

Goethe State Forest
Non-native Invasive Plant Maintenance Project
Withlacoochie Regional Invasive Plant Working Group
Fiscal Year 2009-2010



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Method of Control:

Contractual services

Project Goals:

This maintenance project will target previously treated infestations of cogon grass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), camphor tree (*Cinnamomum camphora*), skunk vine (*Paederia foetida*), air-potato (*Dioscorea bulbifera*), mimosa (*Albizia julibrissin*), lantana (*Lantana camara*), natal grass (*Rhynchelytrum repens*), kudzu (*Pueraria montana*), Chinese wisteria (*Wisteria sinensis*) and winged yam (*Dioscorea alata*) as described further in the following scope of work document.

Project Location

Goethe State Forest (GSF), managed primarily by the Florida Division of Forestry and in cooperation with the Florida Fish and Wildlife Conservation Commission, is comprised of over 53,000 acres located in Alachua and Levy Counties. The Forest headquarters is located on Levy County Road 337, about a mile south of State Road 121. The project is divided into four control zones— Tidewater, Watermelon Pond East, the 121 Tract/Sandpit Tract, and the Main Goethe Roadside Cogon Grass Project (Figure 1). Zone A is the Tidewater area, which is located near the intersection of Levy County Roads 336 and 337, about 5 miles east of US Highway 19 (Figure 2). Zone B is within the Watermelon Pond East tract, located near the town of Bronson on the north side of Levy County Road 335 approximately 3.5 miles east of Alternate US Highway 27 (Figure 3). Zone C is composed of two out-parcels— the 121 Tract and the Sandpit Tract. The 121 Tract is located on the north side of State Road 121 about 5 miles east of Levy County Road 337, and the Sandpit Tract is located on the east side of Levy County Road 337 about 4.5 miles north of State Road 121 (Figure 4). Zone D is the main body of the Goethe State Forest, which consists of about 43,000 acres in five contiguous tracts. The Forest is located in southern Levy County, between Bronson and Dunnellon, and between US Highway 19 and Levy County Road 337 (Figure 5).

Project Description

Zone A: Tidewater

This control zone is a 600-acre area within the main body of GSF, and consists of mesic flatwoods, wet flatwoods, cypress ponds, and hydric hammock. The majority of the exotic plants in this control zone are within a 12-acre area that consists of an old home site, an archeological site, and an old rail bed. The exotics spreading out into the rest of the control zone surrounding this area are widely scattered at low densities, but are well documented. Within the core area is air-potato, camphor tree, kudzu, skunkvine, lantana, and a recently established infestation of Japanese climbing fern. The kudzu and much of the camphor tree to be treated through this project is within a large area of arrow bamboo (*Pseudosasa japonica*), which is not a part of this control project, but is being managed by GSF staff with a mow/burn/herbicide plan. This site has an extensive treatment history. In 2002, the air-potato

covered 4 acres at 90% cover, but through DEP Task Assignment WR-039 and annual in-house follow-up treatments by GSF staff, this infestation has been reduced to less than half of what it once was. The kudzu has been treated thrice in the last five years, and the camphor and skunkvine have both been treated twice. Some of the large camphor trees have been pushed and burned by local staff along side of the mowing/herbicide treatments of the bamboo.

Zone A: Tidewater

Species	Acres	Density
Air-potato	2.2	15%
Japanese climbing fern	0.526	15%
Skunkvine	0.001	5%
Camphor tree	8	5%
Kudzu	0.7	7%
Lantana	0.003	2%

Zone B: Watermelon Pond East

This control zone is a 460-acre area within a 1,946-acre out-parcel consisting of sandhill and xeric hammock. The cogon grass is scattered in dense clumps along the northern boundary of the parcel. This cogon grass infestation was treated by GSF staff in 2006 prior to the grant treatment. The winged yam as well as the majority of the mimosa at this control zone is growing in a disturbed area at the south end of the parcel. The mimosa is clumped in a 0.7-acre area here, with several individuals widely scattered throughout the rest of control zone. There is also a 12-acre Japanese climbing fern at the south end of the control zone that has been and will continue to be treated through the Lygodium Strike Team program and not a part of this control project. A small infestation of Chinese wisteria was located in the vicinity of the winged yam, but was treated by GSF staff in 2005. Any new growth of wisteria should also be treated.

Zone B: Watermelon Pond East

Species	Acres	Density
Cogon grass	0.112	20%
Mimosa	0.794	5%
Winged yam	0.1	25%
Chinese wisteria	0.01	15%

Zone C: 121 Tract & Sandpit Tract

This control zone is a 500-acre area spanning over two out-parcels that total 882 acres, consisting of high quality sandhill habitat. The natal grass is linearly scattered along firelines and boundary lines, and is starting to spread off of these lines and into the pristine sandhill habitat. The natal grass found on the Sandpit Tract was treated in 2006 by GSF Staff prior to the grant treatment. The mimosa is densely clumped in two spots, and several individual trees are widely scattered throughout the control zone. There are also two small clumps of cogon grass on the 121 Tract.

Zone C: 121 Tract/Sandpit Tract

Species	Acres	Density
Natal grass	3.5	2%

Mimosa	0.033	10%
Cogon grass	0.0003	10%

Zone D: Main Goethe Roadside Cogon Grass Project

This control zone spans the entire main body of GSF to perform maintenance treatments for over 250 individual clumps of cogon grass and over 100 natal grass plants found along roads and trails. The Forest roads and trails have been thoroughly surveyed by the Division of Plant Industry in 2005 and GSF biologists in 2006, 2007 and 2009, and all known infestations have been GPSed, flagged, and treated; initially by GSF staff, then by grant contractors, and again by staff. The majority of the cogon grass infestations are small clumps about three square feet in size, but do range up to clumps of 500 square feet. Natal grass is found mixed in with cogon grass along a total of 2 miles of road in three separate infestations, and was also treated by GSF staff in 2006 and 2009. Cogon and natal grass have been found and treated in a road material stockpiling site at the intersection of US121 and Sand Ridge road. The area along sandridge road where this spoil was used has been monitored and treated by GSF staff.

Zone D: Main Goethe Cogon Project

Species	Acres	Density
Cogon grass	5.5	1%
Natal grass	3.5	1%

Work Specifications

All herbicides will be applied in compliance with label rates and requirements, using a low-pressure spray to reduce damage to non-target plants. All vegetation will be left to decompose on-site. The contractor will furnish labor, herbicide, adjuvant, and dyes. The site manager will provide some labor, equipment, and fuel as described below. The site manager can provide three locations for the contractor to fill tanks with water and mix herbicides. The site manager's desired treatment methods and chemicals to be used are listed below for each control zone, however alternative methods may be considered after consulting with the contractor.

Zone A:

Air-potato, kudzu, skunkvine, and lantana will be controlled at this site with a basal bark application of triclopyr ester (Garlon 4). Japanese climbing fern will be controlled with a foliar application of a glyphosate (RazorPro) and metsulfuron (Escort) mix. Poodle cuts will not be necessary for the Japanese climbing fern as this is a recent infestation and most of it is clumped on the ground, with some climbing vines up to four feet high. Camphor tree will be controlled with a cut-stump treatment of triclopyr amine (Garlon 3a). The site manager will provide the labor, equipment, and fuel necessary for cutting the camphor trees, while the contractor will provide the equipment and labor for treating the cut stumps. Ground-disturbing activities are not permitted within the archeological site, so specific parking areas will be shown to the contractor during the site visit.

Zone B:

Cogon grass will be controlled with a foliar application of a glyphosate and imazapyr (Arsenal) mix. The site manager will provide the equipment and labor to mow the cogon patches two to four weeks prior to treatment. Mimosa and winged yam will be treated with a basal bark application of triclopyr ester. Chinese wisteria will be treated with a cut-stump application of triclopyr amine.

Zone C:

Natal grass will be treated with a broadcast foliar application of imazapic (Cadre). Mimosa will be treated at this site with a basal bark application of triclopyr ester. Cogon grass will be treated with a foliar application of a glyphosate and imazapyr mix. A four-wheel drive vehicle is needed to navigate some roads on the 121 Tract, so an ATV will be provided for the broadcast treatment of natal grass.

Zone D:

Cogon grass and natal grass will be treated with a foliar application of a glyphosate and imazapyr mix. Although the majority of these infestations will be spot-treatments, there are two sites that require broadcast application. An ATV with a 25-gallon tank and broadcast sprayer will be provided for the broadcast applications. The site manager will also provide the equipment and labor to mow the cogon patches two to four weeks prior to treatment.

Treatment Methods & Chemicals

Species	Method	Herbicide	Rate	Adjuvants
Air-potato	basal bark	triclopyr ester	per label	oil, dye
Japanese climbing fern	foliar	glyphosate + metsulphuron	per label	dye
Skunkvine	basal bark	triclopyr ester	per label	oil, dye
Camphor tree	cut stump	triclopyr amine	per label	dye
Kudzu	basal bark	triclopyr ester	per label	oil, dye
Lantana	basal bark	triclopyr ester	per label	oil, dye
Mimosa	basal bark	triclopyr ester	per label	oil, dye
Winged yam	basal bark	triclopyr ester	per label	oil, dye
Chinese wisteria	cut stump	triclopyr amine	per label	dye
Cogon grass	foliar	glyphosate + imazapyr	per label	dye
Natal grass - Zone B	foliar	imazapic	per label	dye
Natal grass - Zone D	foliar	glyphosate + imazapyr	per label	dye

Other Requirements and Provisions

Any known endangered plants or otherwise sensitive areas within control zones will be shown to the contractor during the site visit and will be clearly marked by the site manager prior to treatment operations.

Project Time Frame

Treatments may begin as soon as possible if the conditions are appropriate. Zone A and Zone D are part of the Goethe Wildlife Management Area, which is open to regulated hunting and fishing. Contracted workers will be encouraged to wear blaze orange vests or hats if herbicide applications are taking place in these areas during hunting season.

Funding Information

Detailed funding information is included on the attached DEP Budget Justification Form. Matching funds will be available and in-kind contributions will be made. Labor, equipment and fuel for felling camphor trees during cut-stump treatments will be provided. Labor, equipment and fuel will be provided for mowing cogon grass prior to treatments. An ATV with a 25-gallon tank and broadcast sprayer will be provided, including fuel, for necessary broadcast applications in Zone C and Zone D.

Project Title and Site Manager: Goethe State Forest; Jared Beauchamp & Charlie Pedersen

**Upland Invasive Exotic Plant Removal
Reimbursement Program *** Budget Justification Form**

Contract ☒ In-House ☐

Federal Employer Identification
(FEID) # 59-28883965

Combination (explain below) ☐

Matching Funds Available (identify source)	Control Dollars
Division of Forestry; G.S.F. Budget	\$5,000.00

Total Matching
Funds \$ 5,000.00

#1 Total of In-Kind
Contributions
(see #1 on Budget Worksheet) \$ 1,022.00

#2
Total Matching Fund Contribution
(see #2 on Budget Worksheet) \$ _____

Total In-Kind
Contributions/Matching
Funds for Project \$ 6,022.00

Total DEP Funds Requested \$ 3,700.00

Total Cost of
Project \$ 9,722.00

Notes/Explanations
\$5,000 will be available as a cash match from the Goethe State Forest budget
for FY09-10 to be put towards this project as needed.

Conservation Land Qualification

The Goethe State Forest is listed as a FNAI Conservation Land. The NATC Gulf Hammock Conservation Easement, managed by the Suwannee River Water Management District, is adjacent to GSF and connects it with Waccasassa Bay Preserve State Park, managed by the DEP.

Ability to Maintain Site After Initial Treatment

Invasive exotic plant control is performed by GSF biologists and park rangers. In previous years we have had adequate equipment and personnel to handle most of our infestations of exotic plants, however in the last year we discovered an exponential increase in cogon grass and natal grass infestations. In past fiscal years the majority of our exotic plant control efforts were spent on surveying and treating cogon grass, forcing several other high-priority projects to be put on hold. GSF annually spends estimated \$1,500 in budgeted expense funds and labor on cogon grass control alone. In FY 2007/2008 USDA cogon grass control grant funds were used to upgrade spray equipment (purchasing a skid tank for a pickup to deal with the extensive cogon/natal grass road infestations) and imazapyr. With the implication of this proposed project we expect to be in a position where we can return to handling all of our annual follow-up treatments through in-house efforts and still have time for restoration projects.

Restoration Plan for Native Plants

In Zone A, the eradication of Japanese climbing fern will allow us to use prescribed fire again in order for a native seed bank to naturally regenerate the infested area. The removal of kudzu and camphor trees will allow us to more thoroughly conduct our project involving the eradication of arrow bamboo at this site. In Zone B, controlling the winged yam and mimosa will prevent these two invaders from becoming established in the adjacent sandhill restoration site that was burned and then planted with longleaf pine this year. In Zone C, a plan is in place to restore the old firelines that are now covered with natal grass by spreading native seed of wiregrass and possibly lopsided Indian grass. In some portions of Zone D, road improvements and thus timber operations have been halted due to the problems with cogon grass. Timber harvests are necessary in some dense parts of the forest to restore a more favorable basal area for red-cockaded woodpecker recruitment.

Threatened or Endangered Species or Habitats

The Goethe State Forest has an extensive old-growth longleaf pine forest, which houses one of the largest populations of red-cockaded woodpeckers (G3S2) on Florida state lands. Other listed animal species found within or adjacent to control zones for this project include gopher tortoise (G3S3), Sherman's fox squirrel (G5T3S3), gopher frog (G3S3), Florida mouse (G3S3), and bald eagle (G5S3). Rare and listed plants found on GSF include spoon-leaved sundew

(G5S3), pondspice (G3S2), Florida spiny-pod (G2S2), giant orchid (G2G3S2), small ladies'-tresses, scarlet ladies'-tresses, lacelip ladies'-tresses, long-lip ladies'-tresses, lesser ladies'-tresses, little ladies'-tresses, and hooded pitcher plant. The following natural communities are found within the control zones of this project: sandhill (G3S2), xeric hammock (G3S3), mesic flatwoods (G4S4), hydric hammock (G4S4), and wet flatwoods (G4S4).

Public Education Program

Information is posted at the trailhead kiosks to remind recreational visitors of the scope of invasive exotic plant problems in Florida which shows them photos and identification tips for commonly found exotic plants, and describe the efforts GSF staff make to eradicate the infestations found on the Forest. In addition, interpretive signs are posted in specific control zones with details on the goals and historical progress of the invasive exotic plant removal projects. When we host visiting tour groups, invasive exotic plant issues are typically discussed and will continue to be a message that we try to convey to Forest visitors. An active outreach program is focused on equestrian trail users by giving them interpretive material and speeches during trail rides. This is especially important since hay can be such an important exotic vector.