Hernando County Preserves Master Land Management Plan:

Adaptive Management for Lake Townsen Preserve

Adopted by Hernando Board of County Commissioners: April 12, 2022

Introduction

This section constitutes an update to the Management Plan for the 375-acre Lake Townsen Preserve (Fig. 5.1). The prior Management Plan was completed in December 2012. The current revised Management Plan makes use of information that was not available at the time of the earlier Plan, chiefly improved mapping of soils (i.e., a revision of the NRCS soils map to depict ground conditions more accurately), current land cover, current data on species of conservation concern, and other information.

Lake Townsen Preserve is located along the Withlacoochee River in Nobleton. The property was donated to Hernando County in 1974 by the Department of Interior (DOI). The Deed requires the county to manage the property in perpetuity for public recreation and environmental purposes. The biennial reporting requirement for this donation expired in 1994. Lake Townsen was incorporated into the ESL program in 2011. The preserve has park facilities onsite, which are managed by the County Parks and Recreation Department. The ESL program is responsible for managing the natural areas of the property within the Sandhills Unit. The ESL program is currently working to restore overgrown sandhill habitat to optimum condition and to create a gopher tortoise recipient site. Here the County will relocate tortoises that have been displaced by County-owned infrastructure projects. Passive recreation such as equestrian, hiking, and birding are permitted within the restoration area on designated trails. The ESL program works cooperatively with the Parks and Rec department to maintain the trails for public use.

Lake Townsen Preserve is composed mostly of fire-excluded sandhill, which is undergoing restoration. One imperiled plant was documented on or immediately adjacent to the site in 1976, and three birds (northern bobwhite, Florida sandhill crane, red-headed woodpecker) listed as Species of Greatest Conservation Need (and the crane is also state-listed as Threatened) were observed on-site in 2021. The presence of sandhill-associated species (the bobwhite and woodpecker) provides encouraging evidence of the positive effects of restoration activities so far. Other imperiled species have been documented nearby.

The management units at Lake Townsen are as follows:

Sandhills Unit. This unit is comprised of that part of the preserve north of Lake Lindsey Rd. (CR 476) and west of Lingle Rd. (CR 39). This unit includes about 292 acres of mostly well-drained soils vegetated by longleaf pine sandhill communities. Here fire has been excluded for several decades and has been invaded and overgrown with sand pine and hardwood trees, mostly oaks. This unit will become the Gopher Tortoise Recipient site once habitat restoration is complete. Recreation facilities include about 5 miles of trails used by equestrians and hikers. These amenities will remain open to the public when the recipient site is permitted.

Park Unit. The Park Unit lies north of Lake Lindsey Rd. between Lingle Rd. and the Withlacoochee River. This unit includes about 70 acres, mostly occupied by sandhill vegetation,

a significant stand of cypress along the river, and a borrow pit east of the park site. This unit has not been managed for its natural resources due to the presence of the park is overgrown, and has been invaded by hardwoods, mostly sand laurel oak (*Quercus hemisphaerica*) and live oak (*Q. virginiana*). This unit includes the Lake Townsen Regional Park which is operated by Parks and serves the northeastern part of the County, including the communities of Istachatta and Nobleton. Park facilities were planned and developed in the 1990s.

Rock Pit Unit. This unit lies south of Lake Lindsey Rd. and includes about 13 acres which are bisected by the Withlacoochee State Trail. The unit contains an old phosphate or limestone mining pit along with overburden piles, earthworks, and concrete foundations. This parcel also includes an old, abandoned railroad bed, a functioning power line right-of-way, and a county road that provides access to several private, residential parcels to the south. The site is mostly vegetated by hardwoods.

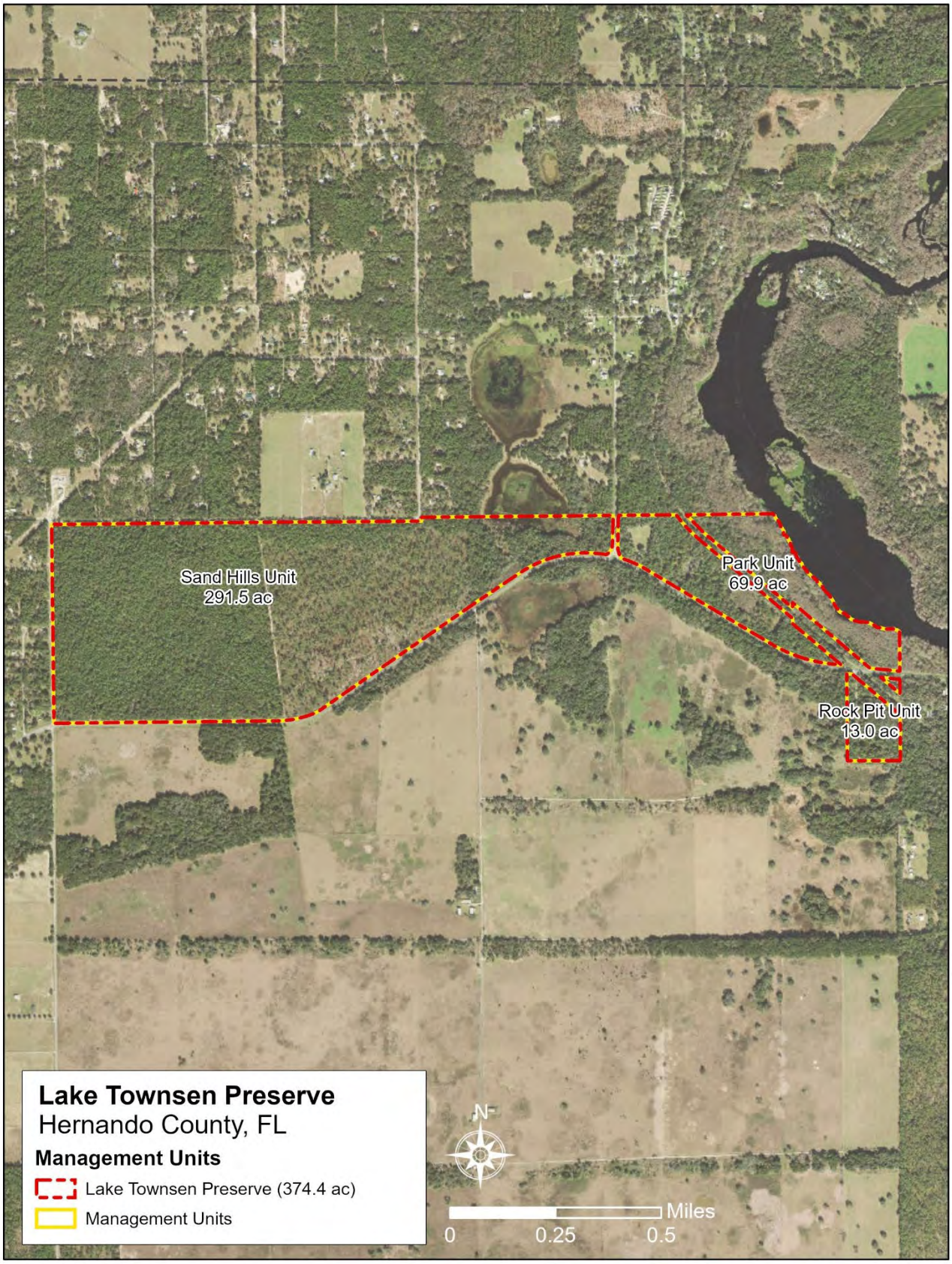

Figure 5.1. Management units for Lake Townsen Preserve, from the 2012 Management Plan.

Geography, geology, landform, and soils

Lake Townsen Preserve lies in the northeastern portion of Hernando County and is bordered on the east by the Withlacoochee River. The Preserve lies on the Brooksville Ridge (Fig. 1.4), though partly in a depression of the ridge created by the Withlacoochee River floodplain. The topography is relatively flat to gently rolling. Most of the preserve lies within the 50-80 foot (near the river) and 85-115 foot (west of Lingle Rd.) elevation classes (Fig. 5.2). The preserve is bordered on the south by Lake Lindsey Road, on the north mostly by Osage Road, and on the west by Daly Road. The preserve is bisected at its narrowest point by Lingle Road.

The underlying geology is the Ocala Limestone of Eocene age covered by undifferentiated sediments of Pliocene to Pleistocene age (Fig. 1.3). The surficial strata consist of sands, sandy loams, and sandy clays ranging from a foot or less to 10 feet or more in thickness on the Sandhills Unit. These sands were deposited as windblown, migrating dunes deposited during a dry climate after the end of the last ice age (from about 10,000 years to about 3,500 years before present). Since then, the dunes have been stabilized by vegetation, while the sands near the river (and sands carried from upriver) have been eroded, reworked, and re-deposited as riverine terrace deposits by the meandering Withlacoochee River.

Below the surface sediments lie hundreds of feet of porous limestone, with the Ocala Limestone nearest the surface, but overlain in places by scattered remnants of the younger Suwannee Limestone of Oligocene age. These limestones make up the Floridan Aquifer, which is the source for nearly all potable water for public consumption.

The Withlacoochee River is a recharge/discharge feature which recharges surface water into the aquifer during high water, while at low water it receives ground water discharged from the aquifer. Lake Townsen Preserve also contains several karst depressions. The surficial sands and sinkholes readily transmit rainwater downward to recharge the Floridan Aquifer and recharge rates are high, as indicated by the absence of surface drainage features.

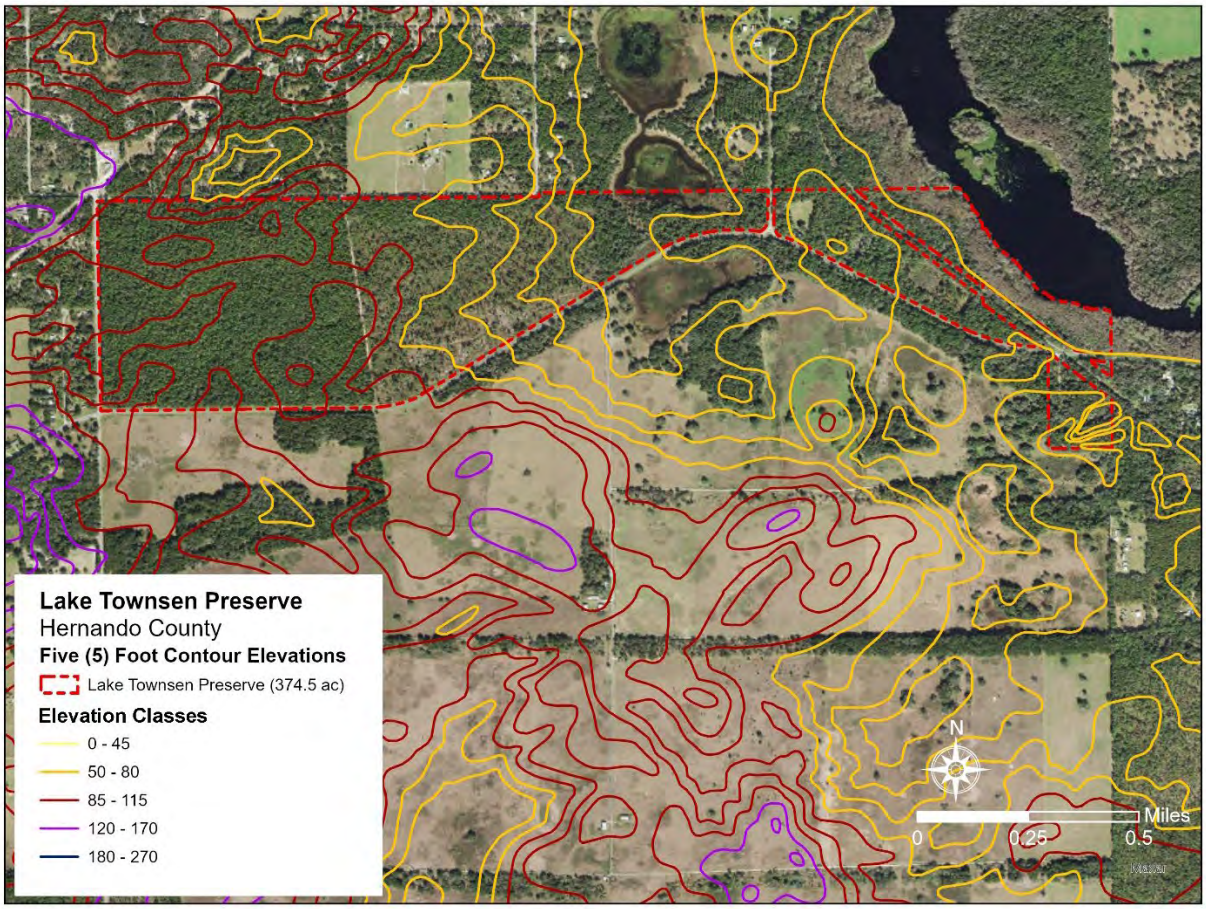

Figure 5.2. Five-foot contour elevation classes at Lake Townsen Preserve. From the 2012 Management Plan.

Four soil series dominate Lake Townsen Preserve: Lake fine sand (25.5% of the property), Candler fine sand (23.7%), Arredondo fine sand (22.1%), and Sparr fine sand (18.5%) (Fig. 5.3, Table 5.1). All of these soil types occur on slopes of 0-5% and all except Sparr have >200 cm depth to water table (Sparr has 59 cm). The Lake series consists of excessively drained, rapidly to very rapidly permeable soils formed in thick beds of sand (https://soilseries.sc.egov.usda.gov/OSD_Docs/L/LAKE.html). Candler fine sands are very deep, excessively drained, very rapidly to rapidly permeable soils on uplands. They formed in thick beds of eolian (wind-deposited) or sandy marine/shoreline deposits (https://soilseries.sc.egov.usda.gov/OSD_Docs/C/CANDLER.html). Arredondo fine sands are well drained soils that are rapidly permeable in the thick sandy surface and subsurface layers and moderate to very slow in the subsoil. They formed from sandy and loamy marine sediments (https://soilseries.sc.egov.usda.gov/OSD_Docs/A/ARREDONDO.html). Sparr fine sands consists of very deep, somewhat poorly drained, moderately slowly to slowly permeable soils on uplands of the coastal plain. They formed in thick beds of sandy and loamy marine sediments (https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SPARR.html). Other soils, which cover much less area of the preserve, are Kendrick fine sand, Micanopy loamy fine sand, Myakka-Myakka wet fine sands, and the Okeelanta-Terra Ceia association (Fig. 5.3, Table 5.1).

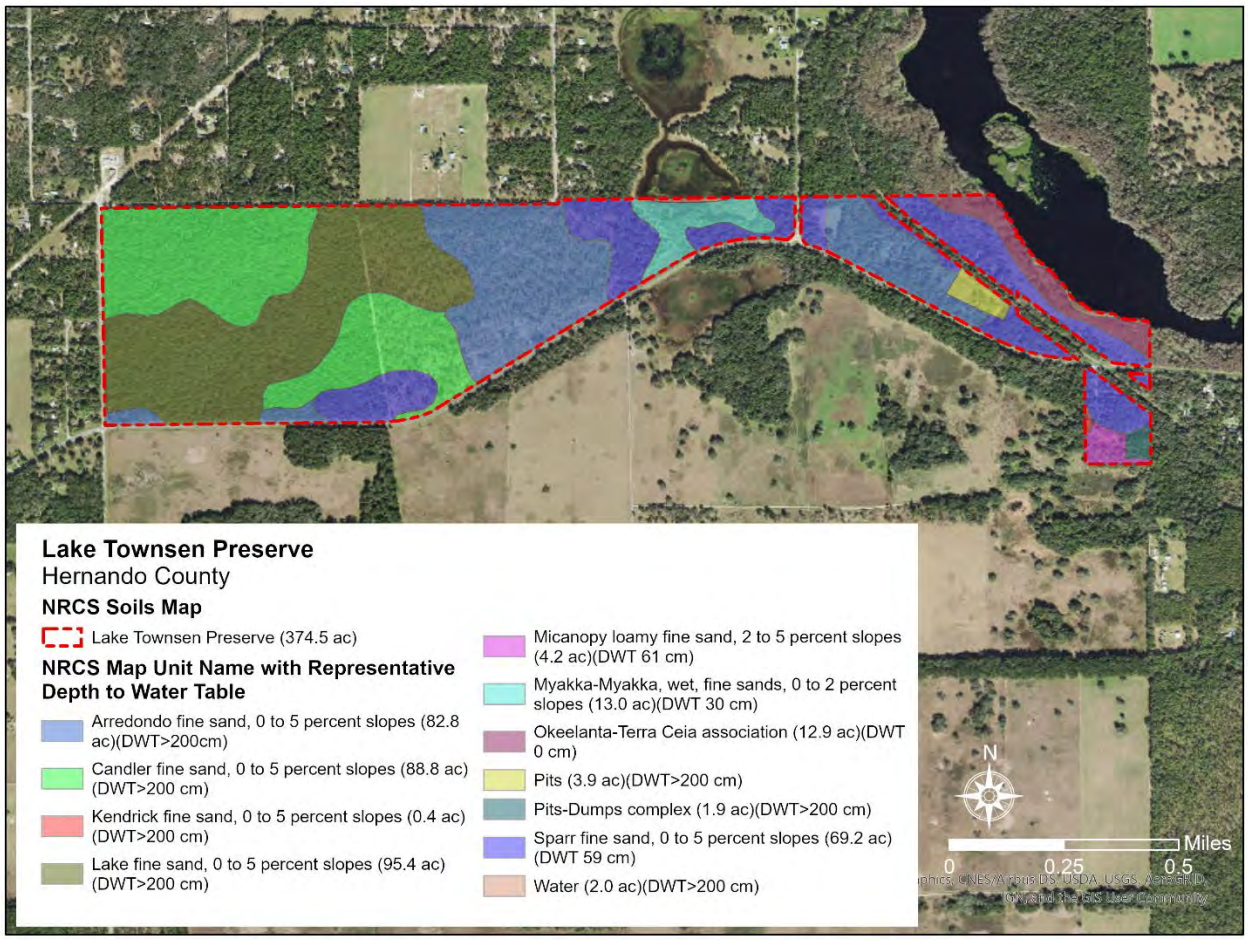

Figure 5.3. Natural Resources Conservation Service (NRCS) soil map for Lake Townsen Preserve.

Table 5.1. Soil types on Lake Townsen Preserve. The rating (in centimeters) refers to the depth to water table.

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
6	Arredondo fine sand, 0 to 5 percent slopes	>200	82.8	22.1%
14	Candler fine sand, 0 to 5 percent slopes	>200	88.8	23.7%
29	Kendrick fine sand, 0 to 5 percent slopes	>200	0.4	0.1%
31	Lake fine sand, 0 to 5 percent slopes	>200	95.4	25.5%
34	Micanopy loamy fine sand, 2 to 5 percent slopes	61	4.2	1.1%
35	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	30	13.0	3.5%
37	Okeelanta-Terra Ceia association	0	12.9	3.4%
41	Pits	>200	3.9	1.0%
42	Pits-Dumps complex	>200	1.9	0.5%
47	Sparr fine sand, 0 to 5 percent slopes	59	69.2	18.5%
99	Water	>200	2.0	0.5%
Totals for Area of Interest			**374.5**	**100.0%**

Landscape context

Lake Townsen Preserve is connected via Withlacoochee State Trail to the nearby Croom unit of Withlacoochee State Forest (which is also designated the Croom Wildlife Management Area). Less than a mile to the west is a connected/contiguous network of conservation areas: additional units of Withlacoochee State Forest, Audubon Florida's Ahhochee Hill Sanctuary, Florida Agriculture and Mechanical University's (FAMU) Brooksville Agricultural and Environmental Research Station (BAERS), FWC's Chinsegut Wildlife and Environmental Area, another small unit (Headquarters) of Withlacoochee State Forest, and Chinsegut Hill. This entire complex is part of the current conservation lands network (Fig. 1.2).

The current surrounding land use is a mixture of low-intensity agriculture, and low-density residential, including single family homes, mobile homes, and vacant lots (Fig. 5.4). The land north of the preserve is mostly wooded residential. The east end of the preserve is bordered by vacant and residential properties of Nobleton. The Rock Pit Unit is bordered on the east by low density residential and on the south and west by FAMU pasture. The remainder of the southern boundary is bordered by CR 476 and south of CR 476 is agricultural pasture formerly used by the USDA for beef cattle research and now managed by FAMU.

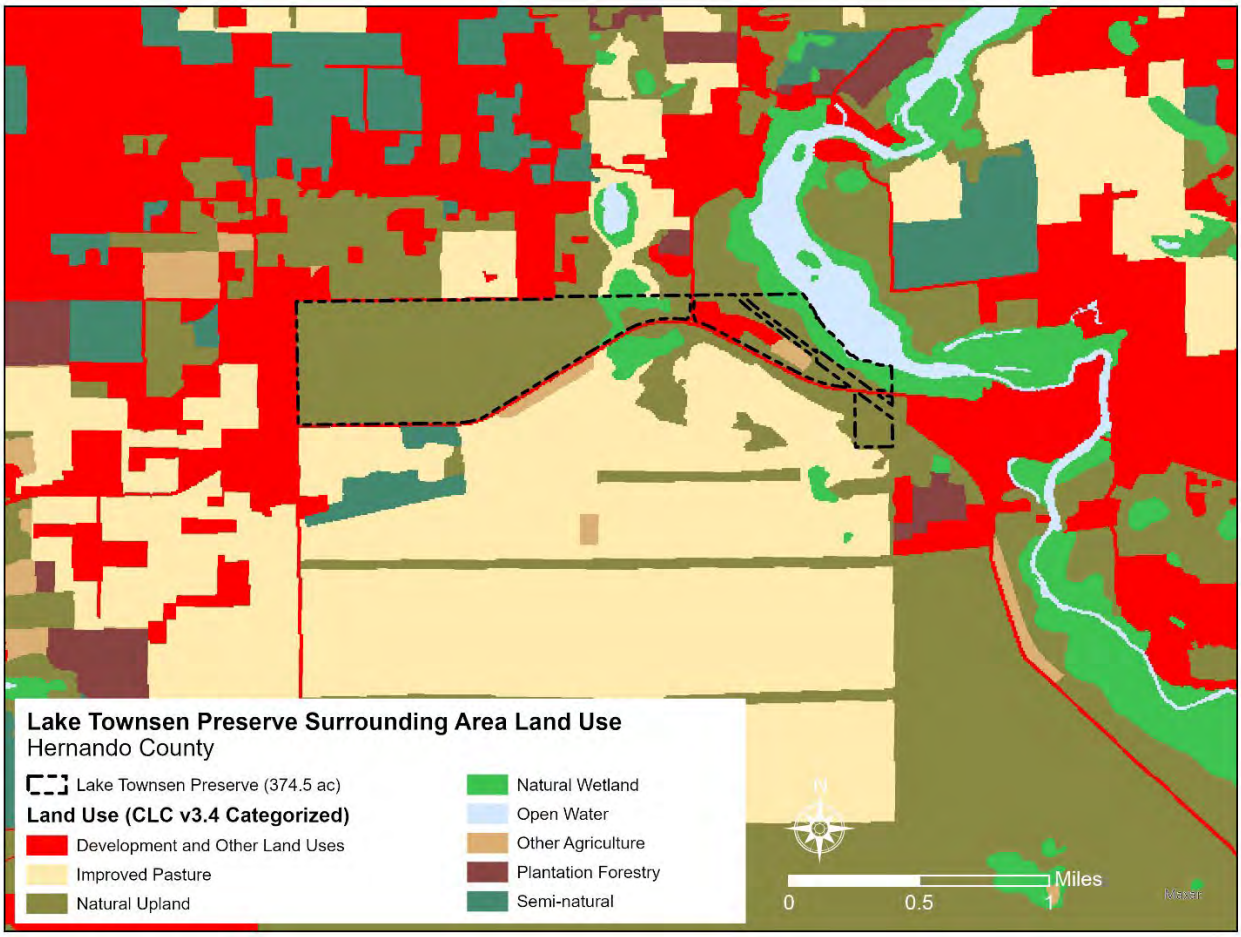

Figure 5.4. Current land use (2020) grouped to illustrate development, agricultural, and natural lands surrounding Lake Towsen Preserve.

Hydrology

Lake Townsen has two significant hydrological features, both of which are evident in Fig. 5.3: (1) The eastern boundary of the preserve is set mostly by the Withlacoochee River and its old bald cypress (*Taxodium distichum*) floodplain swamp, which is narrow in this area. (2) The northern boundary passes through the southern end of a large depression marsh, which is connected during times of high water level to another, larger depression marsh to the north. The more northern of these depression marshes is labeled on maps as Townsen Lake.

Vegetation and natural communities

The natural vegetation of the western two-thirds or more of Lake Townsen Preserve is sandhill with longleaf pine (*Pinus palustris*) in the overstory, pyrophytic oaks in the midstory, and wiregrass (*Aristida beyrichiana*) and other native perennial grasses and associated forbs in the ground layer (Fig. 5.5). The most abundant pyrophytic oak is turkey oak (*Quercus laevis*) but

there are also sand post oak (*Q. margaretiae*) and bluejack oak (*Q. incana*). Post oak (*Q. stellata*) was reported on-site in the 2012 Management Plan, but this is probably a misidentification of sand post oak since post oak is not documented south of Marion County (https://florida.plantatlas.usf.edu/Plant.aspx?id=1025). Other important herbaceous species in sandhill include chalky bluestem (*Andropogon cretaceous*), lopsided indiangrass (*Sorghastrum secundum*), gopher-apple (*Geobalanus oblongifolius*), and dozens of flowering forbs.

The sandhill community, along with mesic flatwoods and dry prairie, is among the richest in plant species of any community not only in Florida but, on a fine scale, globally. Many rare and imperiled animal species are associated with sandhill in Hernando County, including gopher tortoise (*Gopherus polyphemus*), eastern indigo snake (*Drymarchon couperi*), eastern diamondback rattlesnake (*Crotalus adamanteus*), gopher frog (*Rana [Lithobates] capito*), red-cockaded woodpecker (*Dryobates borealis*), southeastern American kestrel (*Falco sparverius paulus*), and southeastern fox squirrel (*Sciurus niger niger*).

Most of the sandhill at Lake Townsen, however, does not currently resemble the natural condition described above. Decades of fire exclusion have led to dominance of most of the site, especially the block west of the north-south trail, by mesic oaks, most prominently sand laurel oak (*Q. hemisphaerica*). The ground cover vegetation has suffered under the resulting low-light conditions, to the extent that wiregrass and other native herbaceous species are limited to small patches where small canopy gaps have persisted.

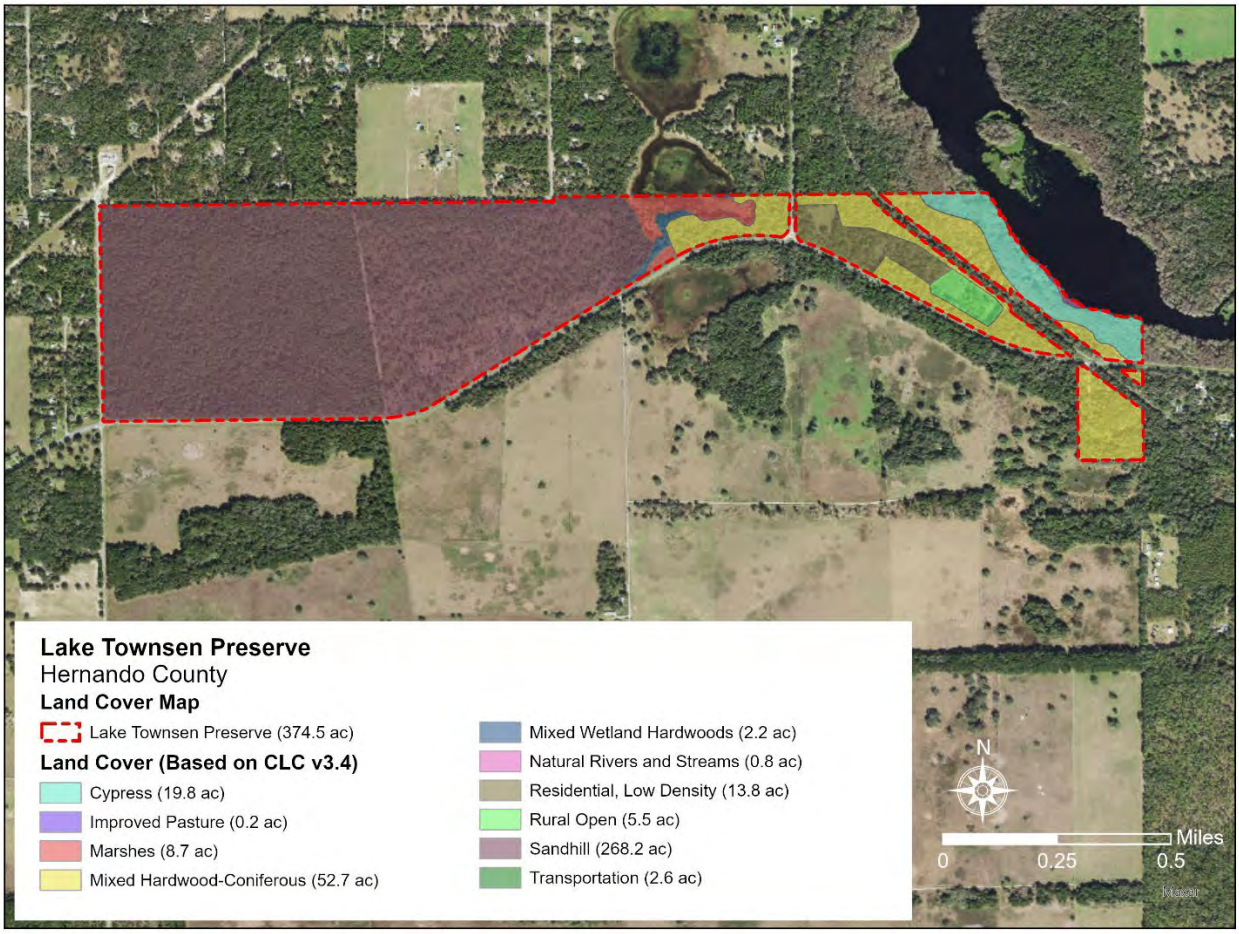

Figure 5.5. Land cover (vegetation) of Lake Townsen Preserve.

Sandhill is a state imperiled (S2) natural community and is considered by FNAI to be under-represented in Florida's conservation areas (Table 1.2). Sandhill requires fires every 1-3 years, preferably in the natural lightning fire season of late April through early July, peaking in May, to maintain its characteristic species composition and structure (Noss 2018). If fire is excluded, oaks associated with scrub or mesic hammock often invade sandhill, including sand live oak (*Q. geminata*), myrtle oak (*Q. myrtifolia*), Chapman's oak (*Q. chapmanii*), sand pine (*P. clausa*), as well as the mesic oaks, sand laurel oak, live oak (*Q. virginiana*), and water oak (*Q. nigra*). Turkey oaks and longleaf pines also become uncharacteristically dense with infrequent fire. The seasonality of fire is critical in sandhill and other fire-dependent natural communities in Florida, as fires during the natural lightning-fire season are now well demonstrated to better control growth of invading hardwoods and also promote flowering and fruit production of native grasses and forbs (Noss 2018).

When fire has been long excluded from a sandhill site, such as the western portion of Lake Townsen Preserve, for a long period of time, more than fire is needed to restore the natural community. Logging of hardwoods and herbicide applications to resprouting stems are often required to augment prescribed burning, sometimes accompanied by chopping, mulching, and

other treatments. After years of such intensive restoration treatments, frequent burning alone will usually be sufficient to maintain sandhill in high-quality condition.

Although the sandhill at Lake Townsen remains in poor condition from decades of fire exclusion (Fig. 5.6), with sand laurel oak, sand live oak, other oaks, and sand pines dense in the midstory, prescribed burning, mechanical treatments, and herbicide applications are beginning to reduce the shrub layer in treated areas. The response from native flora and fauna is positive, as evidenced by the sandhill-associated bird species noted earlier (Fig. 5.7).

Figure 5.6. Two views of fire-excluded sandhill in Lake Townsen Preserve. The tree layer is uncharacteristically dense, and the shrub layer is too high and dense with oaks, sand pine, and other species. Photos by Reed Noss.

Figure 5.7. Restoration (prescribed burning, along with mechanical and herbicide treatments) is beginning to have a positive effect in the sandhill at Lake Townsen. The shrub layer has been thinned in some areas and the herbaceous layer has been exposed. The bottom photograph shows excavation mounds of a characteristic sandhill species, the southeastern pocket gopher (*Geomys pinetis pinetis*). Red-headed woodpeckers (*Melanerpes erythrocephalus*) and northern bobwhite (*Colinus virginianus*) have also recolonized this area, and the woodpeckers are fairly abundant. Photos by Reed Noss.

As noted above, the southern portion of a relatively large depression marsh occurs along the northern boundary of the preserve (Fig. 5.8). This natural community is a shallow, usually rounded depression in a sand substrate with herbaceous or subshrub vegetation. Depression marshes usually form when poor surface drainage results in water moving downward, dissolving limestone and causing overlying sands to clump into the depressions (FNAI 2010). Depression marshes are embedded in frequent-fire uplands, such as flatwoods or sandhill, and their natural fire-return interval is around 1-5 years. When fire frequency is reduced, depression marshes are invaded by woody species such as coastalplain willow (*Salix caroliniana*), buttonbush, wax myrtle, groundsel tree (*Baccharis halimifolia*) and other shrubs (Noss 2018). The concentric zones of vegetation in depression marshes reflect the length of the hydroperiod and depth of flooding. Characteristic plant species include longleaf threeawn (*Aristida palustris*), maidencane (*Hymenachne hematoma*), peelbark St. John's wort (*Hypericum fasciculatum*), and species of yellow-eyed grass (*Xyris* spp.) (FNAI 2010).

Figure 5.8. A depression marsh along the northern boundary of Lake Townsen Preserve. Photo by Reed Noss.

Another significant natural community at Lake Townsen Preserve, though occupying only a about 20 acres along the Withlacoochee River, is floodplain swamp dominated by old bald cypress (Fig. 5.9). This stand is strongly dominated by cypress, but other trees observed include swamp tupelo (*Nyssa biflora*) and red maple (*Acer rubrum*). The 2012 Management Plan notes the additional trees water oak, slash pine (*P. elliottii*), sweetgum (*Liquidambar styraciflua*), and cabbage palms (*Sabal palmetto*) in this community, as well as royal fern (*Osmunda spectabilis*) and cinnamon fern (*Osmundastrum cinnamomeum*). A number of rare plant and animal species occur in floodplain swamps (FNAI 2010), underscoring the need for biological surveys of this and other communities at Lake Townsen.

Figure 5.9. Floodplain swamp dominated by old bald cypress at Lake Townsen Preserve. Photo by Reed Noss.

The other significant natural to semi-natural land cover type at Lake Townsen Preserve is mixed hardwood-coniferous, occupying 52.7 acres (Fig. 5.5). This community is intermixed with a public park with recreational facilities and its history is difficult to decipher. Most likely this area is former sandhill invaded by hardwoods. It is essentially a transitional zone between sandhill and the floodplain swamp, and fires would naturally creep downhill from the sandhill along this slope-moisture gradient every few years. Given the recreational development in this area today, however, prescribed burning and restoration to sandhill is probably precluded within the short term.

At-risk species and resource priorities

The list of at-risk species at Lake Townsen Preserve is short due to limited biological surveys (Fig. 5.10, Table 5.2). Only one imperiled plant, one vulnerable animal, and two animals listed as Species of Greatest Need have been documented within or immediately adjacent to the preserve.

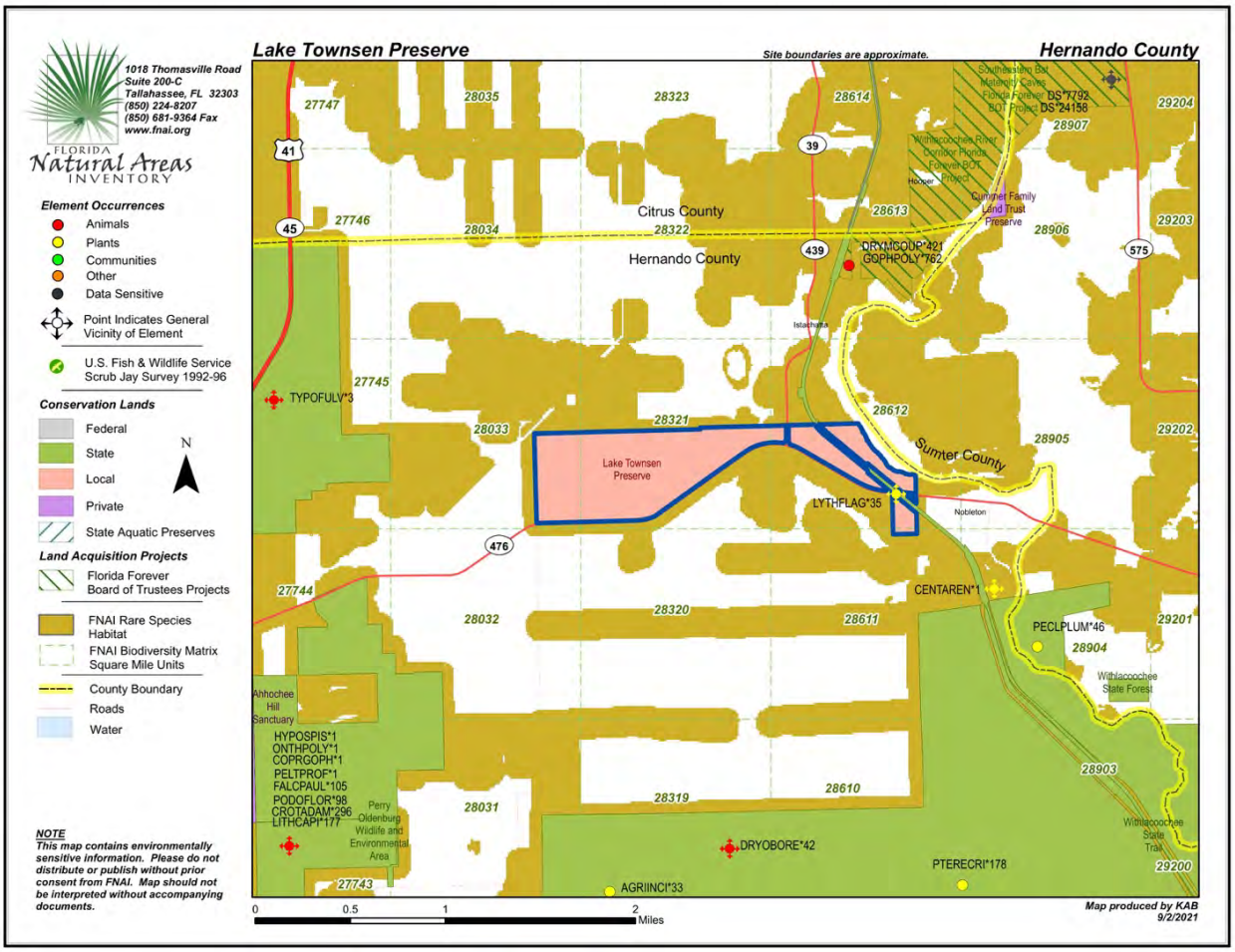

Figure 5.10. Species of conservation concern observed within or in the vicinity of Lake Townsen Preserve. Species names on occurrences are abbreviations of the scientific names in Table 5.2.

Table 5.2. Species of conservation concern with documented or potential occurrence on Lake Townsen Preserve. In the far-right column, "close to" means that a species has been documented to occur within ca. 1 mile of the preserve boundaries. The species below are of concern due to their high G-ranks or S-ranks (3 or above), presence on the federal or state list of threatened and endangered species or listing as Species of Greatest Conservation Need in the Florida Wildlife Action Plan. Note: Because there is not yet a comprehensive species or natural community inventory for Lake Townsen, additional species of conservation concern that are not on the list below likely occur within the preserves.

Species	G rank	S rank	Federal status	State status	SGCN	Present, close to, or potentially on site
Animals						
Eastern indigo snake (*Drymarchon couperi*)	G3	S3	T	FT	Yes	close
Gopher tortoise (*Gopherus polyphemus*)	G3	S3	C	ST	Yes	**On site (2021)**
Southeastern pocket gopher (*Geomys pinetis pinetis*)					Yes	**On site (2021)**

Species	G rank	S rank	Federal status	State status	SGCN	Present, close to, or potentially on site
Florida black bear (*Ursus americanus floridanus*)	G5T4*	S4				Potentially
Northern bobwhite (*Colinus virginianus*)					Yes	**On site (2021)**
Common Ground-Dove (*Columbina passerina*)					Yes	**On site (2017)**
Little blue heron (*Egretta caerulea*)	G5	S4		ST	Yes	**On site (2021)**
Tricolored heron (*Egretta tricolor*)	G5	S4		ST	Yes	**On site (2012)**
Snowy egret (*Egretta thula*)	G5	S3			Yes	**On site (2020)**
White ibis (*Eudocimus albus*)	G5	S4			Yes	**On site (2021)**
Limpkin (*Aramus guarauna*)	G5	S3			Yes	**On site (2021)**
Florida sandhill crane (*Antigone canadensis pratensis*)	G5T2	S2		ST	Yes	**On site (2021)**
Red-headed woodpecker (*Melanerpes erythrocephalus*)					Yes	**On site (2021)**
Southeastern American kestrel (*Falco sparverius paulus*)	G5T4	S3		ST	Yes	(reported in 2017, but outside breeding season)
Common ground-dove (*Columbina passerina*)					Yes	**On site (2017)**
Plants						
Lowland loosestrife (*Lythrum flagellare*)	G2	S2		E		**on or immediately adjacent to site (1976)**
Florida mountain-mint (*Pycnanthemum floridanum*)	G3	S3		T		**On site (ca. 2010)**
Plume polypody (*Pecluma plumula*)	G5	S2		E		Close
Sand butterfly pea (*Centrosema arenicola*)	G2Q	S2		E		Close
Florida spiny-pod (*Matelea floridana*)	G2	S2		E		**On site (2021)**

*Although not ranked high enough (G3 or S3 and above) to qualify for this list, we include the Florida black bear because it is a wide-ranging landscape species highly sensitive to habitat fragmentation by roads and development, with the Chassahowitzka population considered imperiled.

The gopher tortoise (*Gopherus polyphemus*), G3/S3, a state-Threatened species and a candidate for federal listing, was undoubtedly abundant on what is now Lake Townsen Preserve before fire exclusion. Now they are rare in the preserve. As correctly noted in the 2012 Management Plan:

> Gopher tortoises are a visible indicator of the health of sandhills, and an important component of the ecosystem because their burrows enable numerous other animals to survive in the relatively sparse sandhills habitat. When herbaceous groundcover vegetation is lost due to fire suppression, gopher tortoises are lost as well, along with their precious burrows. Preliminary site assessments noted a few large, active gopher tortoise burrows along edges and in small openings, and many abandoned burrows, and several empty tortoise shells. Observations indicate an old, declining tortoise population with minimal recruitment of young tortoises. Clearly the absence of fire has reduced tortoise forage and numbers. Gopher tortoise habitat can be managed using prescribed fire and mechanical treatments to improve forage and significantly increase overall tortoise numbers. Increased tortoise populations and associated increases in burrows are important components of sandhills restoration due to the use of burrows by many commensal faunal species.

The red-headed woodpecker (*Melanerpes erythrocephalis*), not of extremely high conservation concern but listed as a Species of Greatest Conservation Need in Florida's Wildlife Action Plan, has a relatively dense population within Lake Townsen Preserve as recently as spring 2021. The return of this species to Lake Townsen is an early indicator of partial success of restoration treatments. A series of bird surveys in late 2020 and 2021 added two species of conservation concern, northern bobwhite (*Colinus virginianus*) and Florida sandhill crane (*Antigone canadensis pratensis*).

Another Species of Greatest Conservation Need observed on the preserve in spring 2021 is the southeastern pocket gopher (*Geomys pinetis pinetis*). The pine snake (*Pituophis melanoleucus*), a G4/S3 species listed as Threatened in Florida, should be searched for in these areas, as it is a predator of pocket gophers and often uses their burrows.

Of the plant species of concern in Table 5.2, only two have been observed within (or immediately adjacent to) Lake Townsen Preserve: Florida spiny-pod (*Matelea floridana*) state imperiled (S2) and state-listed Endangered species, is abundant within the restoration area and the lowland loosestrife (*Lythrum flagellare*) (G2/S2 and state-listed as Endangered) was recorded within or immediately adjacent to Lake Townsen Preserve, on the roadside of Lake Lindsey Road (Rt. 476) in 1976. It is unknown whether it has been observed since, but surveys for this plant, as well as Florida mountain-mint (*Pycnanthemum floridanum*) within the preserve are needed.

It should be noted that, in addition to the species found "close" (within ca. 1 mile) to Lake Townsen Preserve, several additional species of concern have been documented within a few

miles of the preserve (Fig. 5.10). The closest occurrence is of the red-cockaded woodpecker (*Dryobates borealis*), a federally Endangered (but proposed Threatened) species (G3/S2), which has been documented about 1.5 miles directly to the south in the Croom Tract (Croom Wildlife Management Area) of Withlacoochee State Forest. After habitat restoration, Lake Townsen might be suitable for reintroduction of this species.

The statewide Critical Lands and Waters Identification Project (CLIP) shows Resource Priorities in the vicinity of Lake Townsen Preserve (Fig. 5.11) (https://www.fnai.org/services/clip). CLIP was created in 2006 in response to the Century Commission for a Sustainable Florida's call for an identification of those lands and waters that are critical to the conservation of Florida's natural resources. CLIP was produced through a collaboration of the Florida Natural Areas Inventory, University of Florida Center for Landscape Conservation Planning, Florida Fish and Wildlife Conservation Commission, and an independent Technical Advisory Group. CLIP is a GIS database of statewide conservation priorities for a broad range of natural resources, including biodiversity, landscape function, surface water, groundwater, and marine resources. The latest version of CLIP (v4.0) shows Lake Townsen in the first through third highest priority categories for biodiversity, third and fourth highest for landscape, highest to lowest priority for surface water (i.e., highest directly adjacent to the Withlacoochee River), and highest to third highest for aggregated priorities (Fig. 5.11).

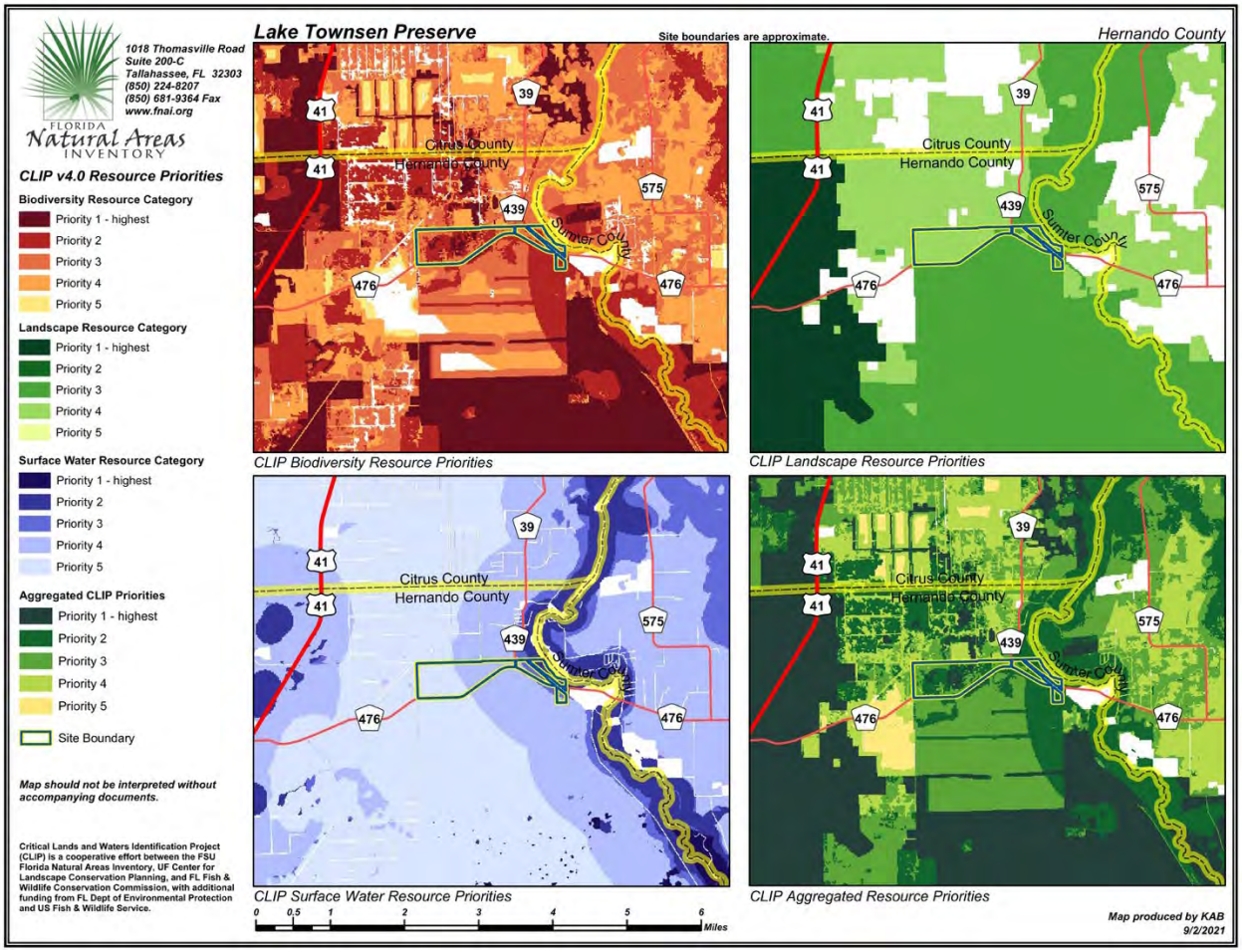

Figure 5.11. Resource Priorities in the vicinity of Lake Townsen Preserve, as identified in the statewide Critical Lands and Waters Identification Project (CLIP), version 4.

Non-native and invasive species

Non-native species have not been intensively surveyed or mapped at Lake Townsen Preserve. However, the following non-native species have been recently observed:

Bahiagrass (*Paspalum notatum*)
Cogon grass (*Imperata cylindrica*)
Natalgrass (*Melinis repens*)
Sour orange (*Citrus x aurantium*)
Skunk vine (*Paederia foetida*)
Winged (white) yam (*Dioscorea alata*)
Air potato (*Dioscorea bulbifera*)
Coral ardisia (*Ardisia crenata*)
Camphor-tree (*Cinnamomum camphora*)
Pink wood sorrel (*Oxalis debilis*)

Chinese tallow (*Triadica sebifera*)
Caesar's weed (*Urena lobata*)
Smut grass (*Sporobolus indicus*)
Red imported fire ant (*Solenopsis invicta*)

In addition, the 2012 management plan mentions signs of feral hogs (*Sus scrofa*) on site and summarizes the non-native plants as follows:

> Invasive exotic plants are present in several parts of the preserve. The Rock Pit Unit is heavily impacted with infestations of air potato, cogongrass, mimosa, camphor tree, skunk vine, and Japanese climbing fern. The Park Unit is heavily infested with cogongrass and Chinese tallow east of the park site, and along the river access road with cogongrass, air potato, and skunk vine. The Sandhills Unit has minor infestations of skunk vine and mimosa.

Undoubtedly other invasive species are present. Additional surveys and mapping of invasive non-native plants and animals are needed in order to develop a control strategy.

Site development, improvements, and access

Existing improvements

The property was previously managed entirely by the Hernando County Parks and Recreation Department (hereafter Parks) as Lake Townsen Regional Park in the County's public park system. Public recreational facilities have been historically developed using county and state funds, appropriate signs have been erected, and reporting requirements have been maintained by Parks.

In 2011, the Lake Townsen Regional Park was transferred by the Board of County Commissioners from Parks into the Environmentally Sensitive Lands Program (ESL) to become and be managed as Lake Townsen Preserve. The property includes the USDI donation comprising about 375 acres in six parcels. On September 13, 2011, the Board of County Commissioners approved designation of Lake Townsen Regional Park as a preserve under the guidelines and criteria of the ESL Program, including zoning and land use changes identifying the property as Conservation. Currently, Parks is responsible for managing and maintaining developed facilities, recreation, and infrastructure (Primarily the Park and Rock Pit units) while ESL manages sandhill unit for its natural resources with primary objective of restoration of the Sandhill. ESL provides assistance to Parks in managing invasive plants and provides recommendation on BMP's for other work impacting natural areas outside of the Sandhill Unit.

One major point of focus for ESL is restoring overgrown sandhill habitat on the western half of the preserve for creation of a State-permitted Gopher Tortoise Recipient Site. The FWC permits Gopher Tortoise recipient sites and requires specific site conditions which the site must achieve prior to issuance of a permit. Restoration and management actions undertaken in "Phase 1"

between 2013 and 2021 to prepare this Recipient Site and meet state requirements include installation of a perimeter fireline, harvest of hardwoods, mulching, basal treatment of hardwoods with triclopyr ester, foliar treatment of hardwood regrowth with triclopyr amine, basal soil treatments with hexazinone to control hardwood regrowth, herbicide treatments of invasive plants, and prescribed burning. These actions were funded in part by the FWC and will increasingly continue until the sandhill habitat is in high-quality condition, after which frequent prescribed burning alone is expected to maintain the community.

Further work of the same nature will be needed in the remainder of the Sandhill Unit (Phase 2) to restore the habitat. The adaptive management protocols from Chapter 7 will be utilized to restore these areas. Project objectives will be to meet FWC habitat site conditions allowing for expansion of the recipient site. FWC site criteria for habitat which apply to Lake Townsen are canopy cover no greater than 60%, and herbaceous ground cover no less than 30%. Intensive management to reduce the overstory and midstory will be needed, which may include but not be limited to: further timber harvest of hardwoods and sandpine, mechanical roller chopping or mulching treatment of mid-story and under-story shrubs, and herbicide treatment of re-growth and invasive plants. Supplemental planting of herbaceous vegetation may also be needed to increase groundcover if natural recruitment alone doesn't satisfy. All additional restoration efforts will consider recreation facilities (trails) and will work to ensure adequate canopy buffers, including hardwood species to provide shade for all trail users. Working with stakeholders and providing proper outreach and education will be key. More detail on adaptive management may be found in Chapter 7.

An extensive trail system has been developed thorough Lake Townsen Preserve (Fig. 5.12).

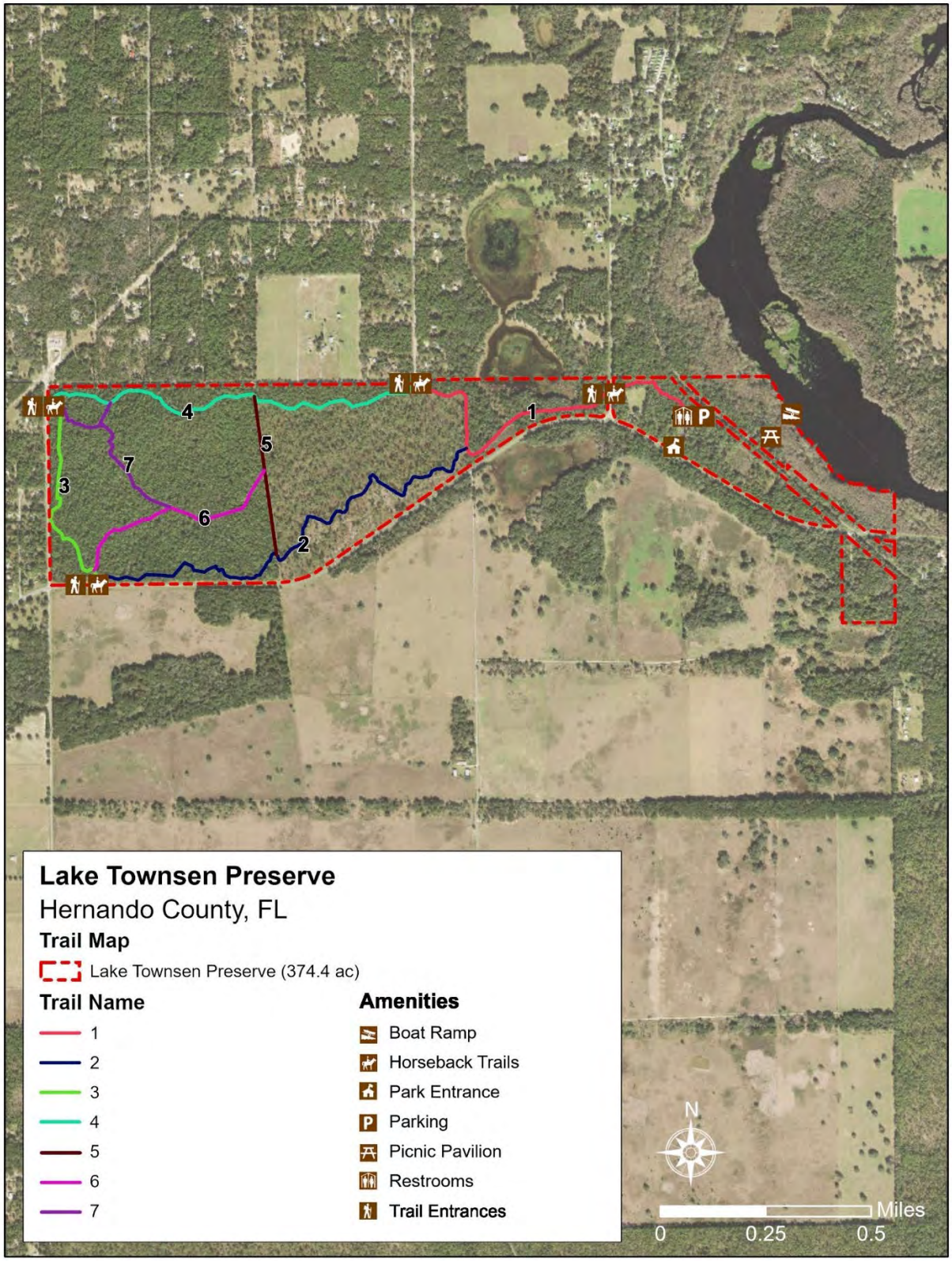

Figure 5.12. Lake Townsen Preserve trail system and recreational amenities map.

In addition to the trails, recreational facilities are present at Lake Townsen Preserve (primarily within Lake Townsen Regional Park). The Regional Park includes the following improvements:

- Public fishing pier (6’ wide and 240’ long) (Fig 5.13);
- Boat ramp on the Withlacoochee River (Fig. 5.14);
- Two lighted picnic pavilions (33’ X 55’ and 29’ X 59’), one 12’ X 24’ picnic pavilion, nineteen covered picnic tables, twenty-nine portable picnic tables, barbecue grills, and trash cans;
- Restroom building;
- Perimeter fencing;
- Potable well water serving the park area;
- Storage and maintenance building;
- Baseball field with irrigation, bleachers and fencing;
- Parking lot;
- Signage, including historical signs;
- Playground/Tot Lot;
- Sand volleyball court;
- Paved basketball court;
- Horseshoe pits;
- Security residence occupied by deputy sheriff;
- Horse facilities, including connecting trails, trailer parking, water trough, hitching rails, and a network of riding/hiking trails; and,
- Withlacoochee State Trail (Rails to Trails) segment passes through.

Figure 5.13. Public fishing pier on Withlacoochee River at Lake Townsen Preserve/Lake Townsen Regional Park. Photo by Reed Noss.

Figure 5.14. Recreationists on jet skis departing the boat launch at Lake Townsen Preserve/Lake Townsen Regional Park. Photo by Reed Noss.

Proposed improvements

No structures, roads, or additional access are planned at this time by ESL

The following proposed improvements are planned by the Parks and Recreation Department through the 5-year Capital Improvement Plan;
Fiscal year 2022: ADA Access from parking to Withlacoochee State Trail and boat ramp
Fiscal year 2023: New perimeter fencing
Fiscal year 2025: Design and engineering for pier replacement
Fiscal year 2026: Construction of new pier
Other: Updated amenities for equestrians (e.g., hitching posts, water station)

Access

Access to Lake Townsen Preserve is primarily through the parking lot within Lake Townsen Regional Park, off Lake Lindsey Road. This is the only parking lot at this time. In addition, there are three pedestrian access points to the Sandhill Unit from adjacent roads.

Easements, concessions, or leases

The Lake Townsen property was donated to Hernando County in 1974 by the Department of Interior (DOI). The Deed requires the county to manage the property in perpetuity for public recreation and environmental purposes. Specifically, the quitclaim deed included several covenants:

- the property shall be used for public park and public recreational purposes in perpetuity;
- signage must identify the property as a park or recreation area acquired from the Federal Government for use by the general public;
- the property shall not be sold, leased or otherwise encumbered without approval of the Department of the Interior;
- periodic recreational progress reports to USDI were required;
- the Federal Government may reclaim the property for national defense purposes; and,
- breach of the covenants shall revert ownership to the Department of the Interior.

<u>High-priority conservation values (summary)</u>

Conservation values at Lake Townsen will be greatly increased as restoration within the sandhill unit continues. After restoration, the sandhill community has the potential to be one of the largest in the area, exceeded only by FWC's Chinsegut Wildlife and Environmental Area to the west and the Croom Tract (Croom Wildlife Management Area) and Citrus Tract within the

Withlacoochee State Forest. The latter two tracts support some of the largest and most significant sandhill habitat within the state of Florida and could serve as ideal reference sites for the conditions sought at Lake Townsen. The floodplain swamp community along the Withlacoochee River is also significant, especially due to the large bald cypress trees.

Desired outcomes and strategiests

The desired outcome for management of Lake Townsen Preserve is all natural communities restored to or maintained in high-quality condition, both for their habitat values for native species and for an improved visitor experience.

Strategies and tasks necessary to achieve this desired outcome include:

- Vegetation surveys of all natural communities on site. These are necessary to confirm the present and probable historic natural community composition and distribution within the preserve, which in turn are necessary to refine management goals and objectives. Although the natural communities on the preserve (chiefly sandhill, floodplain swamp, depression marsh) are known and mapped, the details of their species composition are not known.

- Thorough biological inventories to create reasonably comprehensive lists of native and non-native plants, animals, and fungi present on the preserve. Surveys should be conducted using the best-accepted survey protocols for each taxonomic group. For example, breeding bird surveys should be conducted during the appropriate season, utilizing point counts and/or transects. Nest searches should be conducted for species of conservation concern. Gopher tortoises and their commensals should be surveyed using transects and burrow cameras. Other herpetofauna and small mammals should be sampled using drift fence/pitfall trap arrays with funnel traps along the fences. Plants and fungi should be surveyed using transects and time-constrained searches of appropriate habitats. All surveys should be conducted by highly trained and experienced field biologists with expertise in the taxonomic groups concerned.

- Species-specific management plans should be created for each species of conservation concern documented on site. These can be brief.

- Natural community-specific restoration and management plans should be developed for all natural and seminatural communities documented on site. The highest priority actions are those described above for restoration and management of the sandhill community on the preserve, which are required for the site to serve as recipient site for translocated gopher tortoises.

- An adaptive management approach accompanied and informed by ecological monitoring should guide all management decisions. Refer to Chapter 7 (Management Protocols, Best Management Practices, and Performance Measures) for guidance on fire management, invasive non-native species control, viability of species of conservation concern, landscape context, adaptation to climate change, and visitor management.

Specific management unit issues and objectives

These management objectives address localized issues for each individual management unit, as adapted from the 2012 Management Plan.

Sandhills Unit

- **Site Security** – This unit has received short-term fence repairs and replacement of the boundary fence will be completed in the upcoming 1-2 fiscal years. Due to numerous access points, horse gates, and fence damage, there is currently minimal site security, with infrequent wildlife poaching and vehicle trespass events. The objective is to maintain site security, improve and replace fences and gates, and post preserve boundary signs to facilitate law enforcement of County ordinances.
- **Habitat Restoration** – This unit is primarily comprised of overgrown sandhill vegetation and is undergoing extensive habitat restoration. The objectives will be to; continue to restore the sandhills to maintenance condition using adaptive management methods (identified in chapter 7) until frequent prescribed burns can be used exclusively to maintain the habitat and support the gopher tortoise recipient site which is being developed. Emphasis will be placed on removing overgrown hardwoods and invading sand pines to decrease canopy (outside of vegetative trail buffers) and increasing herbaceous ground cover.
- **Invasive Species-** Management activities can create opportunities for invasive plants to encroach. The objective will be to closely monitor and quickly treat invasive species identified within the restoration areas.
- **Trails** – This unit includes several miles of trails intended for use by birders, equestrians, and hikers alike. Due to the mixed use and potential differences in travel speeds it is expected that user groups will encounter one another on the trails. The objective is to provide trail etiquette signage and education of mixed-use facilities for continued trail use safety.

Park Unit

- **Recreation** - The Park Unit includes most of the active recreation facilities developed on the Preserve, plus the security residence that facilitates a security presence near the park site. The objective is to provide continued active and passive recreation

opportunities to the public within this unit. Improvements to this unit are ongoing and several are planned in the upcoming years.

- **Invasive Plants and Overgrown Vegetation** - This unit has several species of invasive plants which will require maintenance treatments to reduce and/or eradicate. It also includes former sandhill that has become overgrown. Due to the proximity of the recreational facilities, prescribed fire may not be feasible initially and will require mechanical treatment to reduce growth and redistribute fuels. The objective is to monitor and manage invasive plants to minimize their spread, eradicate existing infestations, and identify and treat new infestations while they are small. Additionally, treating overgrown vegetation to reduce hazardous fuels.
- **Site Security** – The fences along the north boundary and the south boundary along CR 476 are in poor condition with several cuts, breaks, and damaged gates. These fences have received short term repairs and the fence is planned to be replaced in the next 1-2 years. Preserve boundary signs will be re-installed. The objective is to maintain site security, improve and replace fences and gates, and post preserve boundary signs to facilitate enforcement of County ordinances.

Rock Pit Unit

- **Invasive Species** – The Rock Pit Unit has long ago been disturbed by a limestone or phosphate mining which left an open pit, overburden piles, and the mounting foundations for heavy machinery. This disturbed area has received several treatments of invasive plants and is in a 2-year rotation. The rotation should be maintained until noxious species are gone. The objective is to continue to monitor and manage invasive plants to minimize their spread, eradicate existing infestations, and identify and treat new infestations while they are small.
- **Site Security** – The Rock Pit Unit is bisected by a county-maintained road (Lucille's Shady Lane) which provides access to several residential properties south of the unit. An electrical power line right of way crosses the unit. The Withlacoochee Trail also bisects the unit. The unit is not fenced, and boundary signs are not posted. These access routes into and through the property combined with a lack of fencing and boundary signs contribute to a potential lack of effective site security on this unit. The potential hazards of the rock pit indicate site security should be re-evaluated. The objective is to maintain site security and protect public safety by re-evaluating the need to restrict access to the rock pit.
- **Small Size** - This unit is small, about 13 acres in size. Its natural resource value is greatly diminished by the disturbance associated with the pit onsite. Management of the unit is challenging because of the heavily impacted nature of the unit, the extent of past infestations of invasive plants, and the difficult site security issues presented by easy, uncontrolled public access from many points, and extensive boundary lines along the interior road and the Withlacoochee Trail. The objective is to consider the costs of management with respect to potential benefits in order to limit management activities to those which provide important results, with other units receiving higher priority for work and funds.