carolina Press, Chapel Hill.
- Weakley, A.S. 2010. Flora of the Southern and Mid-Atlantic States. March 2010 version. UNC Herbarium, North Carolina Botanical Garden, University of North Carolina at Chapel Hill. URL: <http://www.herbarium.unc.edu/flora.htm>

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 14-29 inches 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. At Chassahowitzka WMA, cinnamon fern was commonly found in seepage areas at the transition from uplands to hammock. Probably also associated with baygalls on the property.

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.

References:

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



Photo by Amy Jenkins (taken at Lafayette Forest Mitigation Park)

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: Epiphytic fern primarily on live oak (*Quercus virginiana*). Pinnate fronds up to 23 inches long. 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. At Chassahowitzka WMA, plume polypody was found in two locations ca. 100 m apart in a small mesic hammock on live oak trunks.

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

Management: Plume polypody is 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 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:

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



Photo by Kimberely Gullledge



Photo by Kimberely Gullledge

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

Pecluma ptilodon (Kunze) M.G.Price
Common name: swamp plume polypody
POLYPODIACEAE

Description: Epiphytic fern on stumps, tree bases, and occasionally rocks. Pinnate fronds up to 35 inches long. Rachis brown with no, or only filiform, scales.

Flowering time: Identifiable all year

Habitat: Swamps and hydric hammocks. At Chassahowitzka WMA, swamp plume polypody was found in patches of basin swamp embedded within the large hydric hammock. Plants were observed mainly on old cypress stumps in areas with standing water.

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

Management: Swamp plume polypody is 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). Also, swamp plume polypody prefers tree bases or old stumps or logs, while the other two species of *Pecluma* are more commonly found on live oaks or limestone outcrops.

References:

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



Photo by Kimberly Gullede



Photo by Kimberly Gullede

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 Chassahowitzka WMA, blueflower butterwort was found in two wet prairies accessible via Old Bayport Road.

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



Photo by Kimberely Gullede

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.



Photo by Kimberely Gullede

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 Chassahowitzka WMA, yellow-flowered butterwort was found in one area of mesic flatwoods accessible via Old Bayport Road.

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

Management: Burn mesic flatwoods 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 Kimberely Gulledge

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. At Chassahowitzka WMA, palegreen orchids were observed in the large hydric hammock and embedded basin swamps growing on tree roots and in mucky soils.

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.



Photo by Ann F. Johnson (taken at Lafayette Forest Mitigation Park)

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 6 to 28 inches long and 1 to 1.5 inches 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 (1.5m) 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 Chassahowitzka WMA, giant orchids have been recorded in sandhill and xeric hammocks by the area biologists. FNAI surveys found six individuals widely scattered in sandhill and scrub.

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 5-foot tall flowering stalk and yellowish maroon flowers. The related wild coco (*Eulophia alta*), found from Pasco and Flagler counties southward, 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 Kimberely Gullede

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 1.5 ft 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, bottomland forest. Needle palm is a common species throughout hydric hammocks at Chassahowitzka WMA and forms a dominant shrub layer in many areas.

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

Management: Requires rich, undisturbed hardwood forests.



Photo by Kimberly Gullede



Photo by Kimberly Gullede

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).

References:

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

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 1 ft-long stems trailing over the ground from a taproot or underground stem; short (<0.5 inch), hairy, linear leaves alternate along the stem; small (0.5 inch), white funnel-shaped flowers are borne individually on short stalks in the axils of the leaves.

Flowering time: May-July

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 Chassahowitzka WMA, scrub stylisma was found in the Hammock tract and on the parcel near the main office on high sandhill where open sandy patches are common. It was also seen in ruderal areas of the Hammock tract along the edges of sandy pits kept open by ORV activity.

Management: Inconspicuous plant in open sand may be inadvertently destroyed by management activities. Use prescribed fire to maintain open sand areas.

Distinguishing features: Can be distinguished from coastalplain dawnflower (*Stylisma patens*), which also occurs in sandhills at Chassahowitzka WMA, 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:

Myint, T. 1966. Revision of the genus *Stylisma* (Convolvulaceae). Brittonia 18 (2): 97-117.

Austin, D.F. and J.N. Burch. 1992. Status of *Stylisma abdita* (Convolvulaceae) in southwestern Florida. Florida Scientist 55 (s): 99-102.



Photo by Kimberely Gullede



Photo by Kimberely Gullede

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

Tillandsia utriculata L.
Common names: spreading air-plant, giant airplant
BROMELIACEAE

Description: Large epiphytes with sizable rosettes of long, triangular leaves. Usually found on live oaks (*Quercus virginiana*) and other trees. Produces a tall flowering stalk with narrow branches and small, white flowers.

Flowering time: March-October

Habitat: Mesic hammock. At Chassahowitzka WMA, giant airplants were seen scattered in slightly drier portions of hammock, and were often found on southern magnolias (*Magnolia grandiflora*), rather than the more typical live oak host.

Range: Southern and central Florida north to Putnam County. Also in Mexico, West Indies, and Central and South America.

Management: These epiphytes are listed as endangered by the state due to their susceptibility to an introduced weevil (*Metamasius hemipterus*) which burrows into and kills leaf rosettes. Airplants often prefer host plants such as live oaks with thick ridged bark that allows for easy attachment. Protection of large oaks and other trees in hammocks promotes healthy epiphyte populations. Unfortunately, control of the exotic weevil is difficult in natural areas, although biological control agents are being researched.

Distinguishing features: This is the largest of the wild pines (airplants) in Florida. It is distinguished from large specimens of common wild-pine (*T. fasciculata*) by its broader leaf bases and its taller flowering stalks.

