

Site Characterization

Current Conditions

The Sawmill Slough Preserve is a 383 acre site set aside as a Preserve by President John Delaney and the University of North Florida (UNF) Board of Trustees in 2006 (see the official Designation, Appendix 1.) It is the result of negotiations between members of the campus community who wanted to protect the Sawmill Slough and the administration that wanted a road to connect the main campus with the northern part of the property. The Preserve's boundaries reflect over thirty years of development on campus and future construction plans. Biologically, it is a fragment of the natural drainage area known as the Sawmill Slough in rapidly developing east Jacksonville. Despite construction to the north and south of campus, the natural flow of water through the Slough continues.

The Preserve is a narrow, fragmented tract of land that is oriented north to south along the natural wetlands. The Preserve is broken into two large sections and two smaller sections by campus roads. The large southern section follows the boundaries of the wetlands and is highly convoluted. Recreational areas and trails border and intersect the Preserve in this section. The Preserve is isolated from other large tracts of woodland in the area by limited access highways and suburban development.

The Curator of the Sawmill Slough Preserve is responsible for day-to-day management of the Preserve. The Curator reports to the UNF Sustainability Committee. The Curator cooperates with the Recreation Department and the Biology Department on numerous issues.

Audiences for the Preserve include members of the campus community and the broader public for academic and recreational pursuits. The Biology Department conducts research in the Preserve and tours classes there. The Recreation Department makes good use of the trails in the large southern section for its children's wilderness camps. In addition, visitors from outside of the UNF campus hike the trails and fish the lakes.

The Preserve will be maintained in a natural condition in a manner that maximizes natural biodiversity. The primary maintenance of the Preserve in 2012 is management of human activities, exotic species control and prescribed burns. Trail maintenance, recreation, environmental outreach and academic activities will continue in the southern section, south of the UNF Drive entry road from I-295. The Grounds Department has the primary responsibility for maintaining trails in the Preserve, excluding boardwalks which were installed by the Recreation Department. The main functions of the other sections of the Preserve are research and conservation. Recreational activity, other than hiking, is discouraged outside of the large southern section.

The North-South Road divides the two large northern-most sections of the Preserve. The road was designed to be as environmentally friendly as possible. A large animal crossing at the south end of the road was designed to serve the deer population and the occasional bear, bobcat or other large animal. Two smaller culverts to the north serve an assortment of smaller animals. Fencing on each side of the road directs wildlife to these crossings and restricts their access to the road. Plantings along the road are naturalistic in appearance and consist of locally native plant species, mostly wildflowers. (In this document, “locally native” is defined as native to Duval County and adjacent counties.) The roadside plantings are maintained as a natural prairie, with semi-annual mowing that respects the natural cycles of seed maturation and regeneration. Pedestrians can access the area via a wide walkway and a boardwalk that overlooks a detention pond. The narrow space between the road and the sidewalk will be maintained to maintain an open view between the two for the safety of pedestrians. Interpretative signs along the walk discuss the ecological communities of the Preserve.

Installed landscapes bordering the Preserve edges throughout campus will be planted with plant species native to campus to help prevent the escape of exotic species into the Preserve.

The Preserve is large enough to serve as part of the range of large animals but is not adequate to serve as the entire range of some. The Preserve may support a small population of deer. However, large predators, with the possible exception of coyote, are expected to disappear as the UNF campus and neighboring areas continue to develop. Nevertheless, the Preserve can be a home for a wide range of animals, plants and other organisms. Documentation of the biological diversity of the Preserve is underway and should continue (see Appendix 4.)

At the creation of the Preserve, upland habitats in and adjacent to the Preserve were becoming degraded due to the lack of fire. Broadleaf trees like oaks in the driest areas and loblolly bay on the moist edges crowded the natural pine canopy. This inhibits pine regeneration and shades the understory, altering its composition and degrading the habitats. Saw palmetto, gallberry and other large shrubs were beginning to dominate the understories of the pinelands. Strong shrub growth in the understory crowds out wiregrass, wildflowers and other herbaceous plants that are important components of the habitats. In particular, many of the small plants that are disappearing serve as food for the gopher tortoise, an endangered keystone species of the upland habitats. A five-year prescribed burn plan was created in 2009 and burns have been conducted annually except for a brief interruption in 2011 and 2012 due to long, exceptional drought. Prescribed burns have included the Biology Department’s gopher tortoise research areas outside of the Preserve boundaries.

Signs of unauthorized activity were apparent for a while on some of the trails, at the edges of the Preserve and in the remote northwestern corner. Damage by four-wheel drive vehicles was spreading in the northwest corner of the Preserve. In 2009, cables and locks were installed at the various openings into the Preserve to prevent access by unauthorized vehicles. In 2010, power lines and poles were removed from the easement

in the northern section. This offers an opportunity to observe natural regeneration along that utility corridor. In 2011, notes were left on several campsites in the northwest corner by UPD to announce the pending removal of these sites. A few weeks later, Biology students joined Grounds in the removal of several truckloads of trash from these old campsites. A fence was added to the open boundary on the north corner to discourage new campers and a narrow trail was cut to improve pedestrian access from the south (during dry periods.)

Biological Resources

The natural community types, as defined by the Florida Natural Areas Inventory include upland and wetland habitats. The dry upland habitat is sandhill. This is a fire-climax community that requires wildfires or prescribed burns to maintain their integrity. The natural wetland habitats are mesic and wet flatwoods, bottomland forest and streams. These areas should be burned around their edges (along their borders with the pinelands.) Natural wildfires occur in these habitats rarely, as infrequently as every one hundred years. Ponds and lakes are artificial but important habitats that contribute significantly to species diversity in and around the Preserve.

Lists of species identified on campus are in Appendix 4. The lists were begun informally in 2009. The vouchering of plant species and Biology student participation began in 2009. Specimens are sent to the herbarium of the Institute of Systematic Botany at the University of South Florida for immediate incorporation in the Flora of Florida program. Inventories of mammals, birds, reptiles and amphibians, fish, invertebrates and lichens are underway. These efforts should continue. The lists reside with the Curator of the Sawmill Slough Preserve and are presented on the Environmental Center website. Species that are threatened or of commercial interest may be excluded from public lists if any concern exists that disclosure threatens the species or the Preserve.

A study of animal crossing use in the Preserve began in 2013.

A few animal species of concern reside in the Preserve and in adjacent upland forests. They include the endangered gopher tortoise of upland habitats and endangered wood storks visit campus waterways. The alligator is a Florida “Species of Special Concern” that is found in local ponds. A fox squirrel, another “Species of Special Concern” in Florida, was observed and photographed in 2009. In 2008, a canebrake rattlesnake (timber rattlesnake) was discovered on campus for the first time. Diamondback rattlesnakes are observed rarely. Tracks of bobcat and black bear indicate that these species wander through the Preserve on rare occasions. Indigo snakes, red-cockaded woodpeckers and Florida panthers have been reported in the past but have not been observed recently.

Over four hundred plants are listed as threatened in Florida by the Florida Department of Agriculture. Most are native to south Florida. Twenty-three of these species are known to occur naturally in Duval County.

Duval County's Threatened Plants

- Asclepias viridula*
- Cleistes divaricata*
- Drosera intermedia*
- Eulophia ecristata*
- Hexastylis arifolia*
- Lilium catesbaei* *
- Listera australis*
- Lobelia cardinalis* *
- Matelea gonocarpus*
- Opuntia stricta*
- Pinguicula caerulea* *
- Pinguicula lutea*
- Platanthera blephariglottis**
- Platanthera ciliaris*
- Platanthera cristata* *
- Platanthera flava*
- Platanthera nivea*
- Pogonia ophioglossoides*
- Pycnanthemum floridanum*
- Sarracenia minor* *
- Spiranthes longilabris*
- Zephyranthes atamasco*
- Zephyranthes treatiae*

Four of these plants grow in the Preserve: the pinewoods lily, *Lilium catesbaei*, cardinal flower (*Lobelia cardinalis*), the blue butterwort, *Pinguicula caerulea*, a ground orchid, *Platanthera cristata*, and a pitcher plant, *Sarracenia minor*. An orchid, *Platanthera blephariglottis*, was documented by John Golden in an undated photo but has not been observed in recent years. In addition, *Sarracenia leucophylla* is an endangered pitcher plant species in Florida. A few specimens of this pitcher plant grow in a natural area on campus but the species has not been documented to occur naturally this far to the east in the state. It is assumed that they were introduced to this site.

Exotic pest plants are non-native plants that invade and alter natural environments. These highly competitive plants degrade the environment and reduce biological diversity. Control began in 2007. The following table lists the terrestrial exotic pest plants observed in and around the campus natural areas.

<i>Albizia julibrissin</i>	mimosa
<i>Cinnamomum camphora</i>	camphor tree
<i>Dioscorea bulbifera</i>	air potato

<i>Imperata cylindrica</i>	cogon grass
<i>Ligustrum lucidum</i>	glossy privet
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Ludwigia peruviana</i>	Peruvian primrosewillow
<i>Lygodium japonicum</i>	climbing fern
<i>Melia azedarach</i>	China berry
<i>Sapium sebiferum</i>	tallow tree
<i>Schinus teberinthifolius</i>	Brazilian pepper
<i>Solanum viarum</i>	tropical soda apple
<i>Sphagneticola trilobata</i>	wedelia

Restrictions included in the legal designation of the Preserve.

The original legal designation of the Sawmill Slough Preserve includes the following restrictions on land use in the Preserve.

“Prohibited uses of the Preserve are as follows:

Construction or placing of buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground.

Dumping or placing soil or other substance or material as landfill or dumping or placing of trash, waste, or unsightly or offensive materials.

Removing, trimming or destroying trees, shrubs or other vegetation.

Excavating, dredging or removing loam, peat, gravel, soil, rock, or other material substances in such a manner as to affect the surface.

Surface use, except for the purposes that permit the land or water area to remain predominantly in its natural condition.

Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation or fish and wildlife habitat preservation.

Acts or uses detrimental to such retention of land or water areas.

Acts detrimental to the preservation of the structural integrity or physical appearance of sites or properties of historical, architectural, archeological, or cultural significance.

Application of herbicides or pesticides.

The following are exceptions to the prohibited uses:

Prescribed burns, controlled burns and other techniques designed to protection vegetation, to improve habitat, and to comply with fire safety requirements of the Florida Division of Forestry.

Non-invasive research.

Control of invasive or exotic plant material by application of herbicides and restoration of the Sawmill Slough Preserve to natural states.

Extension and maintenance of natural trails and directional or interpretative signage.

Research Sites and Activities

Lists of known research and other activities in the Preserve are maintained by the Head Ranger and the Curator of the Preserve. Two on-going projects in the Sawmill Slough Preserve are the gopher tortoise population studies led by Dr. Joe Butler and pitcher plant and gall insect studies by Dr. Tony Rossi. Requests for non-destructive activities in the Preserve are informal, designed to facilitate and communicate rather than inhibit research. They are reviewed by the Environmental Center Ecologist and the Curator of the Sawmill Slough Preserve to protect rare species and alert researchers of possible conflicts between projects.