

FOREST STEWARDSHIP PLAN



FOR

Oakland Nature Preserve

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Description

The Oakland Nature Preserve (Preserve or ONP) was purchased with a grant from Florida Communities Trust through an initiative by the Friends of Lake Apopka. The property was deeded to the Town of Oakland and is managed by the non-profit Oakland Nature Preserve, Inc. In 2000, two additional parcels totaling 34 acres were purchased with mitigation funds from the St Johns Water Management District (SJRWMD). This increased the size of the Preserve from 95 to 129 acres. There is a Memorandum of Agreement (MOA) between the Preserve and SJRWMD which established a conservation easement to be managed by the Preserve. SJRWMD conducts annual reviews to confirm any work done at the Preserve supports the resource management goals of habitat restoration and passive recreation.

Location

The Oakland Nature Preserve is in Section 20 of Township 22S, Range 27E in west Orange County, Florida and extends from the West Orange Trail to the southern shore of Lake Apopka in the Town of Oakland.

Management Objectives

The primary management objective of the landowner continues to be ecological restoration, especially on the most recently acquired acreage. The initial plan recommended an existing planted slash pine stand be restored to natural forest. Subsequent recommendations included removal of a sand pine plantation with restoration to a longleaf pine, turkey oak, wiregrass ecosystem. Secondary management objectives include wildlife management; timber management; and soil and water conservation.

Every management objective supports the **mission of Oakland Nature Preserve:**

To promote an understanding of the fragile balance between mankind and the environment by **educating** visitors about Lake Apopka basin's ecosystems and cultural history, and by **restoring** and **conserving** the lands within the Preserve.

Summary of Management Objectives

Aesthetics

Oakland Nature Preserve was purchased to protect a mixed hardwoods wetland, restore native pine forest and sandhill community to the upland areas, remove invasive exotic vegetation, and provide a buffer between development and the shores of Lake Apopka. The additional acreage purchased in 2000 enlarged the mixed hardwoods wetland and provides an opportunity to create a longleaf pine, turkey oak, wiregrass forest and improve habitat for the gopher tortoise and other native wildlife.

Because this site is adjacent to the West Orange Trail, the Preserve is highly visible and easily accessible. This provides excellent opportunities to educate the public about forest management and ecosystem restoration. An amphitheater was completed in November of 1999 and is used extensively by visitors to

the Preserve, especially school groups and summer camp participants. A trail shelter with interpretive exhibits was constructed at the same time. New facilities include a second amphitheater, boardwalk to Lake Apopka with several shelters, museum, classroom, and administrative office.

Soil and Water Conservation

The Preserve's proximity to Lake Apopka dictates that any management practice performed comply with Best Management Practices to minimize the impact to water quality and soil stability. A freshwater seep and sinkhole on the property are being protected making it a good location to study and interpret aquifer recharge.

Wildlife

The management recommendations in this plan strive to improve the quality of and diversity in existing wildlife habitat. Active management practices involve replanting with appropriate native species, mowing on a fixed rotation, creating firelines around the property (which will serve as travel corridors, feeding or grazing areas, and transitional zones), conducting prescribed burns, and installing artificial nesting structures. Passive management possibilities include leaving snags standing for cavity nesting wildlife species and retaining brush piles on the property for cover. By combining these practices a more diverse habitat is created. This will benefit wildlife as well as the landowners by improving the property's aesthetics, increasing its ecological value, and affording additional educational opportunities.

Wildlife species observed at the Preserve include the following bird species: bald eagle, osprey, barred owl, limpkin, painted bunting, mockingbird, summer tanager, tufted titmouse, mourning dove, and various warblers. Other species of wildlife that have been seen on the property include deer, raccoon, armadillo, and many species of reptiles and amphibians. Active gopher tortoise burrows are found throughout the upland areas. After removal of the planted sand pine stand efforts began to restore the original sandhill plant community and improve the habitat for gopher tortoise and other wildlife which use their burrows.

The Preserve does not qualify as an official Florida Fish and Wildlife Conservation Commission (FWC) Gopher Tortoise Recipient Site as the existing population of gopher tortoises is too high.

In the parts of the Preserve where the goal is longleaf restoration, prescribed fire, rather than mowing on a fixed rotation or applying herbicides, should be used whenever possible. However, if unfavorable weather conditions or smoke sensitivity restrictions prevent the use of prescribed fire with the recommended frequency, these alternate management practices should be applied. Insufficient control of understory vegetation will limit the success of restoring longleaf pine on the upland sites. Best Management Practices for mowing should be used to prevent the spread of exotic vegetation within the Preserve or to other locations if the equipment is moved.

The gopher tortoise is the wildlife species that will most benefit from the longleaf pine turkey oak restoration project. The open canopy typical of this ecosystem will support more herbaceous growth for

food and shelter. In the upland portions of the Preserve, there are numerous active and inactive burrows. Those which are inactive seem to be the result of a low level of habitat management. More frequent use of prescribed burning should change this.

Other wildlife species historically found here are bob-white quail, white tailed deer, and Sherman's fox squirrel. Recruitment of these and other sandhill species will be a challenge due to the isolation of the Preserve created by Lake Apopka, adjacent subdivisions and the Town of Oakland.

The sandhill species of plants adapted to living in sandy well drained soil where fire occurrence is frequent have disappeared due to competition for light with live and laurel oaks. These species should reappear as the longleaf restoration project continues but some may need to be reintroduced through seeding or planting.

Gopher tortoise is the only threatened or endangered species observed at the Preserve. Recommendations presented in this plan are beneficial to any threatened or endangered species that may frequent the property.

Timber

Until the 11-acre stand of planted sand pine stand was purchased, there were limited opportunities for timber management. One was periodic thinning of the planted pine to remove overmature, stressed, or dead trees. Another was restoring a portion of the uplands to a longleaf pine ecosystem.

The sand pine stand was clear cut in May 2013 and efforts have begun to convert it to a sandhill plant community. Opportunities for timber management at ONP are now very limited.

Soils

The soils in the wetlands section are of two types: Samsula/Hontoon/Basinger Association and Sanibel Muck. Both are nearly level and very poorly drained. Both soils are found in freshwater swamps and depressions. Dominant tree types typically associated with these soils which are growing at the Preserve include red maple, cabbage palm, sweetgum, elderberry, sweetbay magnolia, and blackgum. Exotics such as chinaberry thrive on these soils and the efforts to eradicate this invasive plant need to continue.

The soils in the uplands section are of two types: Candler and Pomello fine sands. Candler is sloping to strongly sloping and is excessively drained. Pomello is nearly level to gently sloping and moderately well drained. Natural vegetation includes longleaf, slash, and sand pines in addition to mixed oaks. Longleaf, slash, and sand pine are suitable trees for planting with each having a moderate potential for wood production.

Table 1. Summary Description of the soil types and characteristics of the soils found on the Oakland Nature Preserve.

Soil Type	Vegetative Community	Slope	Drainage	Site Index*
Samsula/Hontoon/Basinger Assoc. and Sanibel Muck	Red maple, Black tupelo, Sweetgum	0-5%	Very poorly drained	n/a
Candler and Pomello fine sands	Longleaf pine, Slash pine, Sand pine, Oaks	5-12%	Excessively drained	Longleaf-60 Slash-65 Sand-70

*Site index is the average height of the dominant and co-dominant trees within an even-aged stand of the selected species at age 50 years.

Environmental Education

The Preserve emphasizes environmental education as a major component of all its management objectives. It is truly an outdoor learning lab and reinforces the mission of promoting the benefits of restoration and conservation and educating the public about the implementation of management practices to support these efforts.

Educational facilities at the Preserve include a nature center, classroom, boardwalk, pavilion, amphitheaters, and trail system. Most of these were added after the initial management plan was written. The Preserve staff includes a Director, Grants and Funding Coordinator, Education and Program Coordinator, two Educators, and a Volunteer Coordinator.

School groups, summer camp participants, and 25,000+ visitors a year use the preserve. Many of these visitors access the Preserve from the West Orange Trail which is located along the south side of the property. Non-profit groups such as the Audubon Society and Turtle and Tortoise Club of Central Florida use the meeting room in exchange for their volunteer work at the Preserve.

The Preserve has a Leaders in Training (LIT) Program for youth 14-17 years of age who want to gain knowledge in programming events, working with kids and improving leadership skills.

Demand for nature- based education and passive outdoor recreation has increased significantly at the Preserve due to the rapid increase in population of Orange County and the surrounding counties. Enrollment in programs such as Archery Camp, Spring Break Art Camp and Environmental Summer Camp is usually at capacity. Preserve staff is discussing expansion of these popular educational programs.

In addition to these camps, activities and events which attract students include: Class Fieldtrips and a Homeschool Education Series.

Events which attract families and adults include Night Hikes, Blue Hikes, Science Saturdays, and Story Time. Night at the Preserve, the Gopher Tortoise Run and the Oakland Heritage and Wildlife Festival are fundraising and outreach events for The Preserve.

The Preserve offers Professional Development (PDs) opportunities to educators by hosting Project Learning Tree and Project Wild workshops. The Florida Master Naturalist Program (FMNP) has been offered at the Preserve. Its mission, to promote awareness, understanding and respect of Florida’s natural world among Florida’s citizens and visitors, is a perfect fit for with the Preserve.

Trail System

The initial Forest Stewardship plan recommended trails and a boardwalk be constructed to allow more access to visitors. Six trails have been established and a 2/3-mile long boardwalk to Lake Apopka constructed. There are now 3.4 miles of trail and boardwalk for visitors to use. They allow access to all areas of the Preserve.

Any hardwood trees or woody debris which is removed from an area is converted to wood chips and used to replenish trail surfaces.

The boardwalk sustained significant damage during the 2018 hurricane season but has been rebuilt using grant funding and volunteers.

Volunteers

Since its establishment, The Preserve has relied on volunteers to fulfill its mission. They have been essential to the Preserve’s efforts to restore native vegetation, remove invasive plants, maintain the trail system, and offer opportunities for environmental education. The Preserve has been very successful utilizing experienced volunteers, training volunteer groups and recruiting new volunteers.

Summary of stands for the Oakland Nature Preserve, Orange County, Florida

Stand	Approximate Acres	Description	%Total
1	95	Hardwoods/wetland areas	74%
2	23	Upland restoration areas	18%
3	11	Longleaf pine restoration area	8%
Total	129		100%

Specific Stand Recommendations

Stand 1: Hardwoods/Wetland

This stand was dominated by an overstory of maple and gum trees. Diligent control of chinaberry over the last decade has almost eradicated it from the Preserve. This has allowed for a more diverse understory palate which now includes swamp dogwood and elderberry. Shrubs and groundcover plants such as blackberry, water hemlock, Smilax species and a variety of ferns are also evident. In the

wetlands section, aggressive removal of exotics should continue. In addition to chinaberry, other exotic or nuisance plants found within this stand include wax begonia, wild taro, air potato, cogongrass, Peruvian primrose willow, noyau vine, Boston fern, and vaseygrass. Continued control measures will create areas suitable for natural regeneration and improve growing conditions for native plant species.

Forest management activities should focus on improving wildlife habitat, maintaining a healthy forest, controlling invasive plants and creating additional educational opportunities for visitors.

This area is an excellent place to install nestboxes for birds such as owls, tufted titmouse, wrens, and woodpeckers. This will provide nesting opportunities and offer an up-close and personal wildlife viewing experience for visitors. Nesting box tip: If possible, nesting structures should be placed on metal poles to deter predators from climbing. Place no more than four nesting structures (small) per targeted bird species for the property or no more than one larger nesting structure per acre. Entrance holes should be faced east when possible to keep from overheating the box in summer. Information about building and installing nest boxes can be found at this FWC web page: <http://myfwc.com/viewing/adventures/wildlife-viewing-at-home/cavity-nesters/>. Bat houses and owl boxes have been constructed and placed within this stand. Information about building and installing bat houses can be found at this Florida Bat Conservancy web page: <http://www.floridabats.org/BatHouses.htm>. Information about building and installing owl boxes can be found at this FWC web page: <http://myfwc.com/viewing/adventures/wildlife-viewing-at-home/cavity-nesters/>.

Where necessary, firebreaks should be established to protect the property from wildfire. Firelines not only help to protect the property but provide excellent travel corridors for wildlife. Firebreaks should be maintained annually by disking during the winter months and be 12-15 feet in width. Wildlife, especially quail, will benefit from the appearance of native legumes and herbaceous vegetation in the spring. Their growth is stimulated by the soil disturbance caused by annual disking. Species such as partridge pea can be planted if natural seeding does not occur. Best Management Practices for disking should be used to prevent the spread of exotic vegetation within the Preserve or to other locations if the equipment is moved. Do not disk if soil moisture is high to avoid compacting the soil and injuring tree roots.

Stand 2: Upland Restoration Area

The overstory in Stand 2 was dominated by slash pine with some southern live oak and black cherry. The mid- and understory contained elderberry, wild grape, briars, and trumpet creeper. There was one section of immature planted slash pine and another of unimproved pasture.

Much work has been done in this area since the initial plan was written. The open area surrounding the parking lot has been planted with longleaf pine and other native specimen plants, many identified by scientific name. Most of the original planted slash pine have been removed and exotics such as chinaberry and air potato are being controlled.

To promote growth of the planted longleaf pine, controlling competing vegetation is very important. This can be done by implementing a once-a-year mowing regime or applying herbicides. The Preserve will emphasize the use of herbicides but if this becomes cost prohibitive or too labor intensive, mowing can be an equally effective management tool. It should commence in late summer (August-September) to reduce the chances of disturbing ground nesting birds during the breeding season. To help improve wildlife habitat mowing can be done in a mosaic pattern so that only a portion is mowed each year. This provides excellent nesting habitat for birds and small mammals as well as providing cover for larger wildlife species. It is critical the Best Management Practices for mowing be followed to prevent the spread of exotic vegetation throughout the property or to other locations if the equipment is taken off-site. Even if the use of herbicides is the primary method used to control understory vegetation, periodic mowing may be necessary to hasten the breakdown of dead plant material.

Felling and/or girdling have been used to thin the hardwood canopy and more sunlight now reaches the forest floor. This has improved growing conditions for the planted longleaf pine and native plants, many of which were salvaged from nearby construction sites. Increased light levels may also stimulate growth of invasive vegetation so volunteers are utilized to inspect the area, locate invasive plants and apply treatment measures.

Brush piles will provide food and habitat for invertebrates, reptiles, small mammals and other wildlife. While brush piles will enhance wildlife habitat, they are pockets of heavy fuel which may burn intensely. Caution will need to be used when prescribed burning this stand to keep fire intensity low and avoid damage to desired vegetation.

Many landowners prefer to use prescribed burning as a management tool to control understory vegetation. However, this can be a challenge when smoke sensitive areas are nearby. For the Oakland Nature Preserve, this includes Florida's Turnpike, SR 50 and nearby residential neighborhoods. Preparing a burn plan is a requirement before any authorization is given by the Florida Forest Service to burn. In the plan the specific conditions necessary to burn will be listed. Prescribed burning is one of the best management tools landowners can employ on their land as it will improve wildlife habitat by recycling nutrients and promoting new herbaceous growth. This succulent and nutritious growth is utilized by many animals including deer, turkey, rabbit, and small mammals. Many seed-eating songbird species will benefit from the seeds produced by the native plants. In addition, after a fire, there is an increase in insect production which provides forage for insectivorous songbirds such as the eastern bluebird, flycatchers, and woodpeckers. Prescribed fire will also help to reduce the fuel load in case of a wildfire.

From 2017-2019 a few small prescribed burns were conducted in this stand. This mosaic pattern of prescribed burning should continue.

Artificial nesting boxes for songbirds, bats, and owls can be placed within this stand to provide visitors with an observational view of wildlife habits. Follow the recommendations given in Stand 1 and the Appendices.

Stand 3: Planted Sand Pine

The Cra-Mar parcel was purchased in 2002 using SJRWMD mitigation funds. It is managed as a conservation easement in partnership with the District. The primary management objectives are habitat restoration and passive recreation. It contained an 11-acre stand of planted sand pine established around 1990 with an initial stocking level of 900 trees per acre. Most of the trees had diameters ranging from 7"-9". Active gopher tortoise burrows occurred in scattered opening and along the edges of the stand.

The long-term goal for this parcel is conversion to a longleaf pine, turkey oak, and wiregrass sandhill community. This will restore the forest type which historically would have occurred and improve the quality of gopher tortoise habitat.

The sand pine stand was clearcut in May 2013. Since that time efforts have been made to restore the stand to its original cover type. The most important goal initially was to control/eradicate the invasive exotic vegetation in preparation for the planting of longleaf pine seedlings and wiregrass plugs. The invasive plants included balsam apple, natal grass, Guinea grass, and citrus trees. Scattered hardwood trees, sabal palms, and stumps were removed along with frequent hand weeding.

Survival rates for the planted longleaf pine and wiregrass have been moderate to good. This is expected given the harsh conditions of low soil moisture and high temperatures on a sandhill.

Post-harvest the logging slash (tree material such as branches and tops left behind after a timber harvest) was chipped and distributed on site. In lieu of burning, this strategy can impede the growth of invasive exotic vegetation, return organic matter to the soil, and moderate soil temperatures.

Management activities such as the identification of invasive exotic vegetation should continue. Spot herbicide treatments can be very effective in combination with hand pulling. If not controlled these plants can displace more beneficial native plants and reduce species diversity. If found quickly eradication is possible. Once established, these invasive exotic plants can become difficult to control. Seed sources can be dormant seeds in the soil or ornamental or commercial plantings on adjacent properties.

It can be helpful to speak with an herbicide specialist periodically especially if the effectiveness of treatments is diminishing. A professional can provide recommendations about what herbicide to use, application rates, time of year to treat, and if subsequent applications are necessary. They may be

aware of new control methods and/or new herbicides. While herbicides can have a significant positive impact, improper application can cause extensive damage.

Invasive exotic vegetation which may become a problem in Central Florida includes air-potato, Brazilian pepper, cogongrass, Old World and Japanese climbing ferns, Chinaberry and Chinese tallow. For more information about invasive exotic plants: <http://edis.ifas.ufl.edu/fr133>

Determining the origin of an infestation can be a challenge. Following Best Management Practices such as cleaning mowing, harvesting or other equipment before it is used on site or moved offsite can help prevent the introduction or spread of invasive vegetation.

The Florida Wildlife and Conservation Commission (FWC) recommends planting longleaf pine tubelings at a stocking level of 400-450 trees per acre when creating gopher tortoise habitat. This is equivalent to planting on a 10' x 12' grid. Planting other trees such as turkey oak and bluejack oak will provide species diversity. However, consideration should be given to their susceptibility to injury from fire while they are young.

Since fire is a critical element in a longleaf pine ecosystem, prescribed burning should be used whenever possible to reduce growth of unwanted herbaceous and woody species, improve wildlife habitat, and increase soil fertility. The typical burning regime for a sandhill community is every 2-3 years during the growing season. The first burn should be within the first year of planting the trees. This will help reduce competition with herbaceous species that may out grow the grass stage of the planted longleaf pines and cause a low planting survival rate. Incorporating prescribed fire into the management regime in perpetuity will produce a stand where longleaf pine is dominant.

Given the challenges of the Preserve's location, it may not be possible to burn as frequently as recommended. In this event, applying herbicides and/or mowing will be necessary. It is important to have flexibility when determining which management practices should be implemented if weather conditions and the availability of resources prevent the preferred activity from being used.

Native groundcover introduced in the stand should be from a seed source as close to the site location as possible. Most native groundcover requires multiple plantings before its establishment is successful. The following species would provide good forage and shelter opportunities for wildlife: Partridge pea, wire grass, panicums, and andropogons. These plants are vital to species that live in the sandhill community and should do well in the sandhill soils. There are many companies that specialize in reintroducing native species in restoration areas who can assist the Preserve in this effort.

Summary of Management Activities for Stand 3**

Year**	Longleaf pine and wiregrass planting	Addition of native plants	Control of Invasive Plants	Prescribed burning	Volunteers
2014	50 Containerized LL	Native sandhill seed mix	x		ONP
2015	875 Containerized LL	Native sandhill seed mix	x		ONP and Eagle Scout
2016	1000 Containerized LL 2000 Containerized WG	Sandhill plants (rescued/donated)	x	5-6 acres	ONP and Eagle Scout
2017	2625 Containerized LL 8625 Containerized WG	Native sandhill seed mix	x		ONP and Eagle Scout
2018	3195 Containerized LL 7125 Containerized WG	Native sandhill seed mix 492 potted sandhill plants	x		ONP and Rotary Club
2019	520 one-gallon WG	Native sandhill seed mix Sandhill plants (rescued)	x		ONP

**Trail maintenance and logging slash/debris removal done every year

Since its establishment The Preserve has surpassed its original goal of conserving natural land along the shores of Lake Apopka. It is an amazing example of what can be done when the dedication of a few people inspires others to join in. Oakland Nature Preserve provides visitors a haven from urban surroundings and offers numerous opportunities for environmental education. The Oakland Nature Preserve staff and Board of Directors support the Preserve's efforts of forest stewardship and public outreach and utilize the many volunteers eager to contribute.