



Upland Invasive Exotic Plant Management Program

**Fiscal Year 2003-2004
Annual Report**



This report was prepared to provide an annual assessment of the control achieved and the funding necessary to manage non-native (exotic, alien) invasive plants on public conservation lands in Florida. The authority of the Department of Environmental Protection (department) as addressed in §369.251, Florida Statutes, extends to the management of all upland invasive exotic plants on all public conservation lands, including land owned by federal, state, and local government entities. The Upland Invasive Exotic Plant Management Program on Florida's public lands involves complex operational and financial interactions between state, federal, and local governments, as well as private sector companies. Therefore, a summary of the entire management program on public conservation lands and associated funding contracted or monitored by the department during Fiscal Year 2003-2004 is included in this report.

In Dedication

This Annual Report represents 100,000 acres of invasive plant control conducted at a cost of \$8,000,000. We dedicate this work, to which Mark himself was fully dedicated, to the people of Florida in his name.



Mark Conrad Zeller

1967 - 2004



A kind gentle man and loving father passed suddenly from this life. He is deeply missed by his family, friends, and co-workers. We remember his generous nature, his willingness to freely share his time with others, his quiet but keen sense of humor, and his warm sincere smile.

Mark Zeller truly loved the outdoors and was an extremely dedicated biologist and avid woodworker. He loved killing weeds, and relished his role in enabling conservation land managers to remove invasive plants from their properties. Despite his youth, Mark knew a world of experience and adventure. He lived all over the United States, attended college in Alaska (drove there on a motorcycle with his girlfriend and eventual wife, Lisa), and volunteered on two separate occasions with animal rescue efforts related to Alaskan oil spills. He also spent six months in Antarctica studying seal behavior. When crisis struck with the first of four hurricanes to hit Florida last year, Mark was one of the first department employees to travel to central Florida to help with the relief effort.

Our Uplands Program office at DEP is a small close-knit group — a family. Mark was with us for some 10 years. He was our friend and able co-conspirator. He would bring little tokens of friendship back from vacation trips; for example, he brought Drew a Willie Nelson CD entitled “Old And In The Way” after one trip. A quart bottle of “Arrogant Bastard” ale showed up after a trip to California. Then there were the numerous field trips when things would go particularly “well” ... we’d just sit in the truck and Mark would finally break the silence to say “Okay, word of this doesn’t leave this truck!”

He was the best and we sorely miss him.

Over one million acres of Florida's conservation lands have been invaded by alien (non-native, exotic) plants such as melaleuca, Brazilian pepper, Australian pine, and climbing ferns. However, invasive alien plants respect no boundaries and millions of acres of private land are also affected. This ongoing alien invasion has degraded and diminished what remains of Florida's natural areas, affected agricultural production, and reduced outdoor recreation and ecotourism. The Bureau of Invasive Plant Management (BIPM) is the designated lead agency in Florida responsible for coordinating and funding the statewide control of invasive aquatic and upland plants in public waterways and on public conservation lands. Florida's aquatic plant management program is one of the oldest invasive species control programs in the world, with its beginnings dating back to the early 1900s. With the later addition of the upland invasive plant control program, BIPM oversees the largest and most successful invasive plant management effort of its kind in the United States.

Upland Invasive Exotic Plant Management Program

The Upland Invasive Exotic Plant Management Program was established in 1997 to address the need for a statewide coordinated approach to the terrestrial (*vs.* aquatic) invasive exotic plant problem. The "Upland Weed" Program incorporates place-based management concepts, bringing together regionally diverse interests to develop flexible, innovative strategies to address weed management issues at the local level. The Upland Weed section of the bureau funds individual exotic plant removal projects on public conservation lands statewide. Projects are considered for funding based upon recommendations from eleven Regional Invasive Plant Working Groups.

The mission of the Upland Weed Program is to achieve maintenance control of invasive exotic plants like Australian pine (*Casuarina* spp.), melaleuca (*Melaleuca quinquenervia*), Brazilian pepper (*Schinus terebinthifolius*), and Old World climbing fern (*Lygodium microphyllum*) on public conservation lands. These and over one hundred other alien plants have invaded at least 1.5 million acres of Florida's 10 million acres of public conservation lands, affecting an ecotourism economy valued at \$8 billion annually. Once invasive plants become established in native habitats, eradication is difficult, if not impossible, to achieve; therefore, continuous maintenance of invasive non-native plants is needed to sustain wildlife habitat and recreational opportunities while preserving native plant communities on public conservation lands.

Upland invasive weeds infested approximately 15% of public conservation lands statewide in 2004 and are currently under maintenance control on 212,000 acres. BIPM expended approximately \$6.7 million controlling 105,129 acres of upland weeds on 129 publicly managed areas during FY 2004. Public land managers are responsible for maintenance control of areas initially treated through state funding. BIPM provided herbicide to assist land managers with maintenance control at a cost of \$224,257 for FY 2004.

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Florida's Upland Invasive Exotic Plant Management Program

With its subtropical climate, an island-like topography, and the pressures of a rapidly expanding human population, Florida is especially vulnerable to invasion by non-native (introduced, exotic, alien) species. Florida is listed along with Hawai'i, California, and Louisiana as one of the states with the highest number of non-native species, both plants and animals. The South Florida region alone is home to more introduced plants than any other region within other states. Thirty years ago, a Smithsonian publication described tropical Florida as a “biological cesspool of introduced life.”

While South Florida has been hardest hit by this invasion of alien species, the problem is statewide in scope. Compounding the problems caused by this ongoing invasion is a lack of awareness by citizens and tourists alike about the invasiveness of non-native species introduced into the Florida environment. Florida covers 36 million surface acres, with over 10 million acres in public ownership owned and managed for natural resource protection. Invasive exotic plants have invaded approximately fifteen percent of these public conservation lands, affecting an ecotourism economy valued at nearly \$8 billion annually.

When our state was first named *La Florida*, its profusely blooming foliage was composed of a panoply of colorful native plants. Today, exotic species comprise roughly one-third of Florida's plant life. Many of these newer botanical residents support the economically important agricultural and horticultural industries; however, there are always a few bad apples in any barrel (tropical soda apple, for one). An estimated ten percent of the thousands of non-native plants in Florida are *invasive*, that is plants that pose a threat to natural systems. Invasive exotic plant species, lacking control by their native diseases and predators, spread explosively and outcompete and replace vital native species on public and private land. The resulting infestations diminish wildlife habitat, decrease recreational resources, and negatively affect the natural health and economy of the state.

Some invaders change the composition, structure, and/or processes of native plant and animal communities. Most easily observed are the obvious examples of displacement: the invader forms a dense one-species stand (monoculture) where once there was a rich assembly of native species, resulting in a loss of biodiversity. A number of populations of Florida's rarest plants have been lost in this fashion. Other invaders modify habitat processes, for example, by changing the natural flow or percolation of water or by increasing the chance of fires in habitats not adapted to fire. Once invasive plants become established in native habitats, eradication is difficult, if not impossible, to achieve; therefore, continuous maintenance of invasive exotic plants is needed to sustain wildlife habitat and recreational opportunities while preserving native plant communities on public conservation lands.

The 1997 Legislature charged the Bureau of Invasive Plant Management with the task of creating a program to bring invasive exotic upland plant species under maintenance control. A maintenance control program, as defined in §369.22, F.S., is “a method for the control of exotic plants in which control techniques are utilized in a coordinated manner on a continuous basis in order to maintain the plant population at the lowest feasible level.”



Florida lies in three climatic zones, tropical, sub-tropical, and temperate, and thus possesses a wide array of natural communities. Unfortunately, invasive exotic plants have found their way into every natural habitat from coastal beach dunes (above left) to interior pine flatwoods (below left). Fortunately, the Upland Invasive Plant Management Program possesses the ability to control invaders wherever they are found (above and below right).



The Upland Invasive Exotic Plant Management (Upland Weeds) Program was established within the bureau in 1997. To implement its statewide cooperative strategy, the Upland Weeds program formed Regional Invasive Plant Working Groups (working groups) comprised of federal, state and local government agencies, non-governmental organizations (NGOs), and other interested stakeholders, in 11 areas of the state and encompassing all of Florida's 67 counties. The Upland Weeds Program funds individual invasive exotic plant control projects on public conservation lands throughout the state, based upon the recommendations from the working groups. The Upland Weeds Program melds these regional priorities into an integrated process that provides the needed support infrastructure (e.g., control method development, research results, public education, technology transfer, policy, oversight, and funding) to conduct an efficient and cost-effective statewide control program.

Funding for the Upland Invasive Exotic Plant Management Program is provided through the Invasive Plant Management Trust Fund as set forth in Section 369.252(4), Florida Statutes, which reads: "Use funds in the Invasive Plant Control Trust Fund as authorized by the Legislature for carrying out activities under this section on public lands. Twenty percent of the amount credited to the Invasive Plant Control Trust Fund pursuant to §201.15(6) shall be used for the purpose of controlling nonnative, upland, invasive plant species on public lands." The trust fund provided nearly \$7 million to fund upland weed control projects for Fiscal Year 2004.

As addressed in the DEP 2000-2005 Agency Strategic Plan, the long-term program goal is to reduce infestations of upland invasive exotic plants on public lands by twenty-five percent by 2010, based on estimated 1995 levels of 1.5 million acres. The 2001 Upland Invasive Exotic Plant Management Program Strategic Plan sets forth specific strategies to implement the program's long-term goal. These strategies include:

- ◆ Implement an integrated control program that uses chemical, mechanical, and biological control technologies. Modify implementation procedures as appropriate to specific public lands to assure the greatest protection for natural systems;
- ◆ Improve the general public's awareness, sensitivity, and responsiveness to the values of natural systems and the threat of loss of biological diversity from invasive plants, by developing and promoting a comprehensive educational program;
- ◆ Inventory and map the distribution of invasive exotic plant species through use of a Geographic Information System database by the year 2010; and,
- ◆ Research the introduction and use of appropriate biological control agents and provide procedures and facilities for their cultivation, dissemination, and evaluation including monitoring and field assessments by the year 2010.

Melaleuca and Brazilian pepper are two well known weeds in Florida, once covering more than one million acres of public conservation lands. The Florida Exotic Pest Plant Council (FLEPPC) lists 67 exotic plants found on public conservation lands as Category I pest plants and another 60 species as Category II. FLEPPC Category I species are those known to have damaged natural areas, while Category II species are not yet implicated in direct damage to ecosystems. Often, there may be a long lag time (years or decades) before an exotic species shows its true colors. Plants like Old World climbing fern (*Lygodium microphyllum*) and air-potato (*Dioscorea bulbifera*) have expanded their range in recent years. Like melaleuca in the mid-1990s, these and other plants are on the verge of overwhelming parks and forests across the state.

Florida's Ten "Most Unwanted" Invasive Exotic Plants for 2004		
Plant Treated	Acres Controlled in 2004	% of Total Project Acres
<i>Melaleuca quinquenervia</i>	66,428	62.1
Brazilian pepper	20,218	18.9
<i>Lygodium microphyllum</i>	3,973	3.7
Caesar's weed	1,295	1.2
tropical soda apple	1,283	1.2
Australian pine	1,074	1.0
cogon grass	909	0.8
<i>Lygodium japonicum</i>	578	0.5
wetland nightshade	472	0.4
Chinese tallow	381	0.4

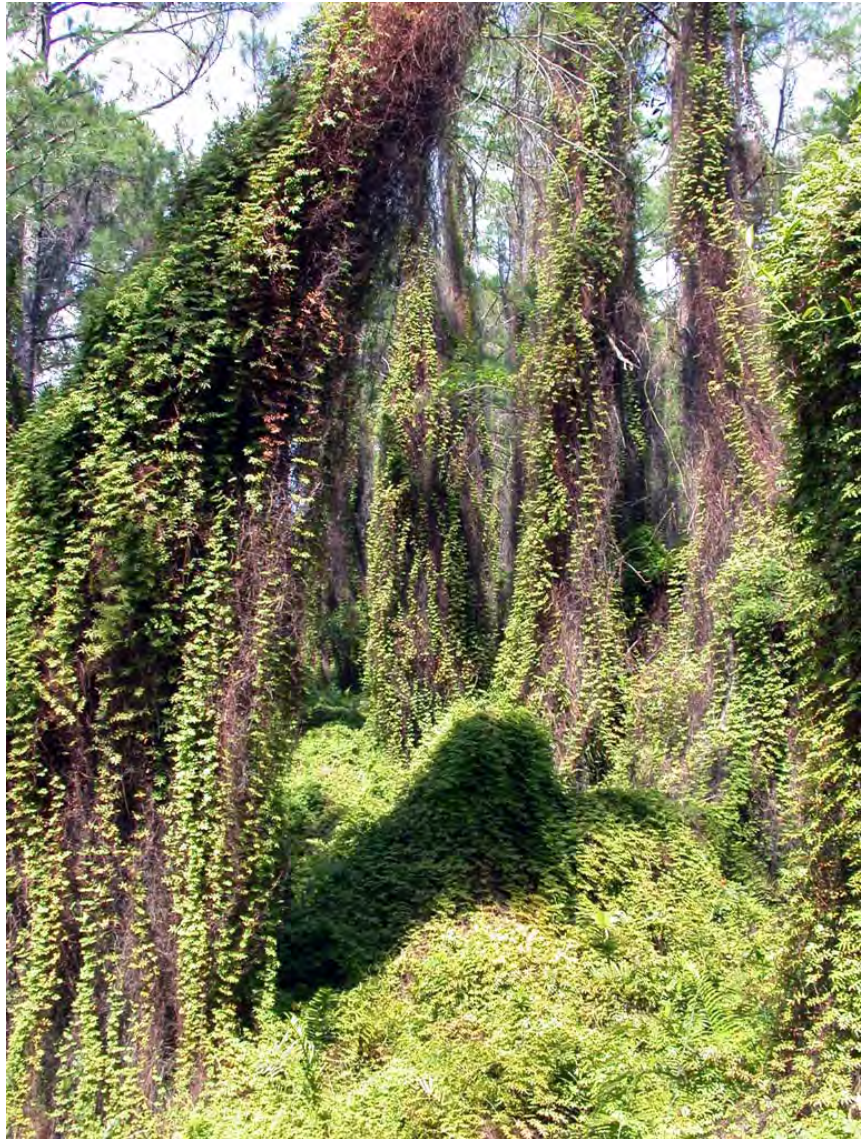
Table 1. Although the Upland Weeds Program controlled nearly 100 different invasive species in 2004, based upon total acres treated these 10 were the worst.

Nearly \$30 million have been spent bringing 213,000 acres of upland weeds under maintenance control since the inception of the Upland Weeds Program. In that time, the program has assisted public land managers on 310 federal, state, and county managed areas located in 51 different counties by funding 534 invasive plant control operations treating 90 recognized weed species. The Uplands Program cooperated on projects with 5 federal, 5 state, 3 regional land managing agencies, 23 counties, 17 cities, and one community college. Another 110 projects are expected to be funded during FY 2005. Public land managers are responsible for the continued maintenance control of areas originally treated with bureau funding. The bureau has further assisted land managers by providing herbicide for maintenance control, at a cost of over \$2 million since beginning this service in FY 2001.

The Upland Weeds Program has clearly met the need for a comprehensive plan that incorporates broad and consistent strategies, reduces agency inconsistencies, and takes into account differing agency mandates to achieve the goal of controlling invasive plant species in Florida. The program is not only applicable to and coordinated with state and federal efforts to manage invasive species, but has also been used as a model for other states and countries in developing their invasive species management plans.

Old World Climbing Fern - New World Menace

Old World climbing fern (*Lygodium microphyllum*) is an aggressive invader of moist habitats in southern Florida. This rapidly spreading fern invades undisturbed natural areas and often completely covers native vegetation by forming a dense canopy. The fern, first found established in Martin County in 1965, now infests more than 200,000 acres in southern Florida. Although primarily a threat to public conservation areas, Old World climbing fern infests residential landscapes, horticultural nurseries, tree plantations, and other managed lands near infested natural areas. The fern's ability to grow up and over trees and shrubs and then form a dense canopy allows it to smother entire plant communities, thus reducing native plant diversity. Old World climbing fern can grow in bald cypress stands, pine flatwoods, wet prairies, mangrove swamps, and Everglades tree islands. Some Everglades tree islands are so completely blanketed by the fern that it is impossible to see trees and other vegetation beneath the fern canopy. The fern poses management problems for both wildfires and prescribed burns because it can serve as a "fire ladder" that carries fire into the tree canopy, killing native trees. Scientists estimate that, left unchecked, Old World climbing fern could infest more than 2 million acres in southern Florida by 2014.



Old World climbing fern at Corbett Wildlife Management Area.

To address the growing threat of Old World climbing fern the Bureau of Invasive Plant Management began in FY 2005 an additional service to public conservation land managers throughout the state. The Bureau provides a contractor to visit individual conservation lands to provide control of small (up to ten acres) incipient populations of *Lygodium* species. This effort targets populations too large for in-

house control efforts but too small to compete at the regional working group level. The *Lygodium* Strike Team is comprised of experienced weed control specialists under contract with the Bureau. Contractors conduct either foliar applications or "poodle-cuts" (cut vines 4-5 feet up from the ground and apply herbicide to the rooted portion of the plant).



Bluefield Natural Area in St. Lucie County had a significant climbing fern problem (above). After treatment by Bureau contractors (below), the problem became a little more manageable. (See also the project report in the Treasure Coast Working Group section.)



The Bureau has a “Weed Alert” for Old World climbing fern available at <http://www.dep.state.fl.us/lands/invaspec/2ndlevpgs/pdfs/Lygodium%20microphyllum.pdf>, or in print by request.

Herbicides, biological controls, manual (hand-pulling), mechanical, and physical controls are used separately or in combination to slow the spread of invasive plants. Herbicides are pesticides designed to kill plants. They are a vital component of most control programs and are used extensively for invasive exotic plant management in Florida. Herbicides are target-specific and are much safer in use than pesticides intended for insects or other animals. Herbicide application methods include:

Foliar. Herbicide is applied to the plant with aerial or ground based equipment. Foliar applications can be either directed or broadcast. Broadcast applications are used when damage to non-target vegetation is a minimal concern or when a selective herbicide is used. A newer method is “lacing,” a low-volume selective foliar application in which only the leaves of the target vegetation are treated.



basal bark application

Basal (or “basal bark”). Herbicide is applied directly to the bark around the circumference of the tree up to fifteen inches above the ground. The herbicide is absorbed through the bark.

Frill, or girdle (or “hack-and-squirt”). Cuts are made into the cambium around the circumference of the tree. Herbicide is then applied to each cut.



girdle treatment

Cut stump. After cutting and removing large trees or brush, herbicide is sprayed or painted onto the cut surface. The herbicide is usually concentrated on the cambium layer on large stumps.

Mechanical removal involves the use of a bulldozer, Brontosaurus mower, Hydroaxe, or other specialized logging equipment to remove woody plants. Intense follow up with other control methods is essential after the use of heavy equipment because disturbance of the soil creates favorable conditions for regrowth from seeds and root fragments, and re-colonization by other invasive non-native plants. Mechanical removal may not be appropriate in natural areas because of disturbance to soils and non-target vegetation. However, it is the only effective way to quickly remove dense monocultures of species such as Brazilian pepper and Australian pine.



Brontosaurus mower

Many plants are prevented from becoming serious weeds in their native range by a complex assortment of diseases, insects, and other herbivorous organisms. When a plant is brought into a new environment with favorable growing conditions, the absence of these regulating species may allow non-native plants to become serious weeds. “Classical” biological control seeks to locate insects from a plant’s native range and import host-specific species to attack and control the plant in regions where it has become a weed. This approach has a proven safety record and has been effective in controlling a number of weeds around the world.



melaleuca weevil

Prescribed burning and water level manipulation are cultural practices that are used in management of pastures, rangeland, and commercial forests, and, in some situations, may be appropriate for vegetation management on natural areas. Some species, such as melaleuca and cogon grass, respond positively to fire, so prescribed burning, if used, must be coupled with another control method.

Invasive Plant Control Projects Bureau of Invasive Plant Management

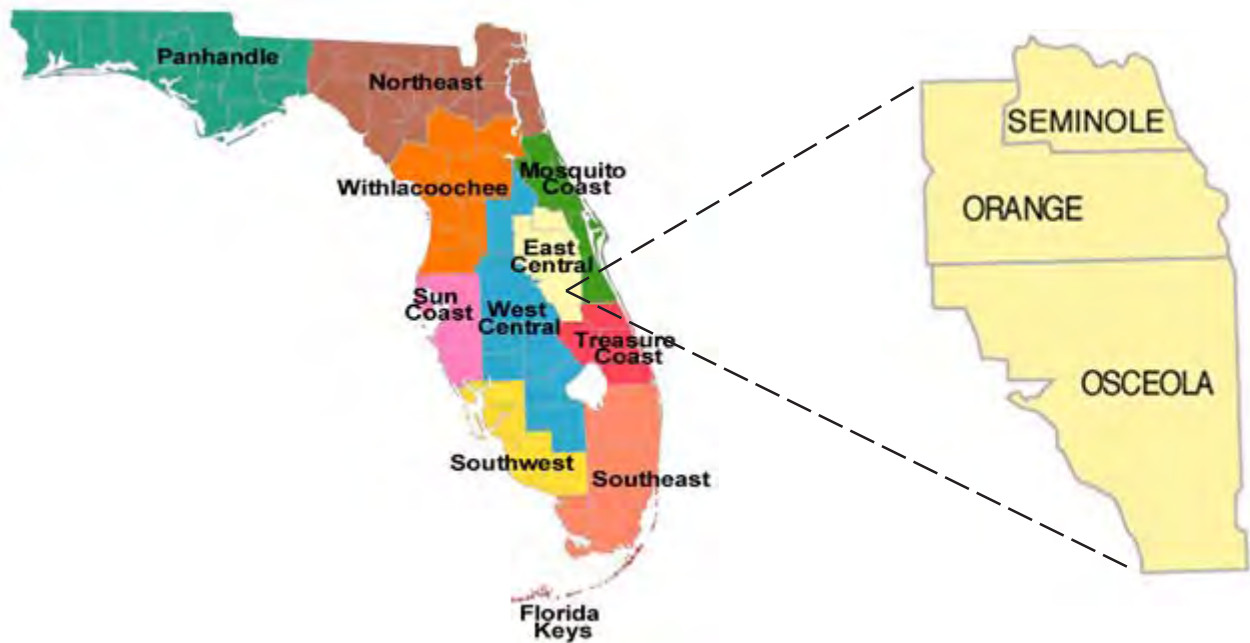
The Regional Invasive Plant Working Group brings together stakeholders in a geographic area for the purpose of combining expertise, energy, and resources to deal with common weed problems. The Bureau relies on the expertise within each working group to set regional control priorities based upon severity and potential threat to existing public conservation lands. This is accomplished by the working group reviewing and ranking control project proposals. The eleven working groups are made up of over 500 members representing federal, state, and local government public conservation land managers, non-governmental organizations, and private landowners across the state. Program liaisons have been designated for each working group to facilitate proposal review and coordination with the state program staff.

The following project reports are arranged alphabetically by working group, then by county. Each report references the PCL (public conservation land) where the work occurred, a file number, the size of the project area, and total Bureau funds expended. When additional funds were provided this is noted in the body of the report. Most projects are solely funded by the Bureau. Descriptive information for each project was current as of the date of submission by the land manager to a working group. Control data are derived from daily progress reports submitted by the contractor performing the work. The control method(s) is agreed upon by the site manager, contractor, and program staff before work begins.

Each project description also contains a table indicating the plants treated, control method(s), and herbicide(s) used. In this table, “herbicide” indicates the brand name of the chemical used. Contractors use various mixtures, depending upon factors such as site/soil conditions, plant densities, proximity to water bodies, or personal experience. When two herbicides are mixed this is indicated with a “+” sign; e.g., “Rodeo+Escort.” When two different mixes are used to control the same plant on a project, for example Garlon 4 is used in one area and Roundup is used in another, this is indicated with a “/” sign; e.g., “Roundup/Garlon 4.” There is no one “right” mix for any plant under all conditions. Mention of any brand name does not denote a recommendation for that product.



East Central Regional Working Group



The East Central Regional Working Group liaison is Mr. Gregg Walker, Seminole County Natural Lands Program, 1101 East First Street, Sanford, Florida 32771-1468, phone: 407-665-7466, fax: 407-665-7367, e-mail: gwalker02@seminolecountyfl.gov

Three Lakes Wildlife Management Area

County: Osceola

PCL Size: 61,845 acres

Project ID: EC-025 51.5 acres \$55,528.76

Project ID: EC-032 30.0 acres \$16,689.43

Project Manager: Fish & Wildlife Conservation Commission
 Bryan Ames, Biological Scientist II
 1231 Prairie Lakes Road, Kenansville, Florida 34739
 Phone: 407-436-1818, Fax: 407-436-1137
 E-mail: bryan.ames@fwc.state.fl.us

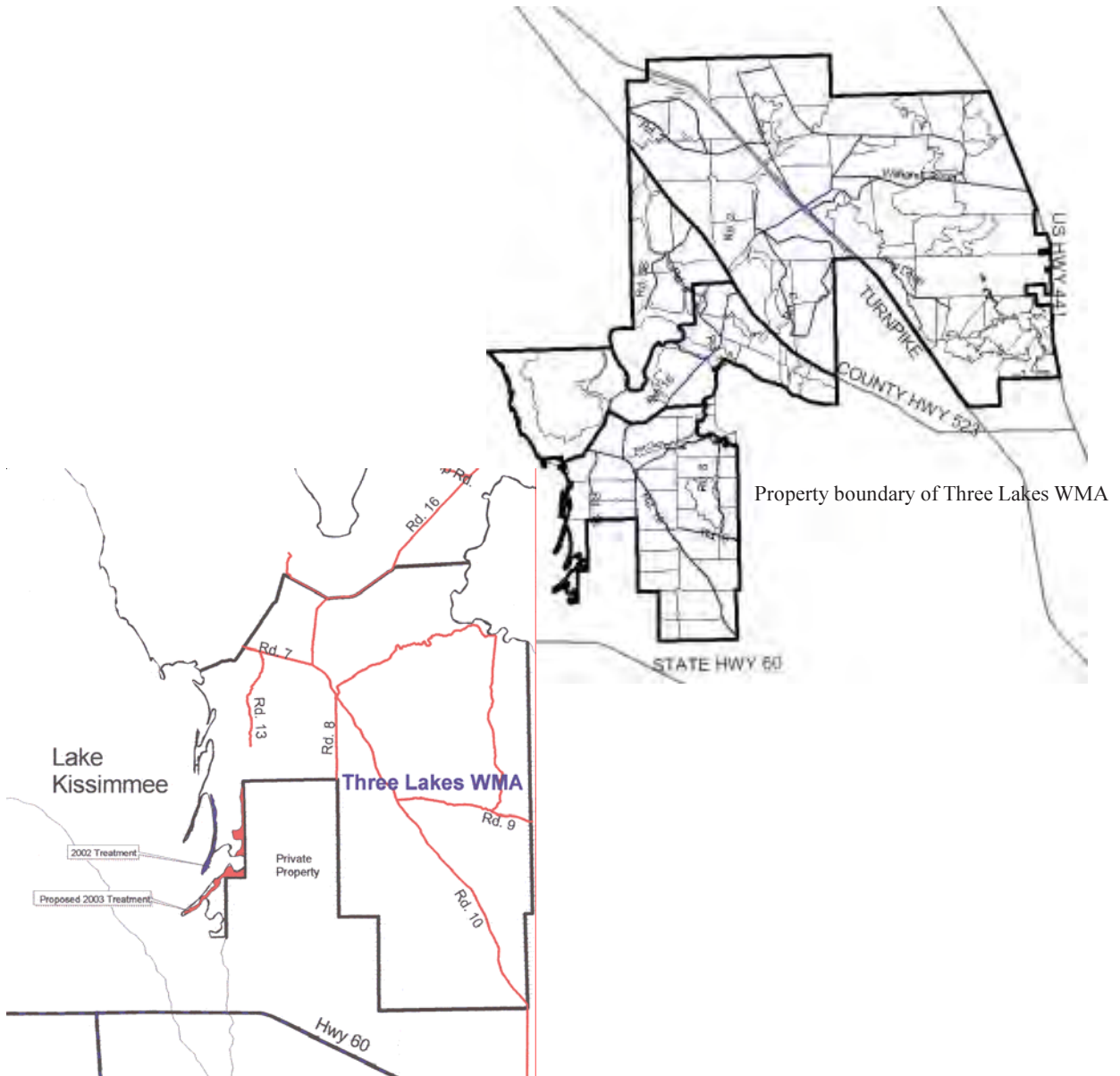
Three Lakes Wildlife Management Area is located in southern Osceola County along the eastern shore of Lake Kissimmee, and surrounding portions of Lakes Marian and Jackson. The WMA contains significant acreage of contiguous longleaf pine flatwoods, oak hammocks, cypress strands, and grassy wetlands, as well as over 12,000 acres of the globally imperiled dry prairie natural community. The property also supports one of peninsular Florida’s largest red-cockaded woodpecker (*Picoides borealis*) populations, and a large population of Florida grasshopper sparrows (*Ammodramus savannarum floridanus*). Smaller numbers of Florida scrub jay (*Aphelocoma coerulescens*), Audubon’s crested caracara (*Caracara plancus audubonii*), wood stork (*Mycteria americana*), and other species occur throughout the year. Several protected plants occur on the property, including the state threatened *Pteroglossapsis ecristata* and the state endangered *Calopogon multiflorus*.



Lygodium microphyllum

Contractors conducted two projects at Three Lakes WMA. The first controlled Brazilian pepper scattered along the eastern shore of Lake Kissimmee in small discontinuous patches of moderately dense coverage. Three Lakes staff provided in-kind service by treating infrequent occurrences of tropical soda apple, Chinese tallow, air-potato, and cogon grass. The second project targeted a 6-acre infestation of Old World climbing fern in a cypress strand located in the Oak Island burn unit on the Hwy 441 unit of Three Lakes WMA.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	cut stump/basal	Garlon 3A/4
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Roundup
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Roundup
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Rodeo



Triple N Ranch Wildlife Management Area

County: Osceola

PCL Size: 15,391 acres

Project ID: EC-026 15 acres \$23,072.31

Project ID: EC-033 20 acres \$92,000.00

Project Manager: Fish & Wildlife Conservation Commission

Brandon Rutledge, Biological Scientist III

5600 Crabgrass Road, St. Cloud, Florida 34773

Phone: 407-498-0991, Fax: 407-498-0994

E-mail: brandon.rutledge@fwc.state.fl.us

The Triple N Ranch WMA contains nearly 9,000 acres of mesic pine flatwoods and over 2,000 acres of contiguous cypress swamp, as well as nearly 700 acres of the globally imperiled dry prairie natural community. Other natural communities include wet prairie, depression marsh, xeric oak scrub, hardwood swamp, hardwood hammock, and hydric hammock. Fourteen rare plant species are known or suspected to occur on the WMA, including short-leaved rosemary (*Conradina brevifolia*) and wild coco (*Pteroglossaspis ecristata*).

Old World climbing fern occurred in irrigation ditches associated with an operating orange grove located on the property, and had begun to invade nearby cypress swamps. Australian pines grew along the edges of man-made canals located in a recent addition to the WMA that was once used for cattle grazing. Melaleuca grew in small isolated patches within this same addition, which consists of longleaf pinelands with a disturbed understory (predominantly bahia grass), and cypress swamp.



Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Roundup
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Garlon 4



This *Lygodium* was caught before it reached the tree canopy. Left unchecked, climbing fern will overtop trees and form a dense blanket over entire hammocks—eventually killing everything underneath.

Wekiva Basin GEOPark

County: Orange, Seminole

PCL Size: 43,000 acres

Project ID: EC-024 17.5 acres \$2,711

Project ID: EC-030 16.0 acres \$2,400

Project Manager: Florida Park Service (DEP)

Gregg Walker, Park Biologist

1800 Wekiwa Circle, Apopka, Florida 32712

Phone: 407-884-2006, Fax: 407-884-2039

E-mail: gregg.walker@dep.state.fl.us

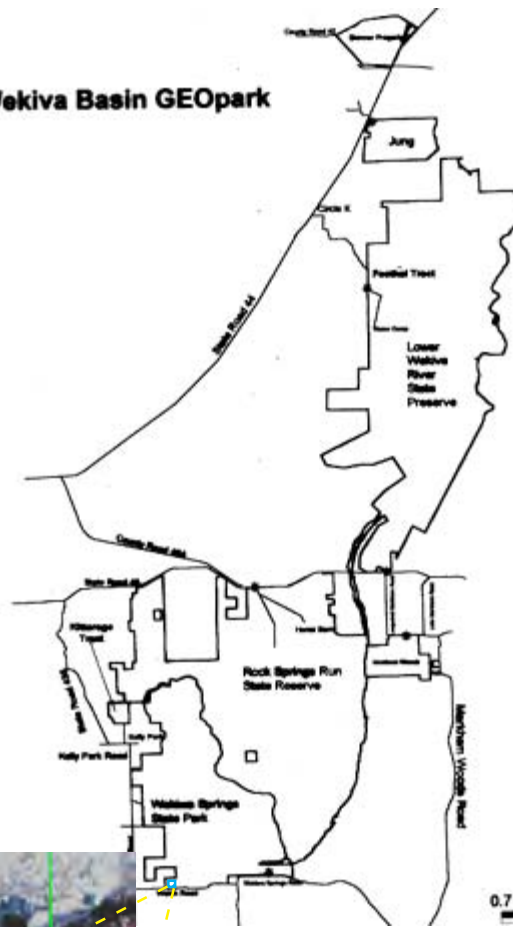


The Wekiva Basin GEOPark lies along the Wekiva River and harbors Florida black bear, Florida sandhill crane, wood storks, and other rare species. One project targeted scattered pockets of exotic plants on 17.5 acres. BIPM provided only the herbicides for this project, through its Herbicide Bank. A second project targeted the 40-acre McCall Parcel for retreatment of a heavily infested area treated in the previous fiscal year. Exotics, primarily air-potato, heavily dominated over 15 acres of the parcel.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	Roundup
<i>Albizia julibrissin</i>	mimosa	Category I	basal/cut stump	Garlon 4
<i>Ardisia crenata</i>	coral ardisia	Category I	cut stump	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal/girdle	Garlon 4
<i>Colocasia esculenta</i>	wild taro	Category I	foliar	Roundup
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Roundup
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup
<i>Lantana camara</i>	lantana	Category I	cut stump	Garlon 4
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Roundup
<i>Macfadyena unguis-cati</i>	cat's-claw vine	Category I	cut stump	Garlon 4
<i>Melia azedarach</i>	Chinaberry	Category I	girdle	Garlon 4
<i>Nephrolepis cordifolia</i>	sword fern	Category I	foliar	Roundup
<i>Panicum repens</i>	torpedo grass	Category I	foliar	Roundup
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal/girdle	Garlon 4
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Roundup
<i>Urochloa mutica</i>	Pará grass	Category I	foliar	Roundup
<i>Broussonetia papyrifera</i>	paper mulberry	Category II	cut stump	Garlon 4
<i>Hemarthria altissima</i>	limpoglass	Category II	foliar	Roundup
<i>Panicum maximum</i>	Guinea grass	Category II	foliar	Roundup
<i>Rhynchelytrum repens</i>	Natal grass	Category II	foliar	Roundup
<i>Sesbania punicea</i>	purple sesban	Category II	foliar	Roundup
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Roundup



Wekiva Basin GEOpark



0.7 0 0.7 1.4 Miles



**Wekiva Basin GEOpark
Exotic Plants at the McCall Tract**



Preserving the Real Florida

Split Oak Forest Mitigation Park and Wildlife and Environmental Area

County: Orange, Osceola

PCL Size: 1,689 acres

Project ID: EC-027 17 acres \$9,008.03

Project Manager: Fish & Wildlife Conservation Commission

Shane Belson, Site Manager

1601 Scotty's Road, Kissimmee, Florida 34744

Phone: 407-846-5300 x1003

E-mail: shane.belson@fwc.state.fl.us

Split Oak Forest Mitigation Park WEA comprises eleven natural communities, which include scrubby flatwoods, pineland, xeric oak scrub, hardwood hammock, freshwater marsh, cypress swamp, hardwood swamp, shrub swamp, open water, and grassland. Turpentine operations were long ago conducted on site, with the more recent use being cattle grazing. The former owners cleared only a limited area for improved pasture, so most of the site remains intact. Chinese tallow occurred primarily in a cypress/hardwood floodplain swamp near Lake Hart and along nearby cypress domes and depression marshes in the northwest corner of the park.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Psidium guajava</i>	guava	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4



Chinese Tallow Project Area
 Chinese Tallow (17 ac)
 Split Oak Forest Mitigation Park boundary



Shingle Creek Recreational Preserve

County: Osceola

PCL Size: 122 acres

Project ID: EC-031 122 acres \$11,948.76

Project Manager: Osceola County

Rod Schultz, Project Coordinator

1 Courthouse Square, Kissimmee, Florida 34741

Phone: 407-343-3409, Fax: 407-343-3415

E-mail: rsch@osceola.org



Osceola County and the City of Kissimmee purchased a portion of the Shingle Creek Recreational Preserve with a Florida Communities Trust grant in April 2000. The Preserve, when fully purchased will be approximately 182 acres. The project area comprised approximately 88 acres of County/City land and approximately 34 acres of City land. The project area consisted of approximately 29 acres of upland pasture natural restoration and 93 acres of wetlands. The uplands are best characterized as abandoned pasture turned fallow. The wetlands are riverine bottomland swamp primarily dominated with bald cypress trees.

Shingle Creek's shoreline banks and associated project area within the wetlands contained significant numbers of mature guava trees, Chinese tallow, Brazilian pepper, Caesar's weed, rattlebox, primrose willow, and scattered camphor tree. The coverage was sixty-five to seventy-five percent throughout the wetlands of the project area. In the uplands, dominant plant species included bahiagrass, Chinese tallow, bladderpod, soda apple, Brazilian pepper, and dog fennel. The coverage was eighty-five to ninety percent throughout the uplands of the project area.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Colocasia esculenta</i>	wild taro	Category I	foliar	Rodeo
<i>Psidium guajava</i>	guava	Category I	basal/cut stump	Garlon 3A/4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal/cut stump	Garlon 4
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Rodeo

Shingle Creek Recreational Preserve



The “cut stump” method is one sure way to take out an invasive tree.



But don't forget the seed bank! Chinese tallow produces thousands of seeds that will result in seedlings like these for several years to come. Follow-up maintenance is a required part of every invasive plant control project.

Lake Tohopekaliga

County: Osceola

PCL: City of Kissimmee/SFWMD parcels

PCL Size: 139.2 acres

Project ID: EC-034 20.5 acres \$5,508.25

Project Manager: City of Kissimmee

George Mann, Director, Public Works and Engineering

101 N. Church Street, Kissimmee, Florida 34741

Phone: 407-518-2170, Fax: 407-518-2165

E-mail: gmann@kissimmee.org

The project area includes public land designated as wetland conservation areas that are in close proximity to Lake Tohopekaliga. The project consisted of three adjacent sites infested with Chinese tallow. Of the two of the parcels owned by the City of Kissimmee, one is dedicated as a wetland mitigation/natural public recreation site and the other supplies additional flood storage for Mill Slough. The South Florida Water Management District owns the third parcel (meander row), known as the government meander line. This land provides additional storage capacity for Mill Slough and Lake Tohopekaliga. BIPM provided only the herbicides for this project, through its Herbicide Bank. The Florida Fish and Wildlife Conservation Commission provided labor and equipment.



Project Aerials of Infestation

Target Plants
Sapium sebiferum

Common Name
Chinese tallow

FLEPPC Rank
Category I

Treatment
basal/girdle

Herbicide
Garlon 4

Lake Tohopekaliga



This large tallow tree was girdled with a chain saw and herbicide was sprayed into the cut. When a hatchet or machete is used instead of a chainsaw, this method is often called “frill-and-girdle.”



Chinese tallow, like many invasive tree species, forms dense monocultures that crowd out native species.

Geneva Wilderness Area

County: Seminole

PCL Size: 179 acres

Project ID: EC-028 40 acres \$18,607.03

Project Manager: Seminole County Natural Lands

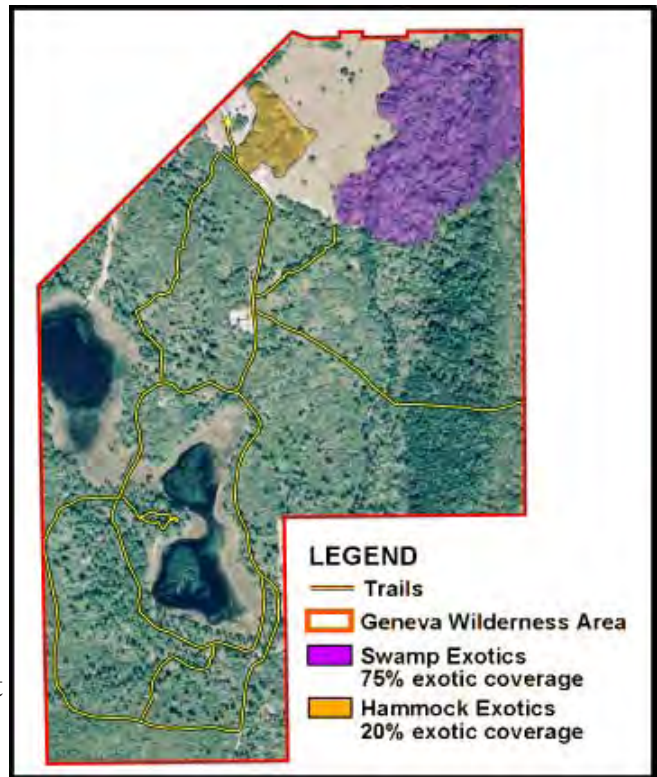
Brian L. Suber, Land Management Specialist

1101 East First Street, Sanford, Florida 32771

Phone: 407-349-1240

E-mail: bsuber@co.seminole.fl.us

The Geneva Wilderness Area is located in north-east Seminole County, adjacent to the Little Big Econ State Forest. This property has a diverse array of native plant communities including: xeric scrub, pine flatwoods, mesic hammocks, and mixed hardwood swamp. Although sparse over the entire property, exotic vegetation in the project area had a coverage estimated at seventy-five percent, with five percent sword fern, forty percent coral ardisia, and thirty percent air-potato. In the mesic hammock adjacent to the parking area, exotic plant coverage was estimated at ten percent sword fern and ten percent air-potato.



Target Plants

Ardisia crenata

Nephrolepis cordifolia

Common Name

coral ardisia

sword fern

FLEPPC Rank

Category I

Category I

Treatment

foliar

foliar

Herbicide

Garlon 3A

Garlon 3A



Sword or “Boston” fern is still commonly sold as an ornamental plant. While fine in your garden, always properly dispose of ferns and other yard waste. Never dump plant material “in the woods.”

Lake Jesup Wilderness Area

County: Seminole

PCL Size: 490 acres

Project ID: EC-029 85 acres \$27,085.25

Project Manager: Seminole County Natural Lands Program

Brian L. Suber, Land Management Specialist

1101 East First Street, Sanford, Florida 32771

Phone: 407-349-1240

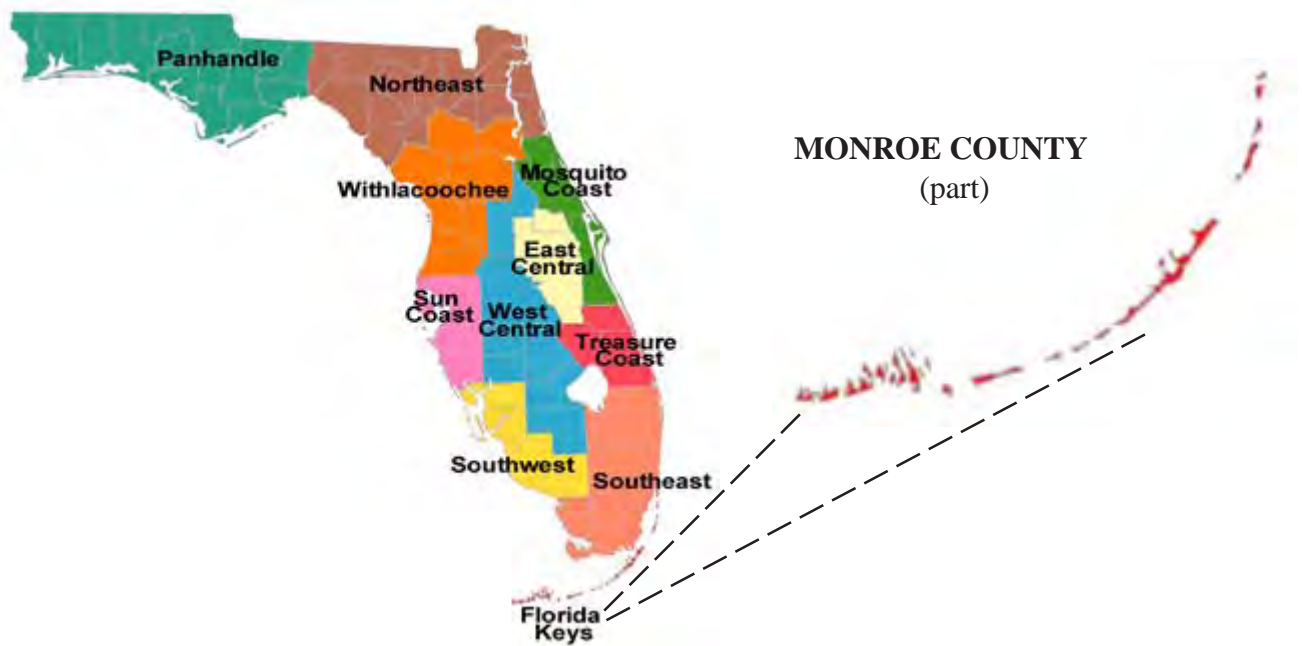
E-mail: bsuber@co.seminole.fl.us

The Lake Jesup Wilderness Area lies west of Toll Road 417 and abutting the north shore of Lake Jesup. The property consists mostly of shallow marsh and wet prairie, with isolated islands of hydric hammock. Mitigation work began in early April 2003, consisting of filling manmade ditches and breaching dikes to enhance the natural function of the habitats on site. The South Hammock project site had exotic plant coverage estimated at sixty percent, comprised of thirty percent nightshade, twenty percent Brazilian pepper, and ten percent tropical soda apple.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Solanum tampicense</i>	wetland nightshade	Category I	basal	Garlon 4
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Garlon 4



Florida Keys Regional Working Group



The Florida Keys Regional Working Group liaison is Mr. Chris Bergh, The Nature Conservancy, P.O. Box 420237, Summerland Key, Florida, 33042, phone: 305-745-8402, fax: 305-745-8399, e-mail: cbergh@tnc.org. Projects completed in the Keys involved partnerships with local, state, and federal conservation agencies, as well as the U.S. Navy, and non-profit conservation groups.

Florida Keys Wildlife and Environmental Area

County: Monroe

PCL Size: 1,809 acres

Project ID: FK-034 55.0 acres \$5,985.00

Project ID: FK-039 7.6 acres \$58,000.00

Project ID: FK-041 40.0 acres \$18,143.43

Site Manager: Florida Fish and Wildlife Conservation Commission

Randy Grau

P.O. Box 430541, Big Pine Key, Florida 33043

Phone: 305-872-0022

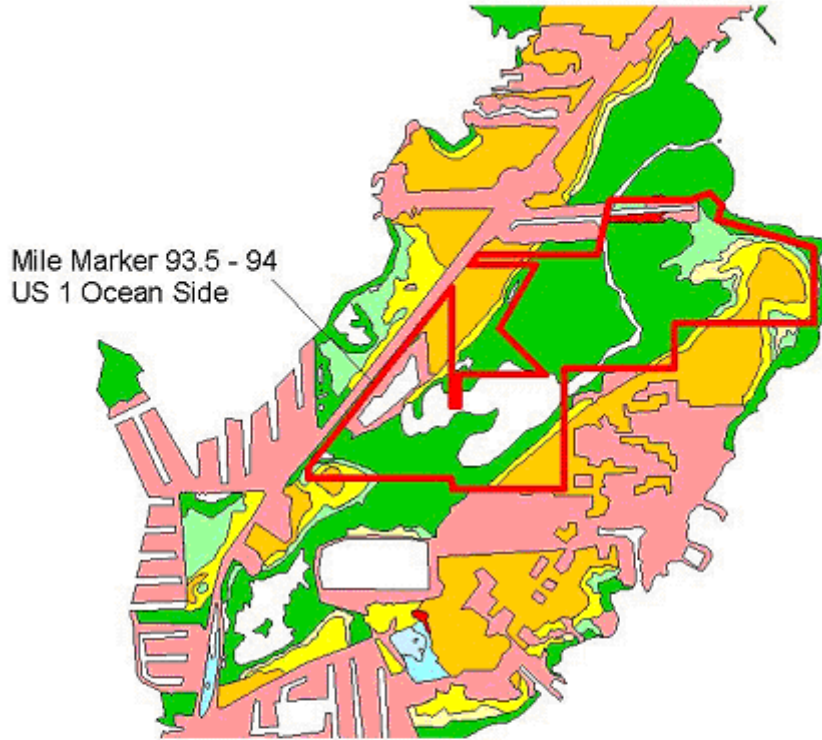
E-mail: graur@fwc.state.fl.us

The Dove Creek Hammocks unit of the Florida Keys WEA is located at the southern end of Key Largo. The Blue Water Borrow Pit parcel comprises approximately 47.3 acres within Dove Creek Hammocks. This parcel contains approximately 5 acres of hardwood hammock, 16 acres of mangrove forest, 1 acre of saltmarsh/buttonwood, 19 acres of open water, and 6 acres of disturbed area. Some of the disturbed areas have been restored to saltmarsh and mangrove habitat. Portions of this site were heavily infested with lead tree. Other exotics found on the site included latherleaf, Brazilian pepper, Australian pine, seaside mahoe, umbrella tree, beach naupaka, and other ornamental species. A majority of the exotics were found east of the borrow pit, where approximately 4 acres were heavily infested.

The Lake San Pedro Hammocks unit on Key Largo harbors rare and endemic species of plants and animals. The project site was a recent addition purchased from the Monroe County Land Authority. The site consists of 6.3 acres of tropical hardwood hammock, 0.5 acres of buttonwood/salt marsh association, and 0.8 acres disturbed area. Brazilian pepper, Australian pine, seaside mahoe, lead tree, and other ornamental species infested the site.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia lebeck</i>	woman's tongue	Category I	basal/girdle	Garlon 4+Stalker
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal/girdle	Garlon 4+Stalker
<i>Colubrina asiatica</i>	latherleaf	Category I	basal	Garlon 4+Stalker
<i>Macfadyena unguis-cati</i>	cat's claw vine	Category I	girdle	Garlon 4+Stalker
<i>Schefflera actinophylla</i>	schefflera	Category I	basal/girdle	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 3A
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/girdle	Garlon 4+Stalker
<i>Thespesia populnea</i>	seaside mahoe	Category I	girdle	Garlon 4+Stalker
<i>Tradescantia spathacea</i>	oyster plant	Category I	basal	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4
<i>Sansevieria hyacinthoides</i>	bowstring hemp	Category II	foliar	Roundup+2,4-D
<i>Oeceoclades maculata</i>	ground orchid	n/a	hand pull	n/a

Florida Keys Wildlife and Environmental Area



- █ DOVE CREEK BOUNDARY
- HABITAT DELINEATION
- █ Hammocks
- █ Ridge/Hammock
- █ Hammocks (CRB)
- █ Dune
- █ Buttonwoods
- █ Salt Marsh
- █ Scrub Mangroves
- █ Mangroves
- █ Freshwater Marsh
- █ Freshwater Hardwoods
- █ Developed
- █ Exotics



Florida Keys Wildlife and Environmental Area

Australian pines don't make good neighbors.



Invasive exotic plants are often found along the edges of conservation land, an area more prone to disturbance.



When working in residential areas, contractors are required to inform neighbors about the control operation, to avoid a different sort of disturbance.

Dagny Johnson Key Largo Hammocks Botanical State Park

County: Monroe

PCL Size: 2,415 acres

Project ID: FK-040 10 acres \$46,000

Project Manager: Florida Park Service (DEP)

James G. Duquesnel, Park Biologist

P. O. Box 487, Key Largo, Florida 33037

Phone: 305-451-1202, Fax: 305-853-3555

E-mail: james.g.duquesnel@dep.state.fl.us

Public conservation lands comprise a significant amount of Key Largo. The native vegetation of Key Largo derives primarily from West Indian and Caribbean origin. This project included two adjacent sites, both part of an acquisition known as Ocean Forest Estates. The larger tract contained Burma reed, Australian pine, Brazilian pepper, and latherleaf along a filled shoreline on the east side of Key Largo. A few minor populations or individuals of incidental invasive species such as night-blooming cereus and Norfolk island pine also occurred. Immediately offshore of the first site is a dredge spoil island where contractors last year removed an infestation of Australian pine and Burma reed, but left behind several pockets of Brazilian pepper. The removal of these trees completed the preliminary vegetative work on this island.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Garlon 3A
<i>Casuarina equisetifolia</i>	Australian pine	Category I	mechanical	n/a
<i>Colubrina asiatica</i>	latherleaf	Category I	cut stump	Garlon 3A
<i>Eugenia uniflora</i>	Surinam cherry	Category I	mechanical	n/a
<i>Neyraudia reynaudiana</i>	Burma reed	Category I	foliar	Roundup
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	mechanical	n/a
<i>Flacourtia indica</i>	governor's plum	Category II	mechanical	n/a
<i>Leucaena leucocephala</i>	lead tree	Category II	cut stump	Garlon 4
<i>Ptychosperma elegans</i>	solitaire palm	Category II	mechanical	n/a
<i>Araucaria heterophylla</i>	Norfolk Island pine	n/a	mechanical	n/a
<i>Cocas nucifera</i>	coconut palm	n/a	mechanical	n/a
<i>Hylocereus undatus</i>	night-blooming cereus	n/a	hand pull	n/a

John D. Pennekamp Coral Reef State Park

County: Monroe

PCL Size: 2,350 acres

Project ID: FK-042 5.8 acres \$36,648.34

Project Manager: Florida Park Service (DEP)

James G. Duquesnel, Park Biologist

P. O. Box 487, Key Largo, Florida 33037

Phone: 305-451-1202, Fax: 305-853-3555

E-mail: james.g.duquesnel@dep.state.fl.us

The native vegetation of Key Largo derives primarily from West Indian and Caribbean origin. The state purchased the park largely to provide habitat for migratory birds, including the state-listed white-crowned pigeon, and to protect nearby marine communities from shoreline development. The park also holds a large number of state-listed plants, especially the endangered Keys' Indigo (*Indigofera keyensis*) and wild cotton (*Gossypium hirsutum*). The project area comprised three park sites, referred to as Key Largo Narrows, Madiera Village, and Dynamite Docks.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia lebbek</i>	woman's tongue	Category I	cut stump	Garlon 4
<i>Colubrina asiatica</i>	latherleaf	Category I	basal	Garlon 4
<i>Manilkara zapota</i>	sapodilla	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Hibiscus tiliaceus</i>	mahoe	Category II	cut stump	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4



Florida Keys Overseas Heritage Trail

County: Monroe

PCL Size: 95.8 acres

Project ID: FK-035 42 acres \$90,545

Project Manager: Office of Greenways and Trails (DEP)

Debra Stucki, Trail Manager

#3 La Croix Court, Key Largo Florida 33037

Phone: 305-451-3005, Fax: 305-853-3553

E-mail: debra.stucki@dep.state.fl.us

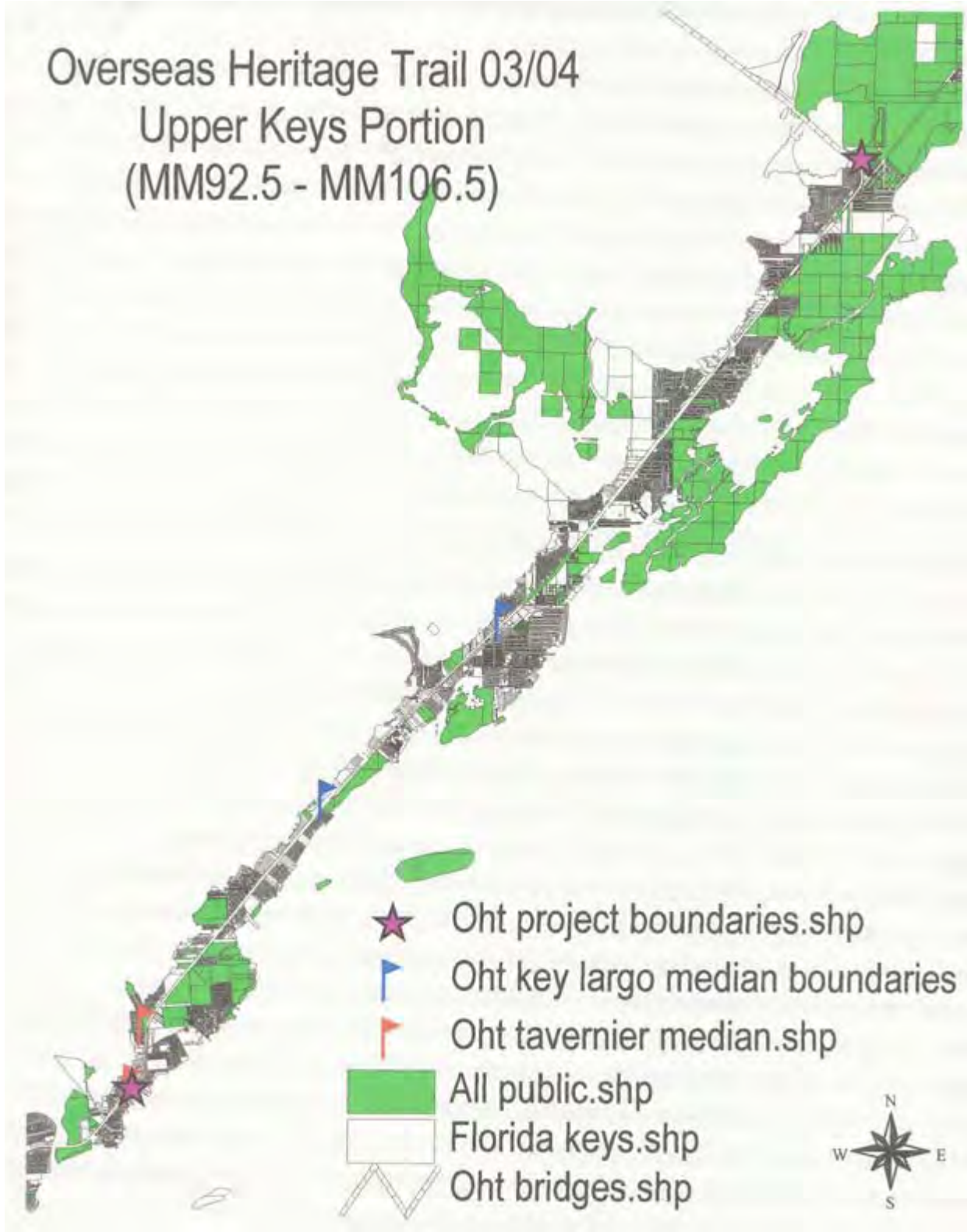
The project was located entirely within the bounds of the Overseas Heritage Trail portion of the Florida Department of Transportation's US Highway 1 right-of-way. There were two distinct sections of Trail covered by this project; "Lower" = Mile Marker (MM) 56-71 and "Upper" = MM 92.5-106.5. The Trail is located in the Florida Keys portion of Monroe County and includes land within unincorporated Monroe County, the City of Marathon, and the City of Layton.

Each stretch of trail had different species of concern, but Brazilian pepper, Australian pine, latherleaf, lead tree, seaside mahoe, and non-native scaevola were the most abundant. Some stretches of trail are bridges with no attention required and others have been partially treated by other means. The project consisted of treating all EPPC-listed invasive exotic species in the linear 14 and 15 mile project sub areas.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Colubrina asiatica</i>	latherleaf	Category I	cut stump	Garlon 4
<i>Manilkara zapota</i>	sapodilla	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4
<i>Hibiscus tiliaceus</i>	mahoe	Category II	cut stump	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal/cut stump	Garlon 4
<i>Sansevieria trifasciata</i>	mother-in-laws tongue	n/a	cut stump	Garlon 4



Overseas Heritage Trail 03/04
Upper Keys Portion
(MM92.5 - MM106.5)



A good GIS map is useful for planning and conducting any control project.

National Key Deer Refuge

County: Monroe

PCL Size: 8,649 acres

Project ID: FK-033 3 acres \$100,000.00

Project Manager: U.S. Fish and Wildlife Service

William G. Miller

P.O. Box 430510, Big Pine Key, Florida 33042

Phone: 305-872-2239, Fax: 305-872-3675

E-mail: william_g_miller@fws.gov

The National Key Deer Refuge includes habitat critical to survival of the endangered Florida key deer. Natural communities within the refuge include tropical hardwood hammock, pine rocklands, freshwater wetlands, and mangrove swamp. The refuge is home to a number of rare plants and animals, five of which are found nowhere else in the world. The project area consisted of a number of former subdivision lots located on Big Pine and No Name Keys, and sites on Snipe and Sawyer Keys, two islands in the backcountry of the Lower Florida Keys. Rapidly expanding populations of invasive exotic plant species, primarily Brazilian pepper, Australian pine, latherleaf, and to a much lesser degree, bowstring hemp infested the project area.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 4

Project ID: FK-036 123 acres \$54,103.75

Project Manager: U.S. Fish and Wildlife Service

Phil Frank

P.O. Box 430510, Big Pine Key, Florida 33042

Phone: 305-872-2239, Fax: 305-872-3675

E-mail: phil_frank@fws.gov

This project consisted of maintenance control treatment of Australian pine, Brazilian pepper, and other invasives throughout land managed by USFWS on Big Pine, Cudjoe, Little Torch, and West Contact Keys. Two plant control technicians funded by BIPM performed the work. The refuge provided cost-share funds for herbicide, equipment, and a vehicle, which equaled \$10,600 of the total project cost. BIPM provided additional herbicide through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Colubrina asiatica</i>	latherleaf	Category I	basal/cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4
<i>Solanum viarum</i>	tropical soda apple	Category I	basal	Garlon 4
<i>Thespesia populnea</i>	seaside mahoe	Category I	basal	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4
<i>Terminalia catappa</i>	tropical almond	Category II	basal	Garlon 4
<i>Euphorbia tirucalli</i>	pencil tree	n/a	basal	Garlon 4

Lignumvitae Key Botanical State Park

County: Monroe

PCL Size: 10,480 acres

Project ID: FK-032 41 acres \$122,808.77

Project Manager: Florida Park Service (DEP)

Pat Wells, Park Manager

P.O. Box 1052, Islamorada, Florida 33036

Phone: 305-664-2540, Fax: 305-853-0713

E-mail: pat.wells@dep.state.fl.us

Two additions to Lignumvitae Key Botanical State Park; the Choate Addition on Upper Matecumbe Key, and the Klopp Addition on Lower Matecumbe Key, comprised the project area. Mostly intact tropical hardwood hammock makes up the interior of the two properties, with the exception of the western end of the Choate Tract and some patches of hemp interior to the Klopp Tract. The Choate Tract encompasses 108 acres of mangrove wetlands and 35 acres of mature hammock. The Klopp Tract includes 17.31 acres of mangrove wetland and approximately 5.72 acres of mature hammock. Tropical hardwood hammock is home to several threatened and endangered species.

Invasive species were located primarily along the U.S. 1 road frontage, the western park boundary, and the northern transition zone. This project consisted of two phases, where one contractor removed the Australian pine, while a second contractor treated the other invasive species.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia lebbbeck</i>	woman's tongue	Category I	cut stump	Rodeo+G4+2,4-D
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Garlon 3A
<i>Casuarina equisetifolia</i>	Australian pine	Category I	girdle	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	girdle	Garlon 4+Stalker
<i>Thespesia populnea</i>	seaside mahoe	Category I	girdle	Garlon 4+Stalker
<i>Leucaena leucocephala</i>	lead tree	Category II	girdle	Garlon 4+Stalker
<i>Sansevieria hyacinthoides</i>	bowstring hemp	Category II	girdle	Glypro+G3A+2,4-D
<i>Ficus</i> spp.	rubber plant	n/a	girdle	Garlon 4+Stalker
<i>Oeceoclades maculata</i>	ground orchid	n/a	hand pull	n/a

Plantation Key Conservation Lands – Keoskie Tract

County: Monroe

PCL Size: 15.1 acres

Project ID: FK-038 5.25 acres \$28,905.49

Project Manager: Islamorada, Village of Islands

Zully Williams

P.O. Box 568, Islamorada, Florida 33036

Phone: 305-664-2345, Fax: 305-853-5357

E-mail: zully.williams@islamorada.fl.us

The Keoskie property, a state-owned parcel on Plantation Key, is managed by the City of Islamorada as a conservation area. Rockland hammock, a rare natural community, makes up most of the Keoskie property. Approximately 10% of the site contained lead tree and Brazilian pepper, although lead tree was pervasive throughout the property. Native poisonwood trees on the parcel serve as food for a variety of species, including the threatened white-crowned pigeon. This project completed work begun in the previous fiscal year.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4
<i>Sansevieria hyacinthoides</i>	bowstring hemp	Category II	basal/cut stump	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal/cut stump	Garlon 4

Crocodile Lakes National Wildlife Refuge

County: Monroe

PCL Size: 6,688 acres

Project ID: FK-043 40 acres \$2,503.75

Project Manager: U.S. Fish and Wildlife Service

Steve Klett

P.O. Box 367, Big Pine Key, Florida 33042

E-mail: steve_klett@fws.gov

Crocodile Lakes National Wildlife Refuge was the site of seven projects conducted in 1998, the pilot year of the Upland Invasive Exotic Plant Control Program. Natural communities on the Refuge include tropical hardwood hammock, pine rocklands, freshwater wetlands, and mangrove swamp. The refuge is home to a number of rare plants and animals, including the Key Largo woodrat, one of the most endangered wildlife species in south Florida. BIPM provided only the herbicides for this project, through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	cut stump	Garlon 4

Curry Hammock State Park

County: Monroe

PCL Size: 665 acres

Project ID: FK-017 31 acres \$38,945.07

Project Manager: Florida Park Service (DEP)

Catherine Close, Park Manager

P.O. Box 776, Long Key, Florida 33001

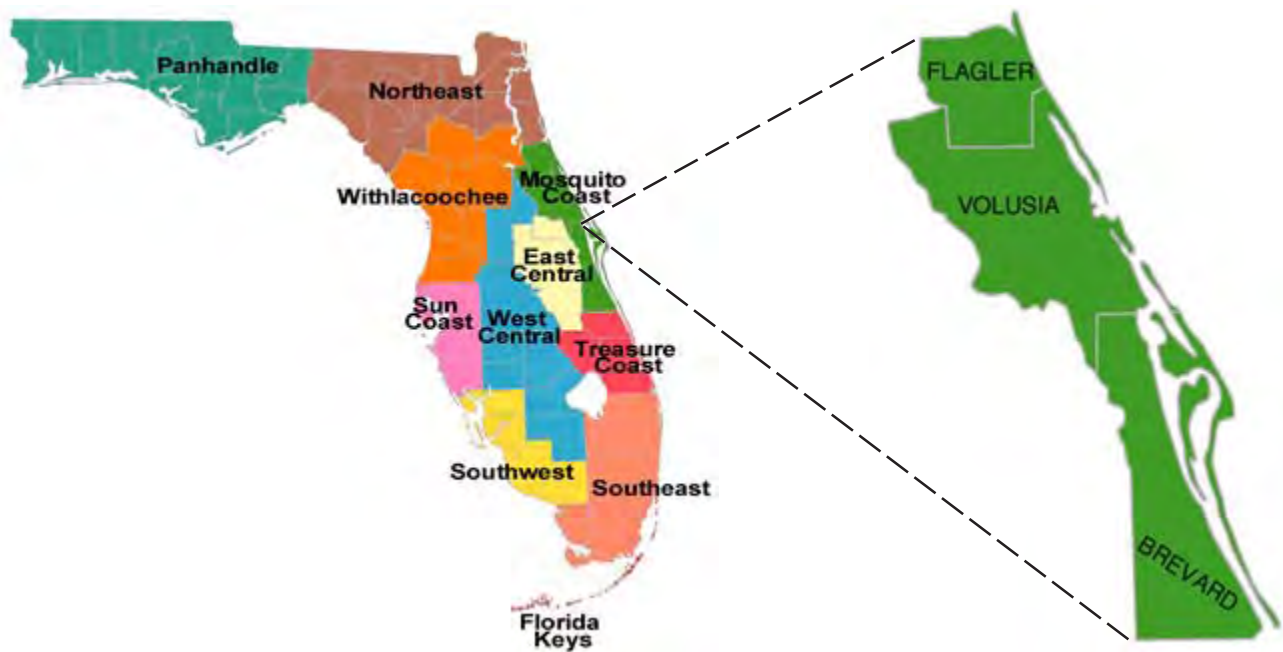
Phone: 305-664-4815, Fax: 305-664-2629

E-mail: catherine.close@dep.state.fl.us

The project sites were Long Point Key and Fat Deer Key, located within Curry Hammock State Park. Curry Hammock is the largest uninhabited terrestrial parcel between Key Largo and Big Pine Key, and the most complete remaining example of the natural heritage of the Middle Florida Keys. Natural communities in the project area included coastal berm, beach dune, tidal mangrove swamp, and tropical hammock. Brazilian pepper, seaside mahoe, and latherleaf were the primary targets for maintenance control work on the site.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4+Stalker
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4+Stalker
<i>Colubrina asiatica</i>	latherleaf	Category I	basal	Garlon 4+Stalker
<i>Thespesia populnea</i>	seaside mahoe	Category I	basal	Garlon 4+Stalker
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4+Stalker
<i>Carica papaya</i>	papaya	n/a	basal	Garlon 4+Stalker

Mosquito Coast Regional Working Group



The Mosquito Coast Regional Working Group liaison is Ms. Jackie Smith, DEP Bureau of Invasive Plant Management, 3111 B-13 Fortune Way, Wellington, Florida 33414, phone: 561-722-2479, fax: 561-791-4722, e-mail: jackie.c.smith@dep.state.fl.us

Pine Island Conservation Area

County: Brevard

PCL Size: 879 acres

Project ID: MC-040 117 acres \$112,050

Project Manager: Brevard County Parks & Recreation

D. Scott Taylor, Ph.D., EEL Central Region Land Manager

5560 North US Highway 1, Melbourne, Florida 32940

Phone: 321-255-4466, Fax: 321-255-4499

E-mail: staylor@brevardparks.com

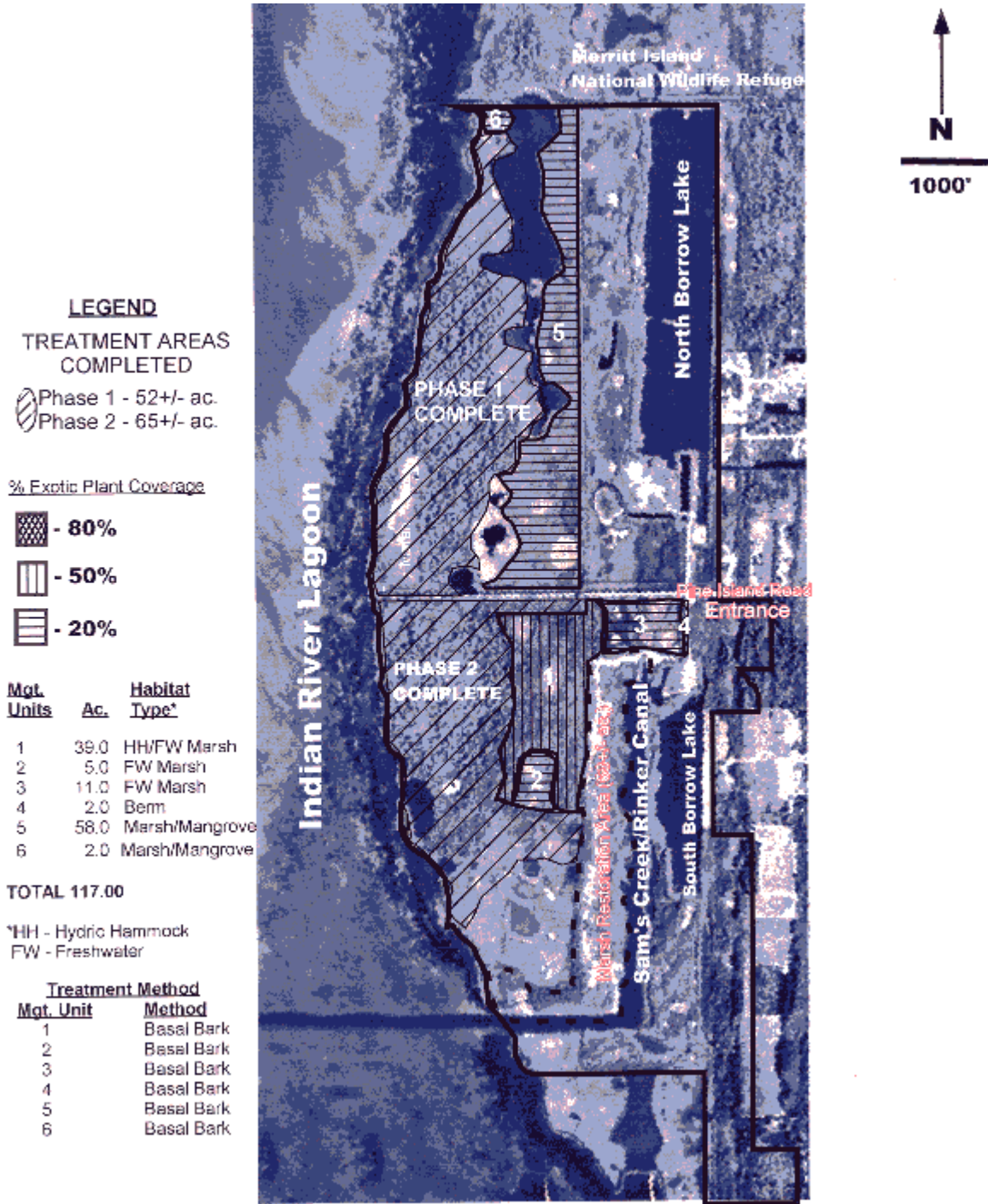
The mesic pine flatwoods “island” for which this conservation land is historically named is regionally unique in that large areas grade directly into the Indian River Lagoon and other areas exhibit rapid transitions to isolated freshwater marshes and impounded estuarine marsh and mangrove forest habitats that fringe the Lagoon. Development activities on Pine Island during the 1960s in support of sand mining and mosquito control operations significantly altered the hydrologic regime and structural integrity of the expansive estuarine marsh system historically characterizing this property. Invasive exotic pest plants, primarily Brazilian pepper, exploited the conditions provided by these land disturbances. This project, the third phase of ongoing work, targeted removal of Brazilian pepper from primarily hydric hammock and impounded freshwater marsh natural community types located in the south-central quadrant of the conservation property. Brazilian pepper occurred throughout the project area in varying degrees of coverage, with the majority of the project exhibiting dense coverage.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Arsenal



Invasive species even compete with each other. This hapless Australian pine (center) is swamped by a monoculture of Brazilian pepper.

Pine Island Conservation Area



Merritt Island National Wildlife Refuge

County: Brevard

PCL Size: 139,174 acres

Project ID: MC-041 818 acres \$39,938.49

Project ID: MC-042 376 acres \$95,200.00

Project Manager: U.S. Fish and Wildlife Service

Ron Hight, Refuge Manager

P.O. Box 6504, Titusville, Florida 32782

Phone: 321-861-0667, Fax: 321-861-1276

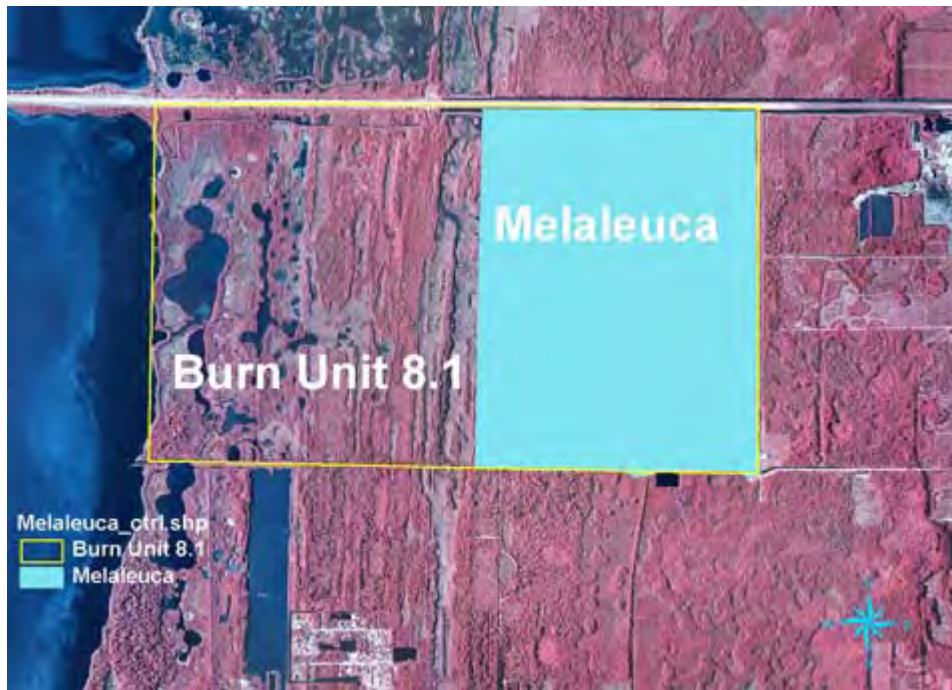
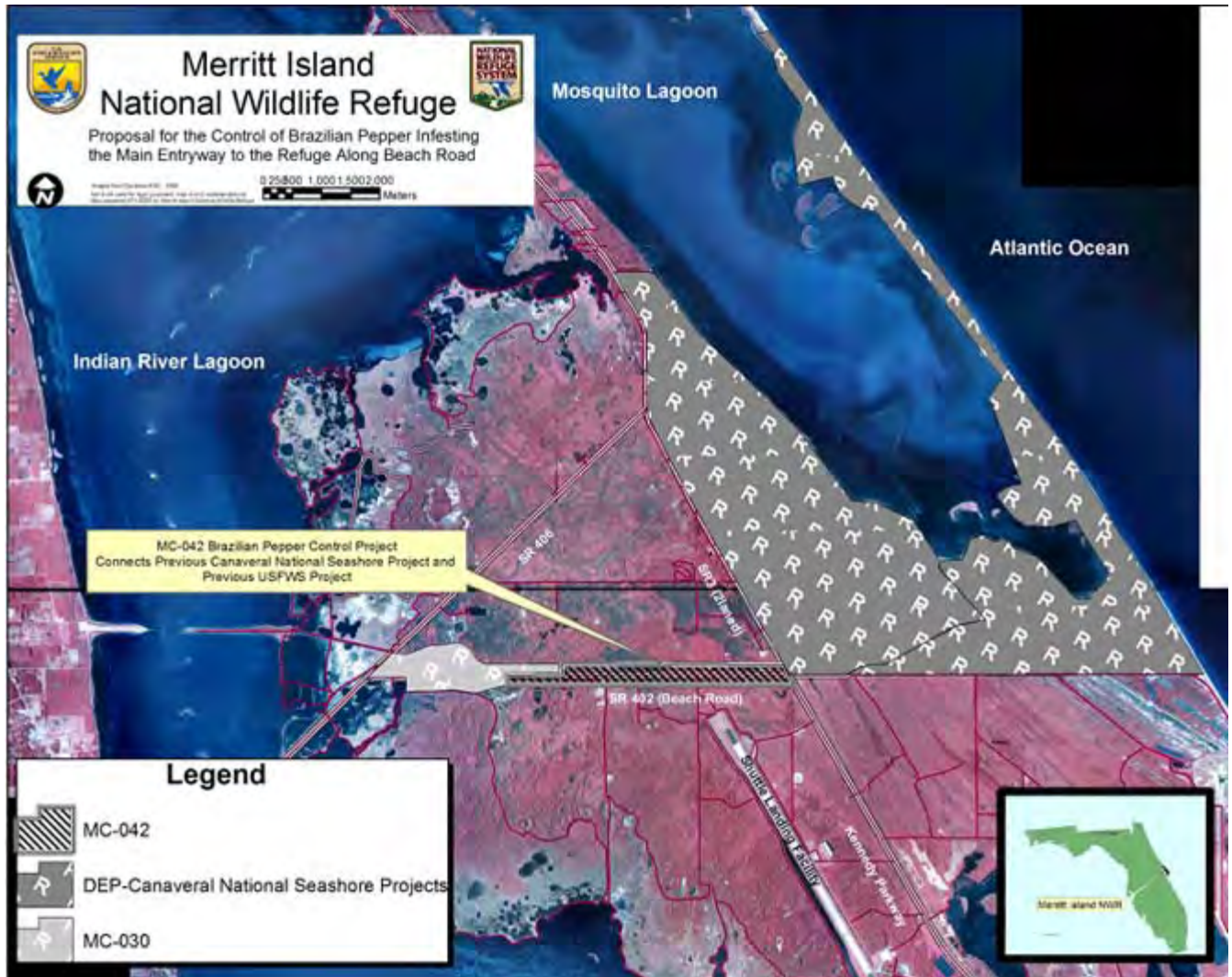
E-mail: ron_hight@fws.gov

In the early 1960s, NASA began to acquire the land that is now John F. Kennedy Space Center. In 1963, the acquisition was complete and NASA turned those lands not vital to the space program over to the U.S. Fish and Wildlife Service. Today, the Department of the Interior manages the 43-mile long barrier island as Merritt Island National Wildlife Refuge and Canaveral National Seashore. The Refuge is adjacent to the Indian River and Banana Rivers, and Mosquito Lagoon. Approximately one-half of the refuge consists of brackish estuaries and marshes. The remaining land consists of coastal dunes, scrub oaks, pine forest, pine flatwoods, and palm and oak hammocks. Numerous rare plants and animals live on the refuge. These include seventeen state-endangered plants, such as satinleaf (*Chrysophyllum oliviforme*), crested coralroot (*Hexalectris spicata*), Florida peperomia (*Peperomia obtusifolia*), beach star (*Remirea maritima*), bay cedar (*Suriana maritima*), coastal hoary pea (*Tephrosia angustissima*), and sea lavender (*Tournefortia gnaphalodes*).

Early homesteaders that occupied the land before it became a refuge first introduced melaleuca. They planted the tree as an ornamental, as well as for shade, and it later escaped into the natural wetlands of the area. The first of two projects on the Refuge controlled melaleuca scattered within 818 acres of Burn Unit 8.1, located a few miles south of the Beach Road corridor. Melaleuca trees lightly to moderately infested swales that run north to south through the marshes in the Refuge.

Those same homesteaders also introduced Brazilian pepper as an ornamental and it likewise escaped into area wetlands. (This pattern continues throughout Florida to this day). This second project primarily controlled Brazilian pepper that moderately infested the 376 acres of wetlands along the entry road to the Refuge. The Beach Road corridor is often the visitor's first look at the refuge, so it is essential this view be unobstructed by exotic plants to provide the visitor an accurate depiction of the natural communities of Merritt Island. This project also played a key role in the restoration of marshes that provide vital habitat for Henslow's sparrows, bobolinks, sedge wrens, and other birds. Canaveral National Seashore previously conducted an exotic control program on the east end of the Beach Road thoroughfare, thus linking with this project area and providing a corridor of native vegetation for wildlife and improving the visitor's experience.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	cut stump	Garlon 4
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Arsenal



Archie Carr National Wildlife Refuge

County: Brevard

PCL Size: 238.62 acres

Project ID: MC-043 153 acres \$73,869

Project Manager: Brevard County Parks & Recreation

Ray Mojica, EEL Land Manager

5560 North US Highway 1, Melbourne, Florida 32940

Phone: 321-255-4466, Fax: 321-255-4499

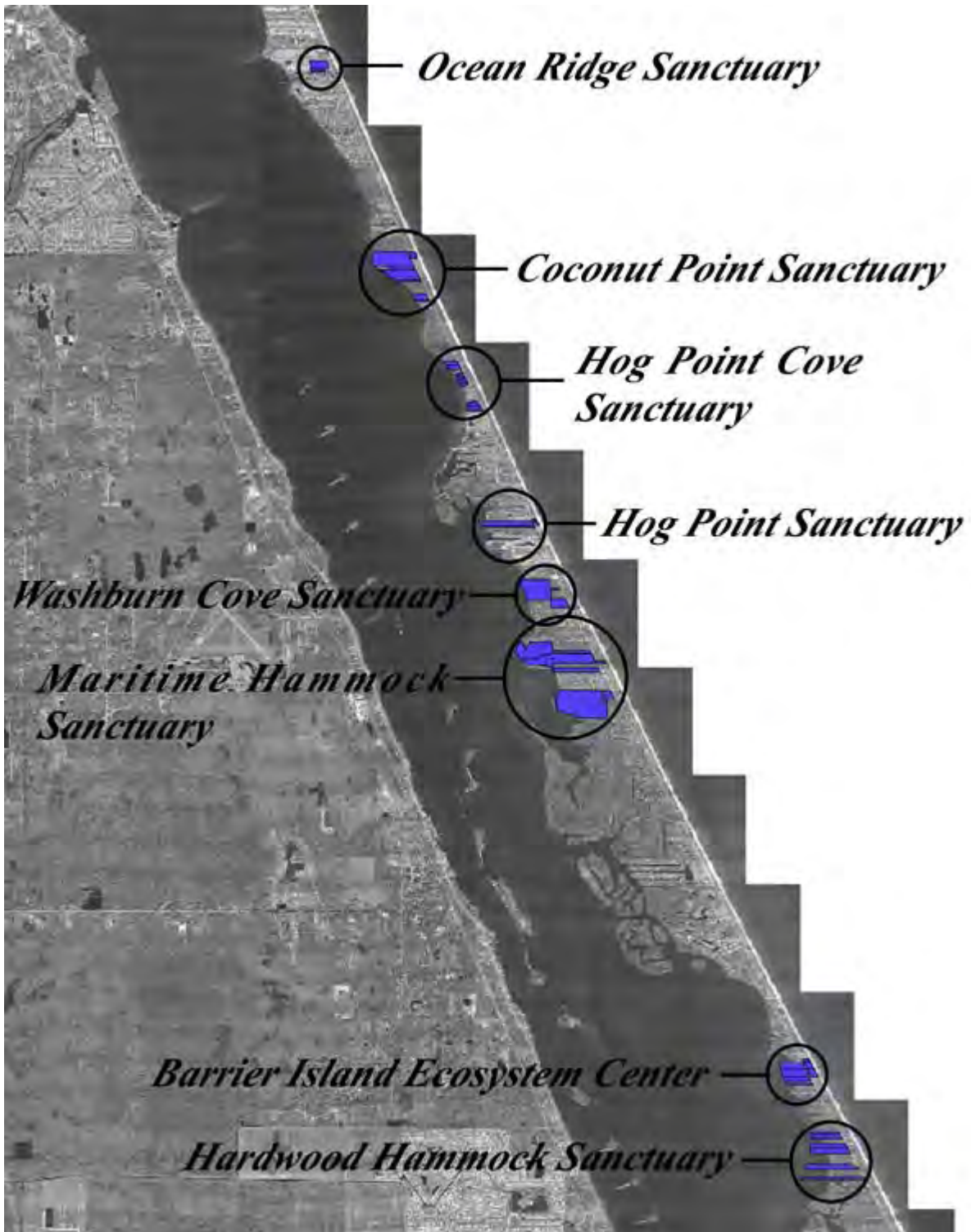
E-mail: rmojica@brevardparks.com

The South Beaches project is a cooperative effort between several partners, including federal, state, and local agencies. The project includes several parcels of publicly owned conservation lands within Brevard County's South Beaches Management Area. All of the property is located within the Archie Carr National Wildlife Refuge. The Refuge, designated by Congress in 1990, is recognized as one of the most important areas in the world for nesting loggerhead turtles and the most significant area in North America for nesting green turtles. Natural communities within the project area include coastal strand, maritime hammock, beach dune, and mangrove forest.

This project is the fifth phase of an aggressive program to remove Brazilian pepper and Australian pine from publicly held lands on the south beaches of Brevard County. The Environmentally Endangered Lands Program, a department within the Parks and Recreation Department, submitted the previous four phases. This project consisted of controlling invasive species with an average coverage of 30% on five sites: the 9.7-acre Ocean Ridge Sanctuary, the Coconut Point Sanctuary additions, which total 5.6 acres, the 17.8-acre Hog Point Cove Sanctuary, the Maritime Hammock additions parcels, which total 66.2 acres, and the Hardwood Hammock parcels, which are four parcels that total 53.6 acres. A Brontosaurus mower removed 26 acres of Brazilian pepper from the Maritime Hammock Yotti Parcel and 2 acres from Hog Point Cove.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4

Archie Carr National Wildlife Refuge



Sebastian Inlet State Park

County: Brevard

PCL Size: 870 acres

Project ID: MC-044 13 acres \$15,558

Project Manager: Florida Park Service (DEP)

Ronald N. Johns, Park Manager

9700 South A1A, Melbourne Beach, Florida 32951

Phone: 321-984-4853, Fax: 321-984-4854

E-mail: ronald.n.johns@dep.state.fl.us

Sebastian Inlet State Park sits on an Atlantic coast barrier island. Natural communities include maritime hammock, beach dune, and mangrove forest. This project was divided into two parts: one 5-acre area to mechanically remove trees with a Brontosaurus mower, and four islands totaling 8 acres to treat with herbicide.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	mechanical	n/a

Volusia County Public Conservation Lands

County: Volusia

PCL Size: various

Project ID: MC-039 2,100 acres \$113,933.95

Project ID: MC-045 3,600 acres \$63,497.12

Project ID: MC-053 42 acres \$23,223.25

Project Manager: East Volusia Mosquito Control District

David Farr

801 South Street, New Smyrna Beach, Florida 32168

Phone: 386-424-2920, Fax: 386-424-2924

E-mail: dfarr@co.volusia.fl.us

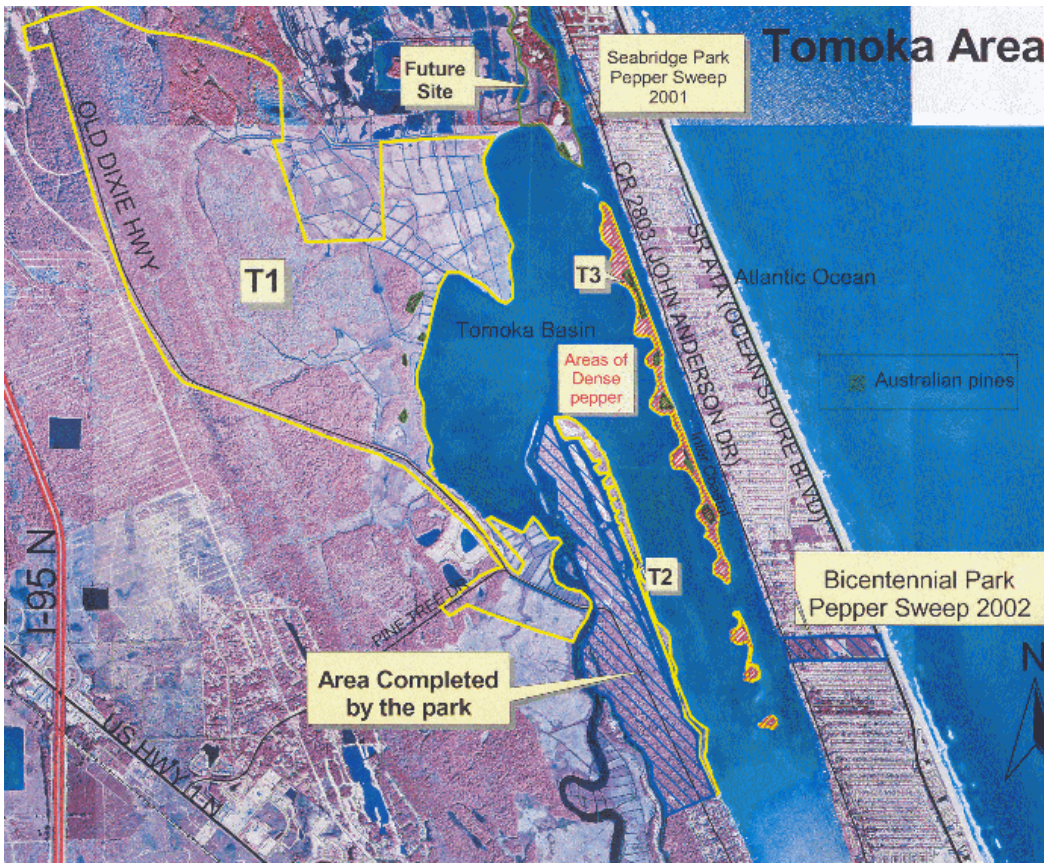
The first project was an annual *Pepper Sweep* maintenance control operation that included one federal and three state properties; Tomoka Basin Geopark (Tomoka and Bulow Creek State Parks), Tomoka Marsh Aquatic Preserve, and Canaveral National Seashore. Much of the project area consists of cabbage palm and live oak hammocks interspersed amidst tidal salt marsh and fringing mangrove forest. Brazilian pepper occurs throughout the Tomoka basin, growing as scattered individuals on dredge spoil bordering dragline ditches, or in small thickets (most less than ½-acre) on pine islands and cabbage palm heads. Eroding shorelines are highly susceptible to invasive peppers, particularly where shallow-rooted red cedars have been washed out by storms in the basin. Brazilian pepper totaled about 110 acres in sparse to dense stands throughout the project area. All of the Australian pines were located in the center portion of the largest island in several densely populated stands. Volusia County provided matching funds of \$19,710 in addition to the project cost.

The second maintenance control project encompassed several county, state, and federal parks. The Volusia County parks included Highbridge, Seabridge, Bicentennial, Smyrna Dunes, and Riverbreeze. These parks were the site of initial control work under three previous “Pepper Sweeps” (1999-2002). Previous control work was also conducted on Tomoka Basin Geopark, North Peninsula State Park, and Canaveral National Seashore. Volusia County provided time and materials valued at \$15,145.76 in matching costs for this project.

The third project consisted of initial control work on 42 acres of Brazilian pepper conducted in concert with maintenance activities. BIPM provided the herbicide only for this work through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina</i> spp.	Australian pine	Category I	basal, cut stump	Garlon 4
<i>Lantana camara</i>	lantana	Category I	foliar	Garlon 3A
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	foliar (seedlings)	Garlon 3A
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	lacing	Arsenal
<i>Sorghum halepense</i>	Johnson grass	n/a	foliar	Rodeo

Volusia County Public Conservation Lands



Control operations were conducted on the northeast (top) and southeast (right) coast of Volusia County.



Volusia County Public Conservation Lands



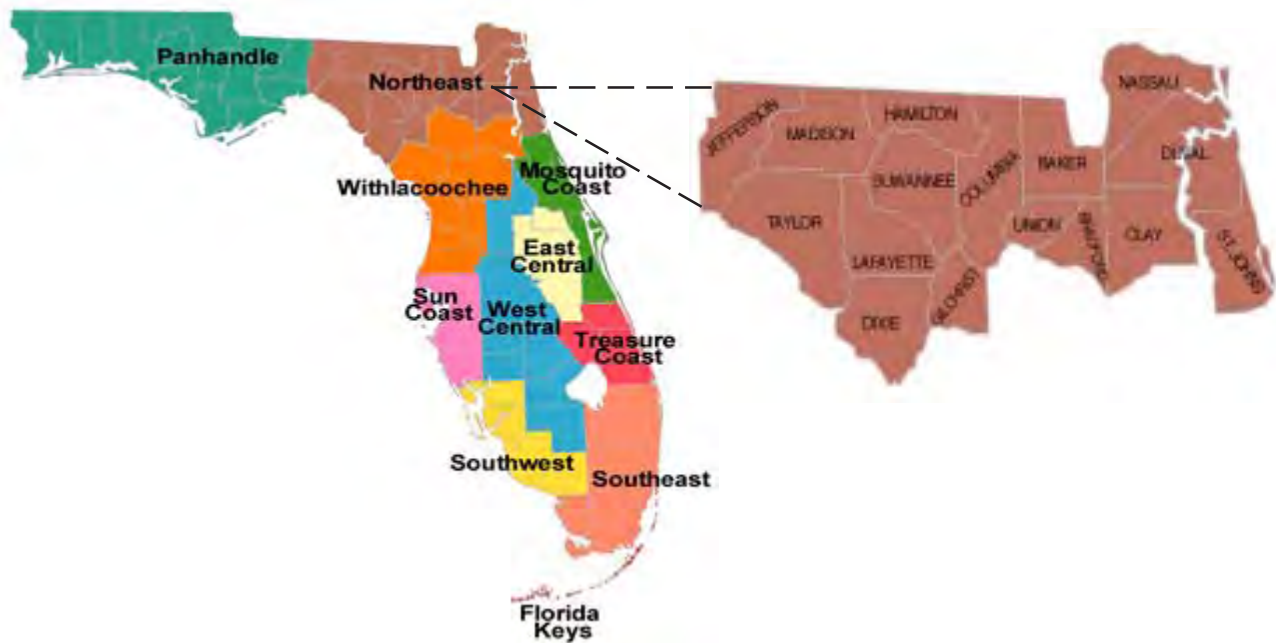
Before (top) and after (bottom) treatment of dense pepper stands — a clean sweep!

Volusia County Public Conservation Lands



But at times, the task of controlling invasive plants may still seem overwhelming...

Northeast Regional Working Group



The Northeast Regional Working Group liaison is Ms. Stefanie M. Nagid, Suwannee River Water Management District, 9225 CR 49, Live Oak, Florida 32060, phone: 386-362-1001, fax: 386-362-1056, e-mail: nagid_s@srwmd.state.fl.us

Tree Hill Nature Center

County: Duval

PCL Size: 50.3 acres

Project ID: NE-017 13 acres \$15,022

Project Manager: Tree Hill, Inc.

Lucille G. Cortese, Executive Director

7152 Lone Star Road, Jacksonville, Florida 32211

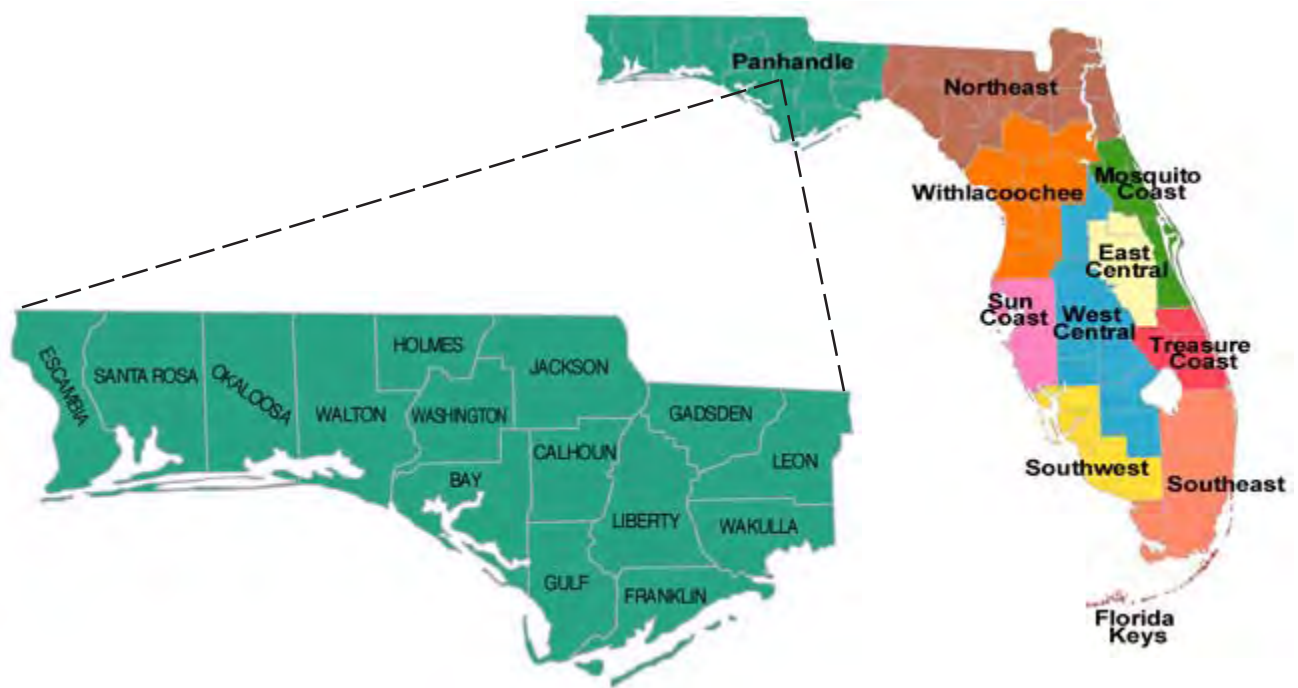
Phone: 904-724-4646, Fax: 904-724-9132

E-mail: treehill@bellsouth.net (www.treehill.org)

Tree Hill Nature Center, located in the heart of metropolitan Duval County, remains the only wilderness preserve and environmental education center serving the Jacksonville community. The Preserve consists of a variety of habitats over a small area, including riverine-mixed hardwood forest, hydric hammock, and mesic hammock. Past clear-cutting, removal of topsoil, and planting of non-native species had disturbed approximately seventy percent of the land. Air-potato invaded much of the tract (ninety-five percent of the infestation was air-potato) with a few other invasive plant species scattered throughout the project area. Exotic plant coverage varied between ten to seventy percent.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Ardisia crenata</i>	coral ardisia	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Dioscorea alata</i>	winged yam	Category I	foliar	Rodeo+Escort
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Rodeo+Escort
<i>Ligustrum</i> spp.	privet	Category I	basal	Garlon 4
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Nandina domestica</i>	nandina	Category I	basal	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Broussonetia papyrifera</i>	paper mulberry	Category II	basal	Garlon 4
<i>Elaeagnus pungens</i>	silverthorn	Category II	basal	Garlon 4

Panhandle Regional Working Group



The Panhandle Regional Working Group liaison is J.J. Bachant, The Nature Conservancy, 4025 Hwy 178, Jay, Florida 32565, phone: 850-675-2884, fax: 850-675-5759, e-mail: jbachant@tnc.org

Eglin Air Force Base

County: Okaloosa

PCL Size: 463,448 acres

Project ID: PH-026 30 acres \$14,945.93

Project Manager: Eglin AFB Natural Resources

Dennis Teague, Endangered Species Biologist

Jackson Guard, 107 Hwy 85 N, Niceville, Florida 32578

Phone: 850-883-1155, Fax: 850-882-5321

E-mail: dennis.teague@eglin.af.mil

Eglin Air Force Base is the largest forested military reservation in the United States. In addition to a large expanse of sandhill, there are 34 other natural communities present, including the most significant array of steephead seepage streams under a single ownership in Florida. A suite of rare and sensitive plants in this area benefit from removal of invasive exotic species, including 67 rare plants and 36 federally or state listed animal species. The project area consisted of three control sites, described below. The USAF provided \$10,000 in matching funds beyond the project cost, and also provided in-kind services by treating approximately 2 acres of cogon grass and torpedo grass at the Barrier Island parcel, and 3 acres of cogon grass at the Hurlburt Archery Range parcel.

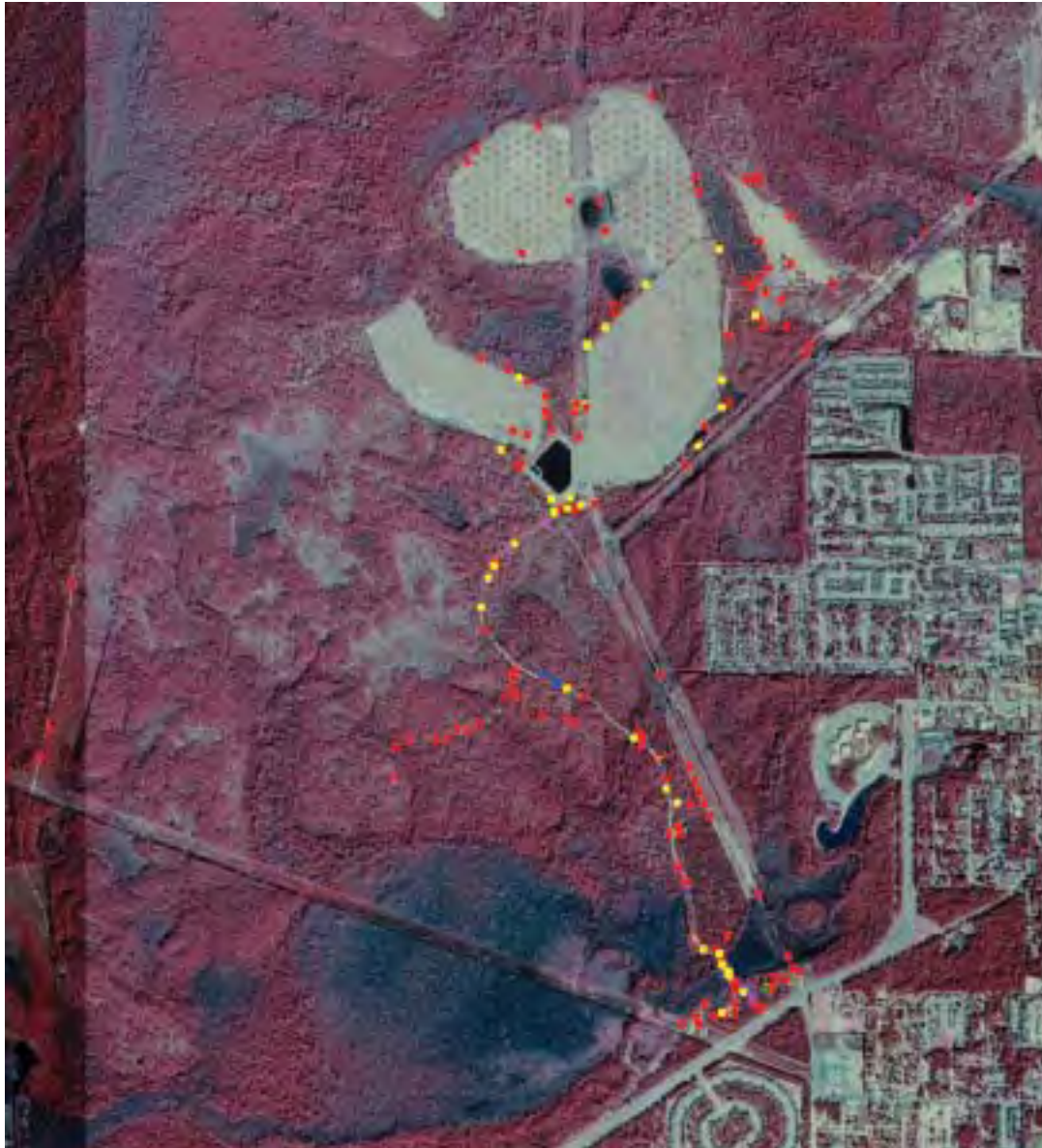
Santa Rosa Island Parcel: This 4-mile section is high quality barrier island habitat containing coastal dunes, interdunal coastal swales, flatwoods, and coastal grasslands. The same coastal interdunal swale habitat where Chinese tallow was established lay immediately adjacent to habitat that supports *Cladonia perforata*, a federally listed endangered lichen, and two state listed endangered asters, Cruise's golden aster (*Chrysopsis cruiseana*), and Godfrey's golden-aster (*Chrysopsis godfreyi*). Control efforts will benefit many other sensitive species, including the Santa Rosa beach mouse (*Peromyscus polionotus leucocephalus*). The average cover of Chinese tallow was 50% of 8 acres with densities light across the landscape but moderate where clustered.

Hurlburt Archery Range Road/Whiskey Head Dove Field: This area is high quality flatwoods habitat interspersed with depression marshes and dome swamps. The area contains known breeding habitat for the federally threatened flatwoods salamander (*Ambystoma cingulatum*). Chinese tallow trees were found adjacent to salamander breeding ponds. Invasive species were associated with, roads, wetlands, and disturbed areas. The target species were Chinese tallow, Japanese climbing fern, and Chinese privet. The average coverage of Chinese tallow was 75% for 10 acres of area where tallow was established. Fifteen small to medium size (less than 1000 ft² each) areas of Japanese climbing fern were identified, along with numerous occurrences of Chinese privet.

Piney Creek Urban Interface: This area supports many exemplary natural communities including upland hardwood forests, xeric hammocks, baygalls, and seepage streams. Rare plants found here include but are not limited to; the Alabama spiny pod (*Matelea alabamensis*), Arkansas oak (*Quercus arkansana*), silky camelilia (*Stewartia malacodendron*), Baltzell's sedge (*Carex balzellii*), sandhill sedge (*Carex tenax*), pinesap (*Monotropa hypopithys*), large leafed jointweed (*Polygonella macrophylla*) and spoon flower (*Peltandra sagittifolia*). Invasive species were associated with roads, the Choctaw Beach urban interface, and areas of illegal dumping. The target species were Chinese tallow, with an average cover of 50% on 3 acres, and mimosa, with coverage of 50% on 4 acres.

Eglin Air Force Base

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Ligustrum sinense</i>	Chinese privet	Category I	basal	Garlon 4
<i>Lonicera japonica</i>	Japanese honeysuckle	Category I	girdle	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4



Invasive plant coordinates are recorded in the field with handheld GPS units. The data is then used to produce GIS maps that graphically depict the location of alien invaders. The red dots above are Chinese tallow trees.

Eglin Air Force Base



Florida's natural pine forests have an open understory. Invasive trees and shrubs crowd out native understory species, as well as alter fire behavior, which threatens the pines themselves.

You can't see the forest for the trees, when invasives move in (above). But after a successful control operation (right), the forest is on its way to recovery.



Apalachicola River Water Management Area

County: Gulf

PCL Size: 35,506 acres

Project ID: PH-025 200 acres \$64,204.81

Project Manager: U.S. Forest Service (USDA)

Louise Kirn, District Ecologist

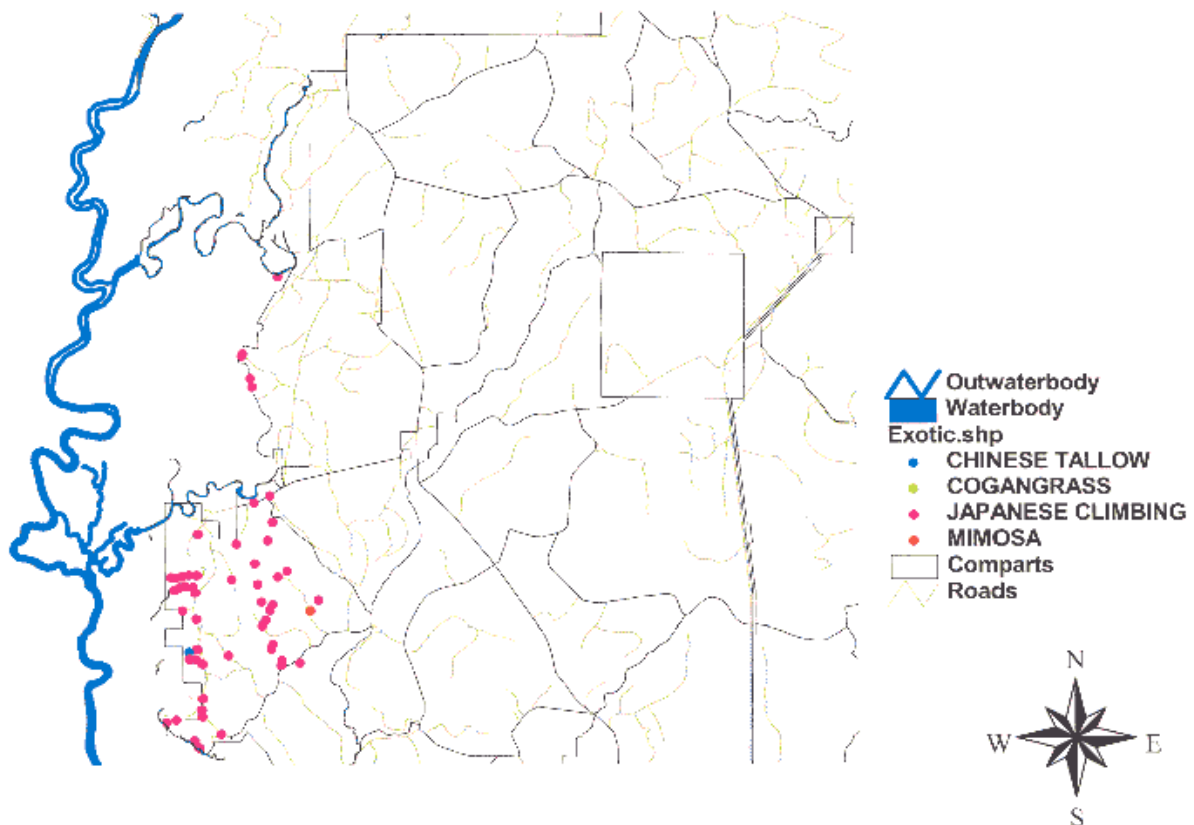
P.O. Box 579, Bristol, Florida 32321

Phone: 850-643-2282, Fax: 850-643-2284

E-mail: lkirn@fs.fed.us

The Florida River Island tract is an inholding within the Apalachicola National Forest owned by the Northwest Florida Water Management District. Japanese climbing fern in the National Forest occurs predominately in bottomland hardwoods (floodplain edge), slope forests, and adjacent pine flatwoods. The vertical distribution ranges from plants a few feet tall to those overtopping the subcanopy and canopy. In the project area, climbing fern varied in density from relatively continuous coverage along the floodplain boundary and slope forests to small isolated patches scattered across several acres of mesic pine flatwoods. The NFWFMD and USFS had cooperatively treated adjacent infestations on one previous occasion.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Roundup+Escort
<i>Nandina domestica</i>	heavenly bamboo	Category I	basal	Garlon4
<i>Aleurites fordii</i>	tung oil tree	Category II	basal	Garlon 4



Blackwater River State Forest

County: Okaloosa, Santa Rosa

PCL Size: 189,594 acres

Project ID: PH-028 108 acres \$29,316

Project Manager: Florida Division of Forestry (DACS)

Tom Cathey, Senior Forester

11650 Munson Highway, Milton, Florida 32570

Phone: 850-957-6140, Fax: 850-957-6143

E-mail: cathey@doacs.state.fl.us

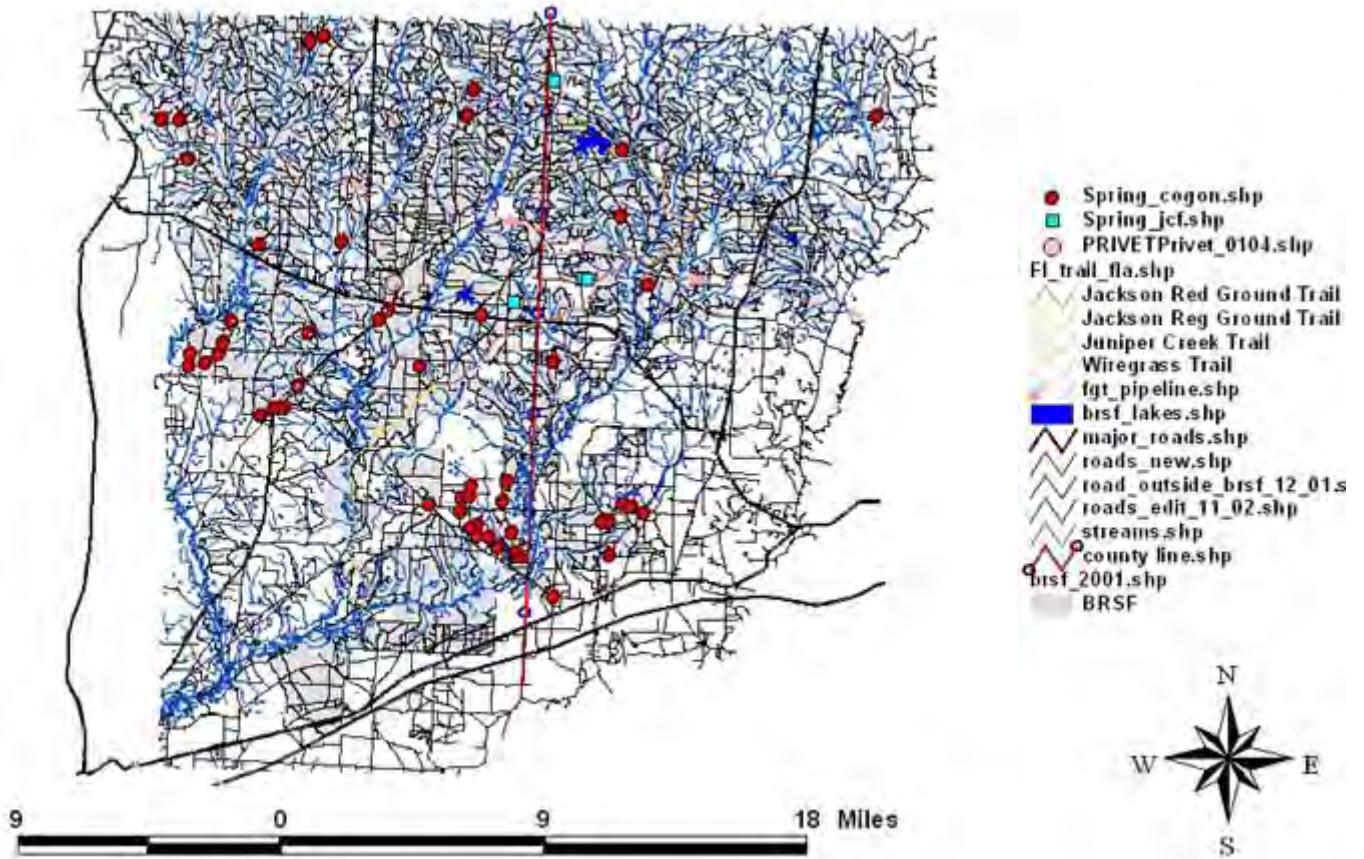
Named for the Blackwater River, which runs through the forest for approximately 30 miles, the Blackwater River State Forest (BRSF) is the second largest state forest in Florida. The Blackwater River is one of the last remaining shifting sand bottom streams still in its natural state for almost its entire length. The DOF acquired the BRSF in 1955 from the US Forest Service.

Current management emphasis is on cogon grass, which DOF believes to be the leading threat to natural ecosystems on BRSF. DOF has periodically treated the worst known infestations since the mid-1990s. During the fall of 2002 and spring of 2003, BIPM contractors treated 68 cogon grass sites, in addition to treating privet, kudzu, Chinese tallow, and mimosa.

The current project controlled cogon grass on 58 sites totaling approximately 15 acres. Infestations ranged from 100 square feet to more than 1.5 acres with an average ninety percent coverage. Chinese privet was treated in a cutover pine stand that was originally treated with Velpar ULW at 2lbs/acre and then planted with longleaf tubelings. The total infested area was 72 acres in size, but only the infestation on the perimeter of the unit (approximately 6 acres with ninety percent coverage) was treated by the contractor. A second dose of Velpar ULW provided by BIPM was aerially applied to the interior of the stand by the BRSF Timber Management Team. Japanese climbing fern found mixed in with the privet was also treated. Three infestations of climbing fern totaling 60 acres with five percent coverage were controlled by the contractor. Two small sites were also treated; a one-acre borrow pit with seven percent coverage of mimosa, and a one-acre clay pit with fifteen percent coverage of tallow.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Razor+Arsenal
<i>Ligustrum sinense</i>	Chinese privet	Category I	foliar	Razor+Arsenal
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Razor+Arsenal

Blackwater River State Forest



A GIS map shows the location of cogon grass (red dots), Japanese climbing fern (blue squares), and Chinese privet (pink dots) within the project area.

Blackwater River State Park and Heritage Trail

County: Santa Rosa

PCL Size: 712 acres

Project ID: PH-027 24.57 acres \$44,142.62

Project Manager: Florida Park Service (DEP)

Robert Barlow, Park Manager

7720 Deaton Bridge Road, Holt, Florida 32564

Phone: 850-983-5363, Fax: 850-983-5364

E-mail: robert.barlow@dep.state.fl.us

Blackwater River State Park consists of mesic flatwoods, sandhill, upland pine forest, baygall, and river floodplain communities. Exotics occurred in the campground, residence area, and near the ranger station, along roadsides, fence lines, and in a few scattered areas of the park. Blackwater Heritage Trail State Park is a paved path 12 feet wide within an approximately 100-foot corridor that stretches 8.5 miles in length. The trailhead is located in the town of Milton. Yards, cultivated areas, pine plantations, exotic hedgerows, and shade trees border the trail. Exotics occurred in almost all areas of the trail.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Colocasia esculenta</i>	wild taro	Category I	foliar	Rodeo
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup+Escort
<i>Lantana camara</i>	lantana	Category I	basal	Garlon 4
<i>Ligustrum sinense</i>	Chinese privet	Category I	basal	Garlon 4
<i>Lonicera japonica</i>	Japanese honeysuckle	Category I	girdle	Garlon 4
<i>Lonicera japonica</i>	Japanese honeysuckle	Category I	foliar	Rodeo/Garlon 3A
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Roundup+Escort
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Nandina domestica</i>	nandina	Category I	basal	Garlon 4
<i>Neyraudia reynaudiana</i>	cane grass	Category I	foliar	Roundup+Escort
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Wisteria sinensis</i>	Chinese wisteria	Category II	girdle	Garlon 4

Lake Jackson Mounds State Archeological Site

County: Leon

PCL Size: 198 acres

Project ID: PH-029 120 acres \$13,400

Project Manager: Florida Park Service (DEP)

Wes Smith, Park Manager

1022 De Soto Park Drive, Tallahassee, FL 32301

Phone: 850-922-6007, Fax: 850-488-0366

E-mail: wes.smith@dep.state.fl.us

This park unit consists of secondary growth hammock, ravines, and upland hardwood forest. Coral ardisia was a widely spread exotic species at the park, with dense stands found throughout the western portion of the unit, especially adjacent to the nature trails and seepage streams. Nandina was abundant in the same locations as ardisia. Stem counts of these two exotics were as high as several thousand per acre in some locations. These exotic species were of particular concern in the lowland ravine areas where they threatened native trilliums. Chinese tallow was well established in dense stands along the unit's southeast and northeast borders and along the entire lakeshore. Tallow stem counts approached several hundred per acre in some areas.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Ardisia crenata</i>	coral ardisia	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Nandina domestica</i>	heavenly bamboo	Category I	basal	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Aleurites fordii</i>	tung oil tree	Category II	basal	Garlon 4

Aerial view of project area and primary invasive plant concentrations.



Panhandle Roving Control Technicians

County: various

PCL Size: n/a

Project ID: PH-024 157 acres Project Cost: \$19,679.06

Project Manager: Bureau of Invasive Plant Management (DEP)

Mark Zeller

3900 Commonwealth Boulevard, Tallahassee, Florida 32399

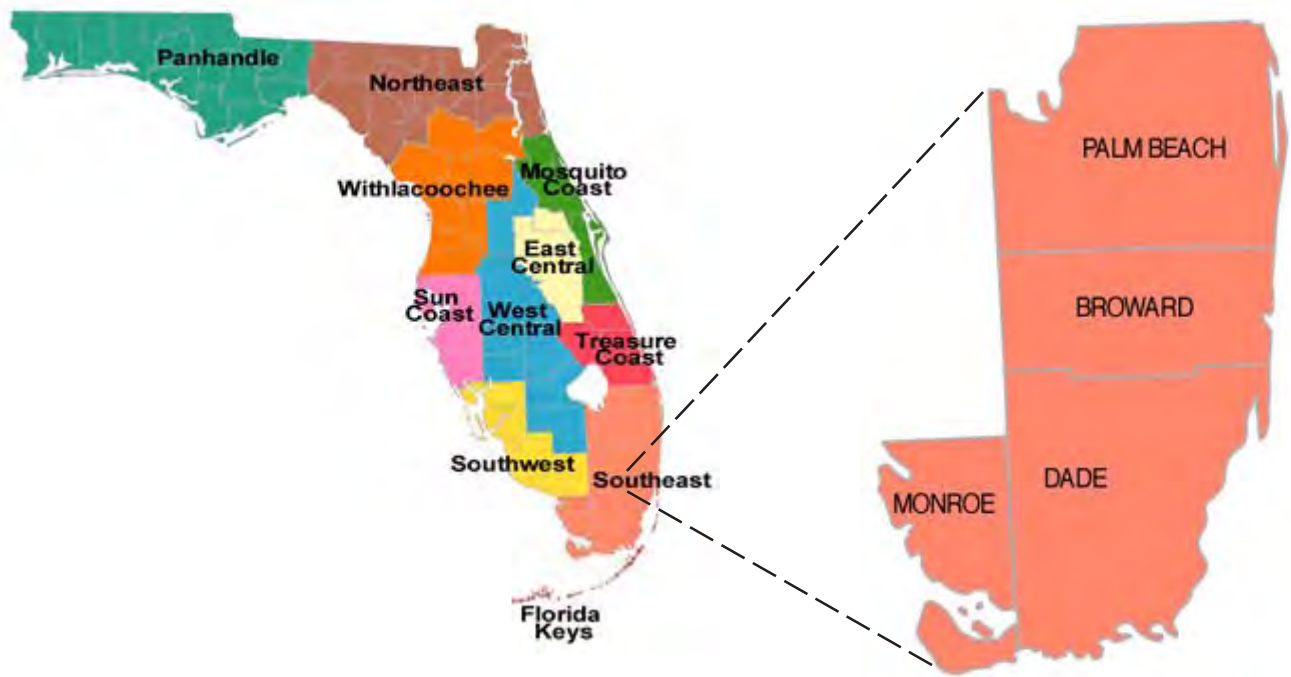
Phone: 850-245-2809, Fax: 850-245-2835

E-mail: mark.zeller@dep.state.fl.us

Two invasive plant control technicians funded by BIPM performed control work on public conservation lands in north Florida. This included both initial and maintenance control work. Sites included Blackwater River and Topsail Hill Preserve State Parks, Blackwater River and Pine Log State Forests, Lake Jackson Mounds State Archaeological Site, St. Joe Bay State Buffer Preserve, St. Marks National Wildlife Refuge, Eglin Air Force Base, and Leon County's Miccosukee Greenway and Phipps Park. BIPM also provided all herbicide through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Ligustrum</i> spp.	privet	Category I	basal	Garlon 4
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup+Arsenal
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Roundup+Arsenal
<i>Lonicera japonica</i>	Japanese honeysuckle	Category I	foliar	Roundup+Arsenal

Southeast Regional Working Group



The Southeast Regional Working Group liaison is Mr. Joe Maguire, Miami-Dade Parks and Recreation, 22200 S.W. 137th Avenue, Miami, Florida 33170, phone: 305-257-0933, fax: 305-257-1086, e-mail: J57@miamidade.gov

John U. Lloyd Beach State Park

County: Broward

PCL Size: 311 acres

Project ID: SE-071, TC-036 91.5 acres \$451,099

Project Manager: Florida Park Service (DEP)

Sid Leve, Park Manager

6503 N. Ocean Drive, Dania, Florida 33004

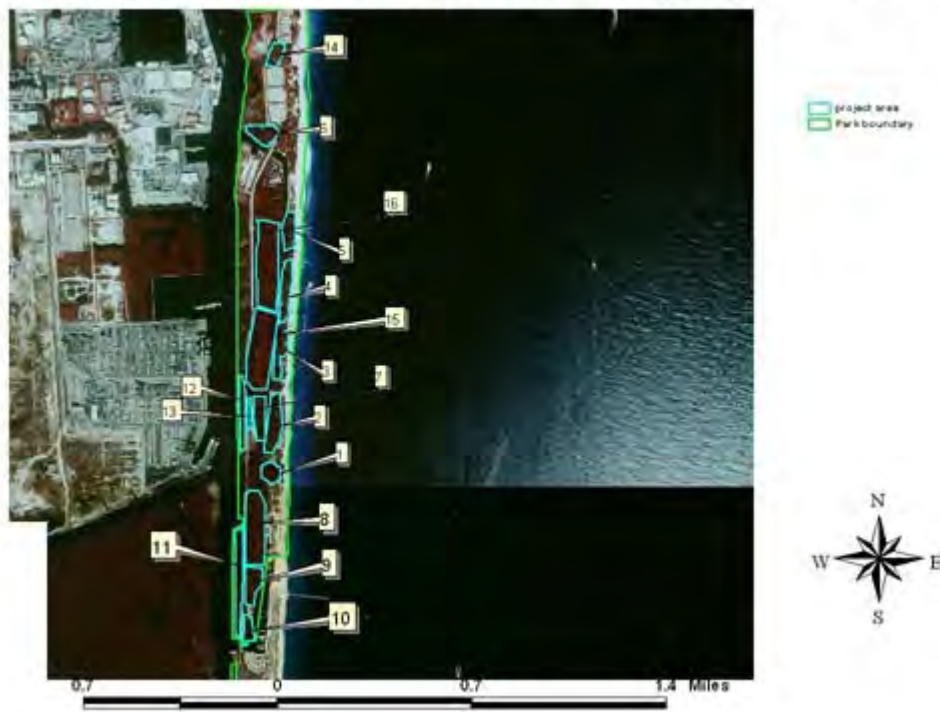
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John U. Lloyd State Park is a linear park running north to south along the southeastern coast of Florida. The tropical hardwood hammock community of the park was heavily invaded by exotics, primarily Australian pine. The project area was divided into sixteen zones and focused on the mechanical removal of Australian pine in preparation for replanting native species on the site. This was a cost share project with the U.S. Fish and Wildlife Service providing a grant for \$39,670, and the Florida Park Service funding work in one zone at a cost of \$13,800 and providing an additional \$18,135 in labor and materials as an in-kind match, for a total project cost of \$522,704.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina</i> spp.	Australian pine	Category I	cut stump/mechanical	Garlon 4
<i>Colubrina asiatica</i>	latherleaf	Category I	cut stump/mechanical	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump/mechanical	Garlon 4

John U Lloyd Beach State Park project area



John U. Lloyd Beach State Park



A dense monoculture of Australian pines (left) must be removed before any ecological restoration can occur. The cleared site (right) is now ready for planting of native tree species.



Removing Australian pines can also have an aesthetic effect by improving a viewshed, and a safety benefit, as the trees are frequently blown down during hurricanes.

Everglades/Big Cypress *Lygodium*

County: Collier, Miami-Dade

PCL: Everglades National Park

PCL Size: 1,507,850 acres

PCL: Big Cypress National Preserve

PCL Size: 729,000 acres

Project ID: NP-033 1016 acres \$97,061.32

Project Manager: National Park Service

Jonathan Taylor

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In Everglades National Park, Old World climbing fern is rapidly colonizing scrub habitat in the coastal marsh communities from Cape Sable to Everglades City. *Lygodium* is a fern and like all ferns reproduces by producing numerous spores, which in this plant are transported by wind. This quickly spreading exotic pest plant rapidly and severely alters the Park's native flora. *Lygodium* readily invades most of south Florida's native plant communities, growing over trees and shrubs and smothering entire plant communities. *Lygodium* also alters natural fire behavior. Huge skirts of old fronds enclose trees and serve as ladder fuels to carry fire into canopies. Trees that may normally survive ground fires are killed when fire is brought into the canopy. *Lygodium* is a difficult plant to treat and requires several treatments to bring it to a maintenance level.

In Big Cypress National Preserve, the treated area is North of 1-75, just south of the Hendry County line. Pinelands and scattered cypress domes and strands dominate this area. The area was historically farmed and cattle grazing was common. Aerial reconnaissance in the 1990s detected no *Lygodium* in the Preserve; however, a ten acre patch was discovered in 2001 and treated in 2002.

Lygodium was reported on 10,117 acres in South Florida in 1993. This number grew to 100,000 acres by 2002. This project consisted of aerial retreatment of land in the Flamingo District and Gulf Coast districts. Much of this area was treated in the previous two years. Overall, climbing fern occurred in the project area with a coverage from ten to one hundred percent. It was aeri ally treated by helicopter using a foliar application of herbicide. This project is part of the National Park Service Natural Resource Challenge where state and federal matching funds are directed toward controlling invasive plants on national parks in Florida.

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	aerial	Escort

Big Cypress National Preserve

County: Collier, Miami-Dade

PCL Size: 729,000 acres

Project ID: NP-034 60,540.5 acres \$244,072.84

Project Manager: National Park Service

William A. Snyder

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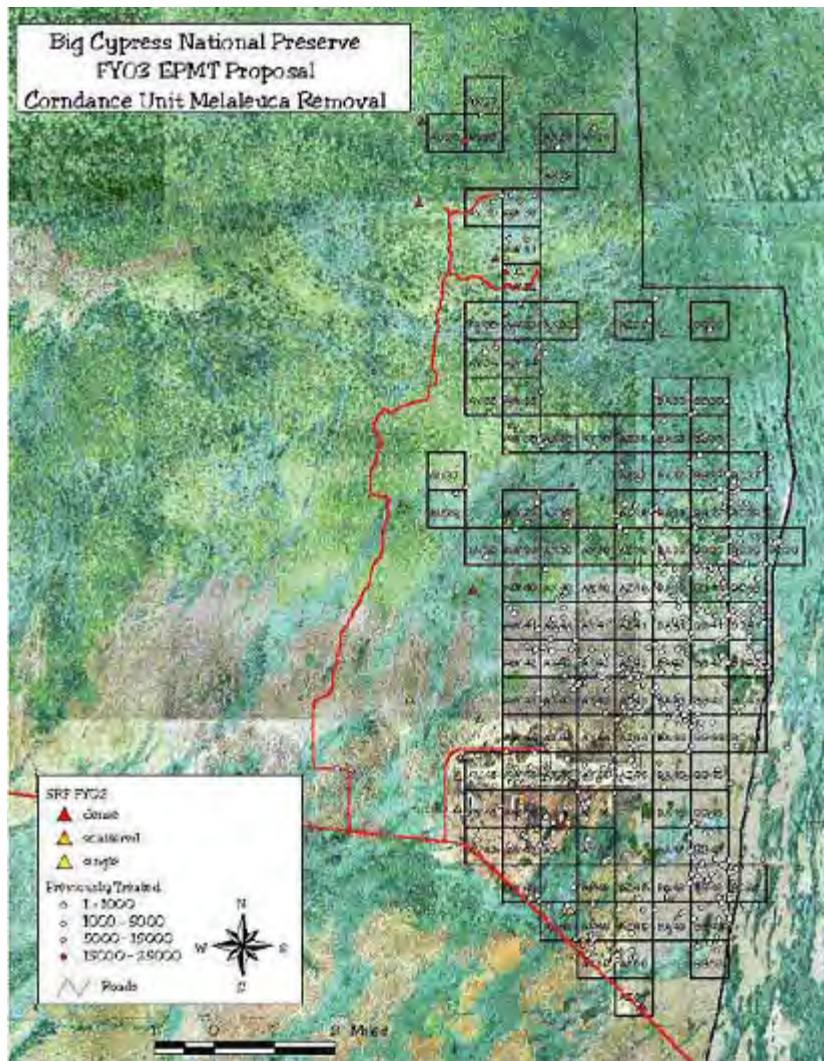
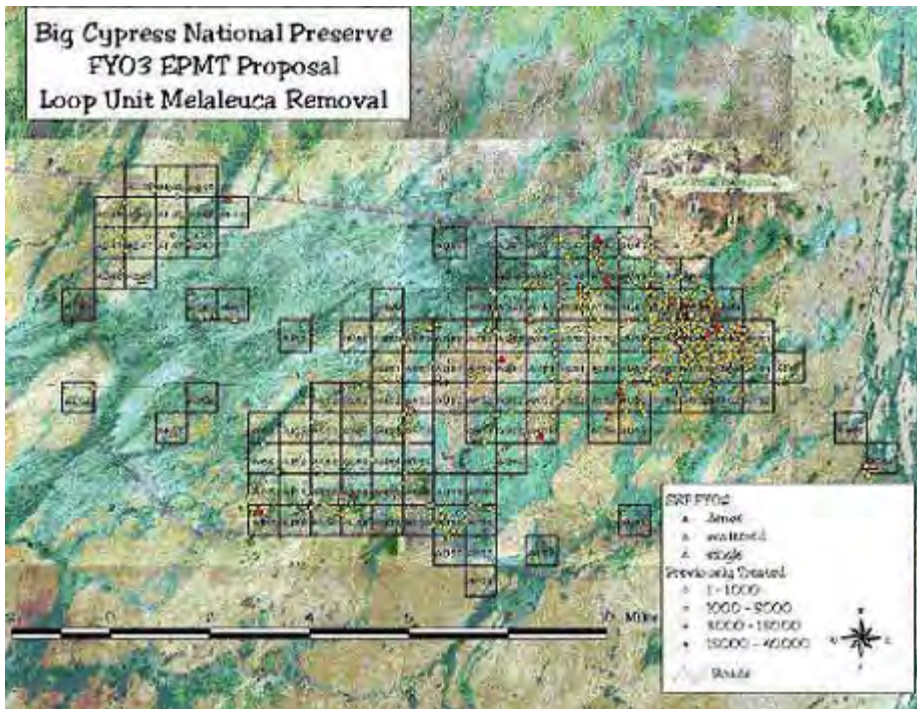
E-mail: bill_snyder@nps.gov

Large expanses of cypress dominate the Loop Unit of Big Cypress. The eastern portion is mostly dwarf cypress habitat with extensive areas of prairie, while the western area is predominately cypress strand (Gator Hook Swamp). Pine islands and hardwood hammocks punctuate the entire Loop Unit. There are areas of soil disturbance around the periphery from agricultural activities. Melaleuca was present at 798 known sites within the treatment area. A systematic reconnaissance flight flown in 2002 revealed new infestations since the last treatment and severe seedling regeneration at previously treated sites in varying densities from a single stem to dense re-growth within the designated 128 square kilometers.

Dwarf cypress swamp and marl prairie dominate the southern area of the Corndance Unit of Big Cypress, while the northern area is predominantly pinelands and tropical hardwood hammocks. Melaleuca was present at 639 known sites within the 117 square kilometers of the treatment area.

Treatment in both areas included ground crews using a combination of hand pulling seedlings and cut stump treatment of larger stems. This project is part of the NPS Natural Resource Challenge where state and federal matching funds are directed toward controlling invasive plants on national parks in Florida. BIPM funded this project under its Melaleuca Program.

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Arsenal+Glypro
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Arsenal+Glypro
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Arsenal+Glypro
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal+Glypro
<i>Schefflera actinophylla</i>	Queensland umbrella tree	Category I	cut stump	Arsenal+Glypro
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Arsenal+Glypro
<i>Syzygium cumini</i>	Java plum	Category I	cut stump	Arsenal+Glypro
<i>Hibiscus tiliaceus</i>	mahoe	Category II	cut stump	Arsenal+Glypro
<i>Terminalia catappa</i>	tropical almond	Category II	cut stump	Arsenal+Glypro



Matheson Hammock Park

County: Miami-Dade

PCL Size: 630 acres

Project ID: SE-058 9.7 acres \$115,000.00

Project Manager: Miami-Dade Park and Recreation Department

Jane G. Dozier, Environmental Resource Project Supervisor

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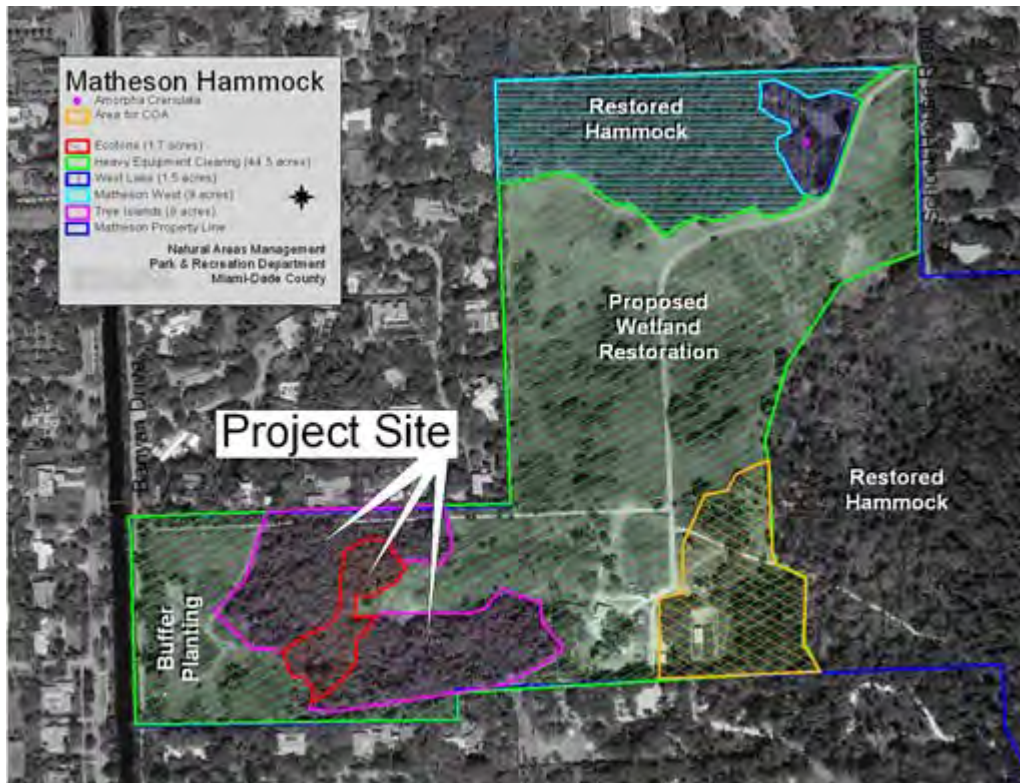
Matheson Hammock Park contains 65 acres of tropical hardwood hammock and transitional oak hammock, as well as 329 acres of marsh, mangrove, and shallow water marine communities. Matheson Hammock supports 35 animal species and 31 plant species listed as endangered, threatened, or commercially exploited. The vegetation consists of a mix of native tropical, temperate, and transitional/pineland plant species. These islands are a refuge to many plant species of note, including least halberd fern (*Tectaria fimbriata*), brittle maidenhair fern (*Adiantum tenerum*), and redberry stopper (*Eugenia confusa*).

This project encompassed two four-acre tree islands and the 1.7-acre intermediate ecotone located in the southwestern section of the park; an area historically called “Matheson Nursery.” This area was once part of a transverse glade containing islands of tropical hardwood hammock, transitional oak hammock, and pineland. Certain sections of the property still represent these ecotonal communities between the historic finger glades and the coastal hammock. Deeply eroded outcroppings of limestone with typical hammock soils (Matecumbe muck) characterize the tree islands, which are surrounded by lowland areas characterized by freshwater wetland or prairie soils (Perrine marl), and mixed Udorthents (minesols) with limestone or marl substratum.

The most problematic invasive exotic plants included sewer vine, Queensland umbrella tree, and shoebutton ardisia. These species formed dense thickets of vegetation in some areas. Other significant pest plants included bishopwood, woman’s tongue, Surinam cherry, Brazilian jasmine, and Brazilian pepper. Since 1991, the county has expended over \$800,000 and restored over 48 acres of Matheson’s largest area of tropical hardwood hammock. Past disturbance, including human development, hurricane damage, and hydrologic alteration, as well as subsequent invasion by aggressive exotic plants, has severely impacted these areas. Miami-Dade Natural Areas Management personnel conducted all control treatments for this project.

Matheson Hammock Park

Plants Treated	Common Name	EPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	cut stump	Garlon 4
<i>Albizia lebbek</i>	woman's tongue	Category I	cut stump	Garlon 4
<i>Ardisia elliptica</i>	shoebutton ardisia	Category I	cut stump	Garlon 4
<i>Bauhinia variegata</i>	orchid tree	Category I	cut stump	Garlon 4
<i>Bischofia javanica</i>	bishopwood	Category I	cut stump	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	cut stump	Garlon 4
<i>Eugenia uniflora</i>	Surinam cherry	Category I	cut stump	Garlon 4
<i>Jasminum dichotomum</i>	Gold Coast jasmine	Category I	cut stump	Garlon 4
<i>Jasminum fluminense</i>	Brazilian jasmine	Category I	cut stump	Garlon 4
<i>Manilkara zapota</i>	sapodilla	Category I	cut stump	Garlon 4
<i>Neyraudia reynaudiana</i>	Burma reed	Category I	cut stump	Garlon 4
<i>Paederia cruddasiana</i>	sewer vine	Category I	cut stump	Garlon 4
<i>Schefflera actinophylla</i>	Queensland umbrella tree	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 4
<i>Tradescantia fluminensis</i>	white-flowered wandering Jew	Category I	cut stump	Garlon 4
<i>Tradescantia spathacea</i>	oyster plant	Category I	cut stump	Garlon 4
<i>Adenantha pavonina</i>	red sandalwood	Category II	cut stump	Garlon 4
<i>Epipremnum pinnatum</i>	pothos	Category II	cut stump	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	cut stump	Garlon 4
<i>Ptychosperma elegans</i>	solitary palm	Category II	cut stump	Garlon 4
<i>Sansevieria hyacinthoides</i>	bowstring hemp	Category II	cut stump	Garlon 4
<i>Syngonium podophyllum</i>	arrowhead vine	Category II	cut stump	Garlon 4
<i>Terminalia catappa</i>	tropical almond	Category II	cut stump	Garlon 4
<i>Alpinia speciosa</i>	shell ginger	n/a	cut stump	Garlon 4
<i>Carica papaya</i>	papaya	n/a	cut stump	Garlon 4
<i>Carissa macrocarpa</i>	Natal plum	n/a	cut stump	Garlon 4
<i>Mangifera indica</i>	mango	n/a	cut stump	Garlon 4
<i>Premna odorata</i>	fragrant premna	n/a	cut stump	Garlon 4



Miami Hammocks Maintenance

County: Miami-Dade

PCL Size: n/a

Project ID: SE-074 19.7 acres \$6,405.65

Project Manager: Miami-Dade Parks and Recreation

Rodell Collins

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This maintenance project included five county parks: Deering West Hammock, Matheson West, R. Hardy Matheson, Whispering Pines, and Bill Sadowski. The major exotic plants of concern were Brazilian pepper, bishopwood, air-potato, Gold Coast jasmine, and shoebutt ardisia. Treatments were conducted by Miami-Dade Natural Areas Management personnel. BIPM provided the herbicides only for this project through its Herbicide Bank.

Pine rockland and rockland hammock provide a diversity of habitats for at least 259 native plant species. The canopy and sub-canopy of these hammocks contain 64 species of native hardwood trees and shrubs, including coco plum (*Chrysobalanus icaco*), buttonwood (*Conocarpus erectus*), gumbo limbo (*Bursera simarouba*), pigeon plum (*Coccoloba diversifolia*), mastic (*Mastichodendron foetidissimum*), lancewood (*Nectandra coriacea*), shortleaf fig (*Ficus citrifolia*), myrsine (*Myrsine floridana*), white stopper (*Eugenia axillaris*), and wild coffee (*Psychotria nervosa*), as well as the rare tropical tree, Krug's holly (*Ilex krugiana*). There are at least 61 listed rare plants known to occur in the upland areas of these hammocks. Ten species of native bromeliads occur in Deering Hammock, including *Tillandsia fasciculata* and *T. flexuosa*. Two other characteristic native plants are broad halberd fern (*Tectaria heracleifolia*) and least halberd fern (*T. fimbriata*). Eight epiphytic and three terrestrial orchid species also occur in the hammocks. The moist shaded limestone surface of Old Cutler Hammock (part of Deering Hammock Park) is rich in ferns and hosts at least four species which are rare in North America, the Florida tree fern (*Ctenitis sloanei*), leather fern (*Acrostichum aureum*), broad halberd fern (*Tectaria heracleifolia*), and the slender spleenwort, (*Asplenium trichomanes-dentatum*).

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	cut stump	Garlon 4
<i>Albizia lebbek</i>	woman's tongue	Category I	cut stump	Garlon 4
<i>Ardisia elliptica</i>	shoebutt ardisia	Category I	cut stump	Garlon 4
<i>Bauhinia variegata</i>	orchid tree	Category I	cut stump	Garlon 4
<i>Bischofia javanica</i>	bishopwood	Category I	cut stump	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	cut stump	Garlon 4
<i>Eugenia uniflora</i>	Surinam cherry	Category I	cut stump	Garlon 4
<i>Jasminum dichotomum</i>	Gold Coast jasmine	Category I	cut stump	Garlon 4
<i>Jasminum fluminense</i>	Brazilian jasmine	Category I	cut stump	Garlon 4
<i>Manilkara zapota</i>	sapodilla	Category I	cut stump	Garlon 4
<i>Neyraudia reynaudiana</i>	Burma reed	Category I	cut stump	Garlon 4
<i>Schefflera actinophylla</i>	Queensland umbrella tree	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 4
<i>Tectaria incisa</i>	incised halberd fern	Category I	cut stump	Garlon 4
<i>Tradescantia spathacea</i>	oyster plant	Category I	cut stump	Garlon 4

Model Lands Basin

County: Miami-Dade

PCL Size: 13,463 acres

Project ID: SE-062 26 acres \$77,055

Project Manager: Miami-Dade County EEL

Gwen Burzycki, Environmental Resource Project Supervisor

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The Model Lands Basin/South Dade Wetlands Acquisition Project comprises approximately 48,000 acres of mixed forested transitional wetlands, freshwater marshes, and coastal wetlands that connect Everglades National Park and the Southern Glades Wildlife and Environmental Area with Biscayne National Park. BIPM funded a previous phase of this project on three sites in FY02. The current project addressed two additional sites where treatment was started during FY01 but could not be completed. These properties are both in public ownership and were infested primarily with shoebutt ardisia and Australian pine, although other invasive species such as Brazilian pepper were also present. Miami-Dade County provided \$77,055 in matching funds for a total project cost of \$154,110.

Site 1 is composed of forested transitional wetlands and sawgrass prairie, and was infested primarily with Australian pine and shoebutt ardisia. The northern boundary of the site was heavily infested with Australian pine, while shoebutt ardisia occurred primarily in the understory of the forested wetlands in the southern portion of the site. Native species on Site 1 include myrsine (*Rapanea guianensis*), dahoon holly (*Ilex cassine*), red bay (*Persea palustris*), wax myrtle (*Myrica cerifera*), and sawgrass (*Cladium jamaicense*). Density of shoebutt ardisia ranged from approximately fifty to one hundred percent of the understory within the forested areas, while untreated Australian pine density ranged from fifty to seventy-five percent along the northern boundary of the property.

Site 2 is also composed of forested transitional wetlands and sawgrass prairie, and was also infested primarily with Australian pine and shoebutt ardisia. Some Brazilian pepper occurred on this site. Australian pine density averaged thirty to fifty percent. Shoebutt ardisia ranged from six to fifteen percent in the understory of areas that received prior initial treatment to nearly one hundred percent cover in the understory of untreated areas. Native species on Site 2 are similar to Site 1, with the addition of Southern swamp lily (*Crinum americanum*) and buttonbush (*Cephalanthus occidentalis*).

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Ardisia elliptica</i>	shoebutt ardisia	Category I	cut stump	Garlon 3A
<i>Casuarina</i> spp.	Australian pine	Category I	basal bark	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 3A
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal bark	Garlon 4



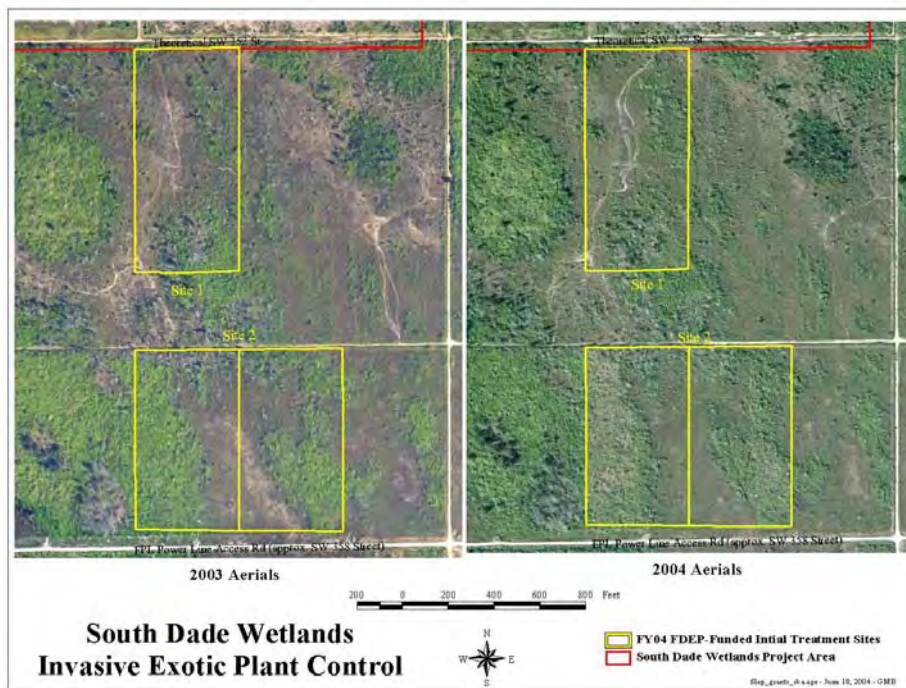
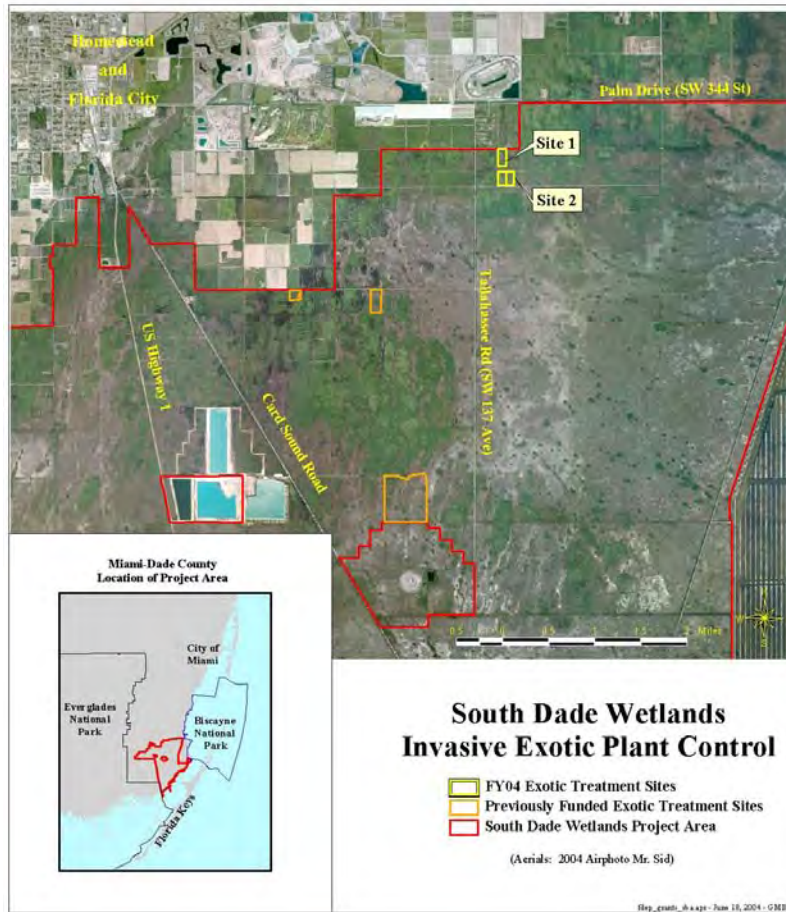
Forested area where the understory is heavily infested with shoebutton ardisia (left) vs. similar area after treatment (right). Forest canopy is composed of native species such as dahoon holly, wax myrtle, and red bay. Shoebutton ardisia can invade undisturbed tree islands and forested wetlands, and within a few years this invasive exotic shrub can completely take over the understory.



Australian pine trunks treated with herbicide in a basal bark application.



Australian pines are sometimes treated and left in place as snags for raptor perching.



Comparison of 2003 (before project) and 2004 (after project) aerials. Note the lighter appearance to the forest canopy (bright green areas) in 2004, which is due to thinning of both the canopy and understory through eliminating shoebuttan ardisia.

Southern Glades Wildlife and Environmental Area

County: Miami-Dade

PCL Size: 30,080 acres

Project ID: SE-059 54.35 acres \$117,263.75

Project Manager: Florida Fish and Wildlife Conservation Commission

Daniel Castillo, Wildlife Biologist III

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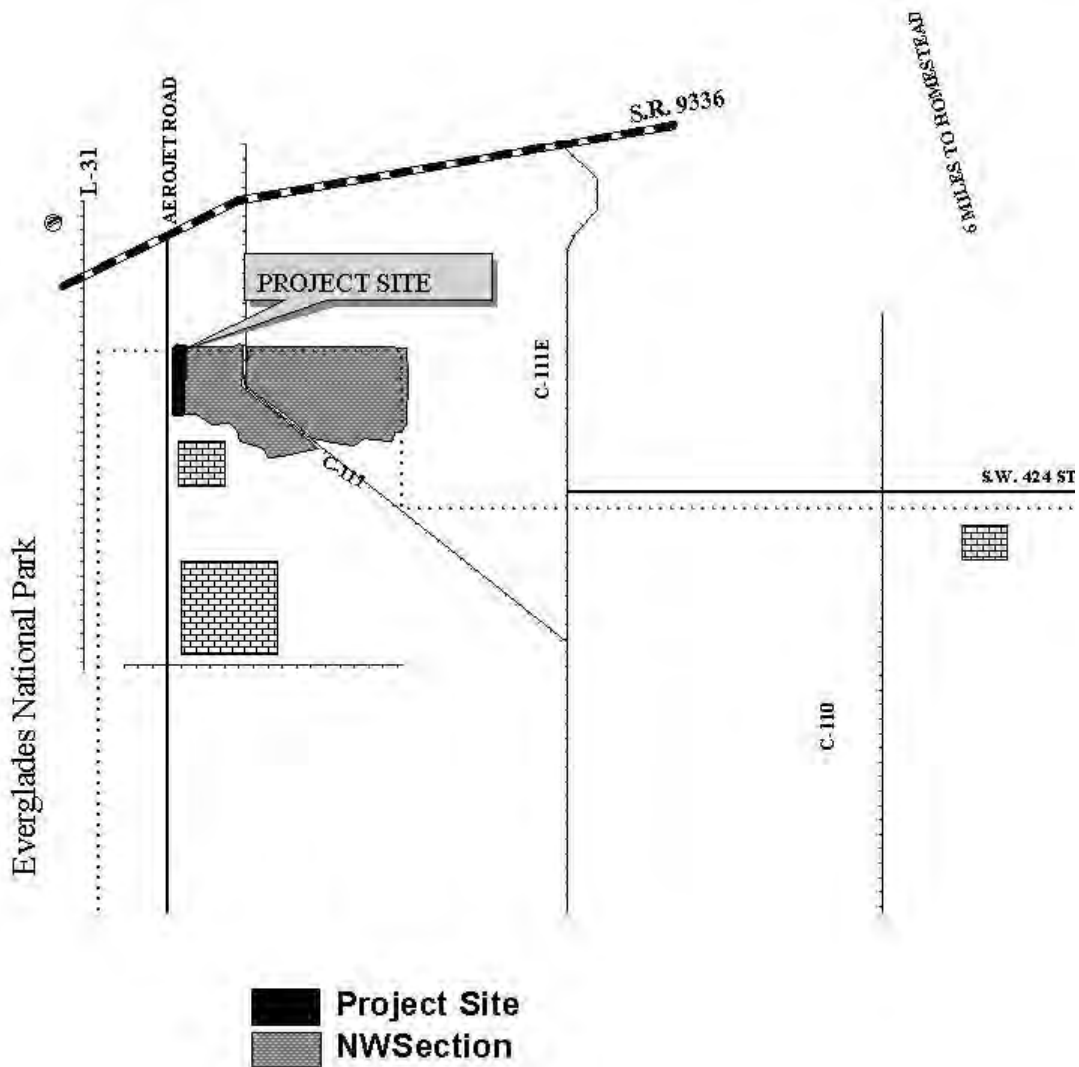
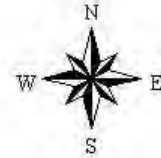
The SGWEA comprises predominantly grassy wetlands interspersed with tree islands and shrub thickets. The SGWEA consists of the former southern unit of the East Everglades Wildlife and Environmental Area and other lands purchased as additions. The project site was located within the marsh area of the northwest section of the SGWEA. Frog Pond Wildlife Management Area borders the site to the north, Aerojet Road to the west, C-111 to the east, and Strand Swamp community to the south. The northwest section of the SGWEA contains approximately 600 acres infested with Brazilian pepper, shoebutt ardisia, and guava. Mature, multi-stem Brazilian pepper trees dominate the canopy and shoebutt ardisia dominates the shrub layer. FWC allocated \$40,000 for the control of non-native vegetation on other areas of the SGWEA.

In addition to supporting a variety of federally and state listed, threatened, and endangered species, the SGWEA is the only non-Federal property in which the critically endangered Cape Sable Seaside Sparrow (*Ammodramus maritimus mirabilis*) occurs. The Cape Sable seaside sparrow inhabits *Muhlenbergia* and mixed grass prairies on the SGWEA. The long term survival of this species depends upon proper management of vegetation, hydroperiod, and fire; therefore, exotic plant control was needed in order to prevent non-native vegetation from invading and degrading adjacent critical Cape Sable seaside sparrow habitat.

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia lebbek</i>	woman's tongue	Category I	mechanical	n/a
<i>Ardisia elliptica</i>	shoebutt ardisia	Category I	mechanical	n/a
<i>Bischofia javanica</i>	bishopwood	Category I	mechanical	n/a
<i>Colocasia esculenta</i>	wild taro	Category I	mechanical	n/a
<i>Psidium guajava</i>	guava	Category I	mechanical	n/a
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	mechanical	n/a
<i>Ludwigia</i> spp.	primrose willow	n/a	mechanical	n/a

Southern Glades

Wildlife & Environmental Area
(30,080)
Miami-Dade County



Southern Glades Wildlife and Environmental Area



The 'gray area' in the top left of the photo is overtaken with exotic species. After mechanical removal (inset) the area is ready for restoration work to begin.



Shoebutton ardisia before removal engulfed the property— and visitors.

Oleta River State Park

County: Miami-Dade

PCL Size: 1,033 acres

Project ID: SE-056 70.8 acres \$970.38

Project ID: SE-069 50 acres \$800.00

Project Manager: Florida Park Service (DEP)

Steve Dale, Park Manager

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Bordering the north shore of Biscayne Bay, Oleta River State Park encompasses the mouth of its namesake, as well as hundreds of acres of mangroves and tidal swamp. The project areas were former spoil sites that were infested with Australian pine, Brazilian pepper, and other exotics. These areas will be restored to Maritime Hammock. The bureau provided the herbicide only for these projects through its Herbicide bank

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Garlon 4

Loxahatchee Slough Natural Area

County: Palm Beach

PCL Size: 11,000 acres

Project ID: SE-063 415 acres \$200,000

Project Manager: Palm Beach County

Michael Cheek, Environmental Analyst

3323 Belvedere Road, Bld 502, West Palm Beach, Florida 33406-1548

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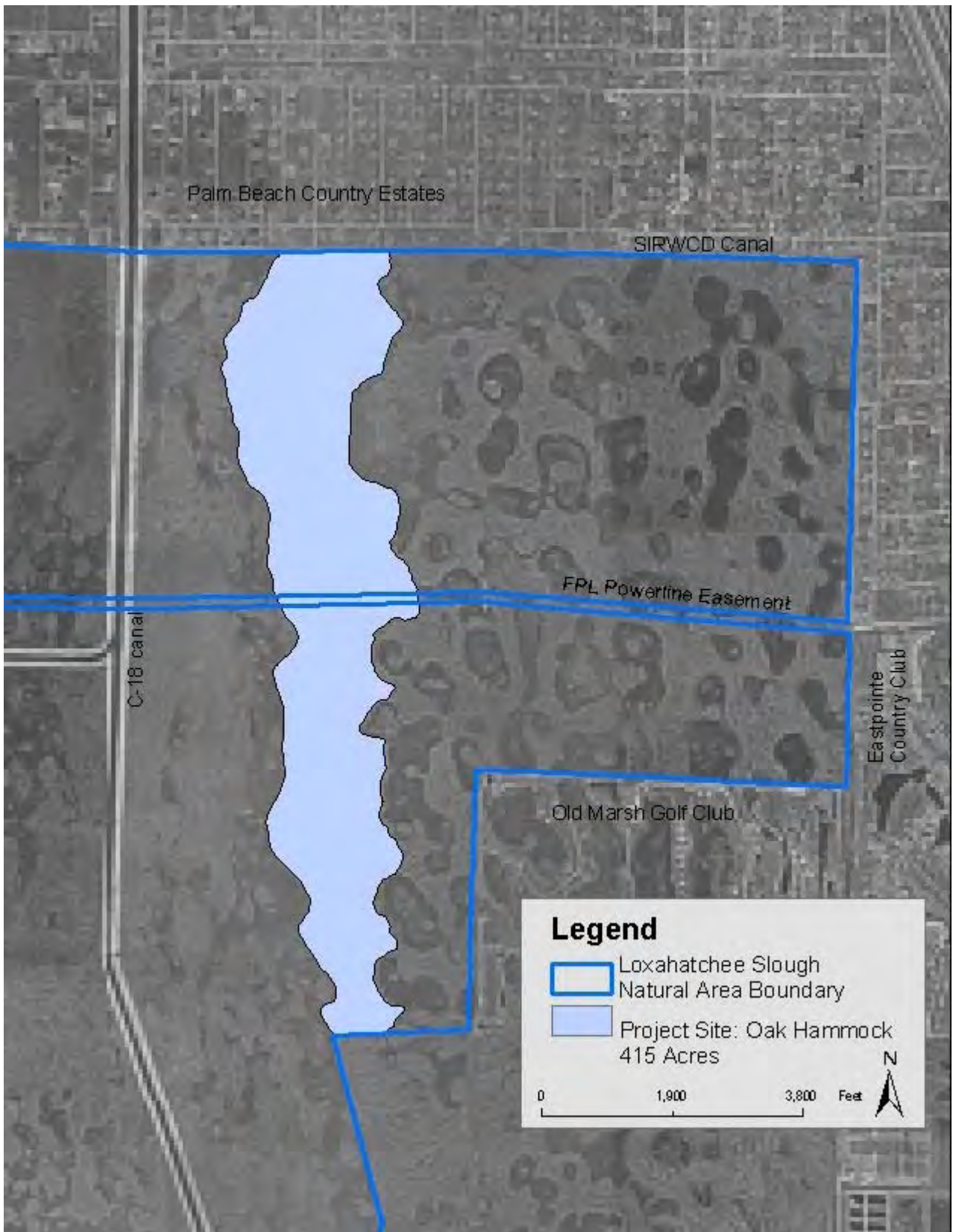
E-mail: mcheek@co.palm-beach.fl.us

Loxahatchee Slough Natural Area, managed by Palm Beach County Department of Environmental Resources Management, is located in northern Palm Beach County. The Slough is an integral property for the greenways between Jonathan Dickinson State Park, J.W. Corbett Wildlife Management Area, and the City of West Palm Beach Water Catchment Area. The uplands are predominately composed of mesic and wet flatwoods. Many depression marshes and sloughs are scattered throughout the project site. Water flows from this site under the Beeline Highway, through the Loxahatchee Slough and eventually drains into the Florida's only Federally listed Wild and Scenic River—the Loxahatchee River. Cypress dome swamps are scattered throughout the site. There are at least three reptile, nine bird, and twenty-eight plant species recorded at Loxahatchee Slough Natural Area that are listed as rare or endangered.

The objective of this project was to treat exotic plant species in the oak hammock ridge within the Natural Area. Melaleuca and Old World climbing fern were scattered in cypress domes, and sawgrass and depression marshes throughout the site. Brazilian pepper and Australian pine were present mainly along the C-18 canal berm. Substantial stands of melaleuca had formed along the core area of the Slough on either side of the C-18 canal, where historically the most significant hydrological alteration occurred. These large stands were treated aerially. This project supported the work of ground crews treating the remaining melaleuca, as well as the other targeted species. The County provided an additional \$28,000 of in-kind services for this project.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	Glypro
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4+Stalker

Loxahatchee Slough Natural Area



Loxahatchee Slough Natural Area

County: Palm Beach

PCL Size: 11,000 acres

Project ID: SE-070 793 acres \$200,000

Project Manager: Palm Beach County

Mark Romagosa

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This was the second project conducted in the Loxahatchee Slough Natural Area in 2004 (*see previous entry for additional resource information*). Melaleuca and Old World climbing fern were scattered in cypress domes, pine flatwoods, and sawgrass and depression marshes throughout the site. Brazilian pepper and Australian pine were mainly present along the C-18 Canal berm. Other exotics were lightly scattered throughout the uplands. A significant amount of mature native species both on the site and on adjacent conservation lands will provide for natural revegetation after treatment of the exotics.

Substantial stands of melaleuca formed along the core area of the Slough on either side of the C-18 canal, where historically the most significant hydrological alteration occurred. These large stands were treated aerially during the late winter/early spring of 2002 and re-treated in February 2003. The Oak Hammock Ridge project located immediately west of this proposed project was also completed during this fiscal year. These projects were funded by the BIPM and coordinated by the SFWMD. Palm Beach County provided matching funds of \$264,950 and additional in-kind contributions worth \$10,850, bringing the total project cost to \$475,800.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	Glypro
<i>Acacia auriculiformis</i>	earleaf acacia	Category I	basal	Garlon 4+Stalker
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Rhodomyrtus tomentosa</i>	downy rose-myrtle	Category I	basal/cut stump	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4+Stalker

Loxahatchee Slough Natural Area



Loxahatchee Slough Natural Area



Larger melaleuca trees (left) are girdled, while smaller saplings (right) are cut down and the stumps treated ('cut stump' treatment).



The end result is much closer to a natural south Florida pine flatwoods, a preferable alternative to a melaleuca monoculture.

Loxahatchee Slough Natural Area

Downy rose-myrtle (right) can be an attractive plant—in a garden—but it has no place in Florida’s natural areas. Many ornamental exotics found invading conservation lands are either garden escapees or the result of people improperly dumping garden wastes.



Workers cut through a thicket of Brazilian pepper (above center), the most widespread of Florida’s 127 invasive exotic plants. The new challenger for the number one spot, Old World climbing fern (left), was given a helping hand by four hurricanes in 2004, which may have spread its spores over the entire southern half of the state.

J.W. Corbett Wildlife Management Area

County: Palm Beach

PCL Size: 60,228 acres

Project ID: SE-068 500 acres \$45,506.40

Project Manager: Fish and Wildlife Conservation Commission

James R. Schuette, Biological Administrator I

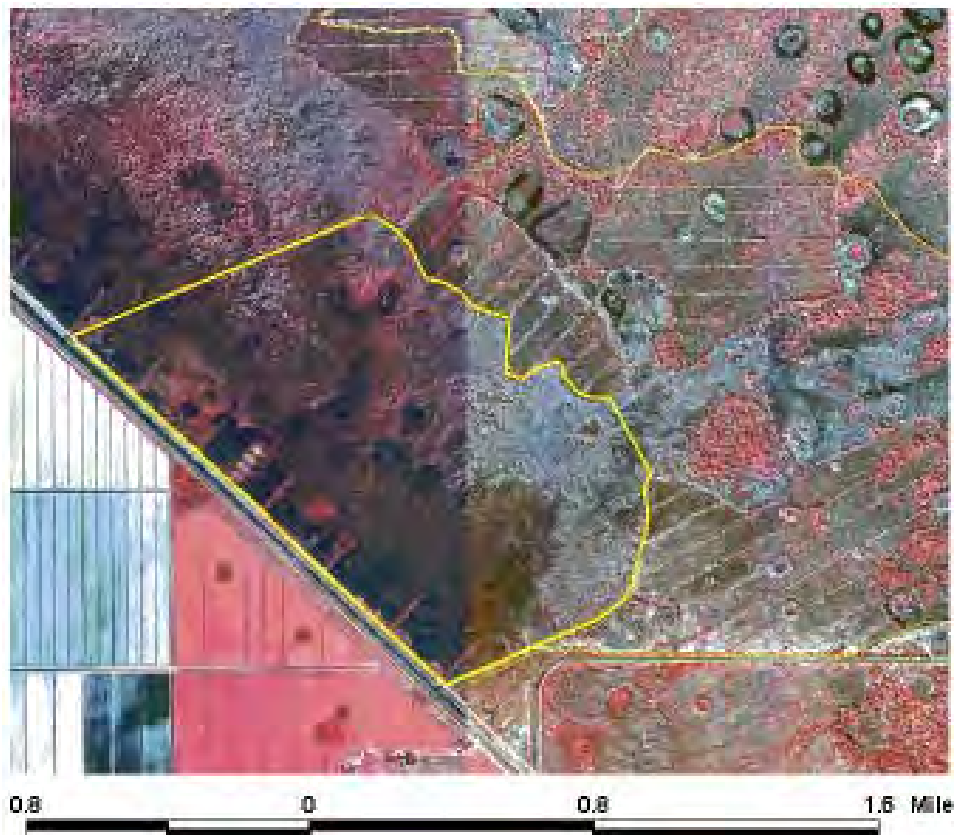
8535 Northlake Boulevard, West Palm Beach, Florida 33412

Phone: 561-624-6989, Fax: 561-624-6988

E-mail: schuetj@fwc.state.fl.us

The J.W. Corbett Wildlife Management Area is located in northwestern Palm Beach County and borders the John and Susan H. Dupuis Wildlife and Environmental Area and the John C. and Mariana Jones Hungryland Wildlife and Environmental Area. Natural communities include primarily mesic and wet flatwoods, interspersed with depression marshes and wet prairies. *Lygodium* was located in the southwestern portion of Corbett WMA along the northern edge of the L-8 Marsh (see area outlined in yellow below). Coverage was estimated at thirty to ninety percent over a 1,000-acre area, covering cypress, sawgrass, and some deciduous trees and shrubs.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	aerial	Escort+Aquaneat

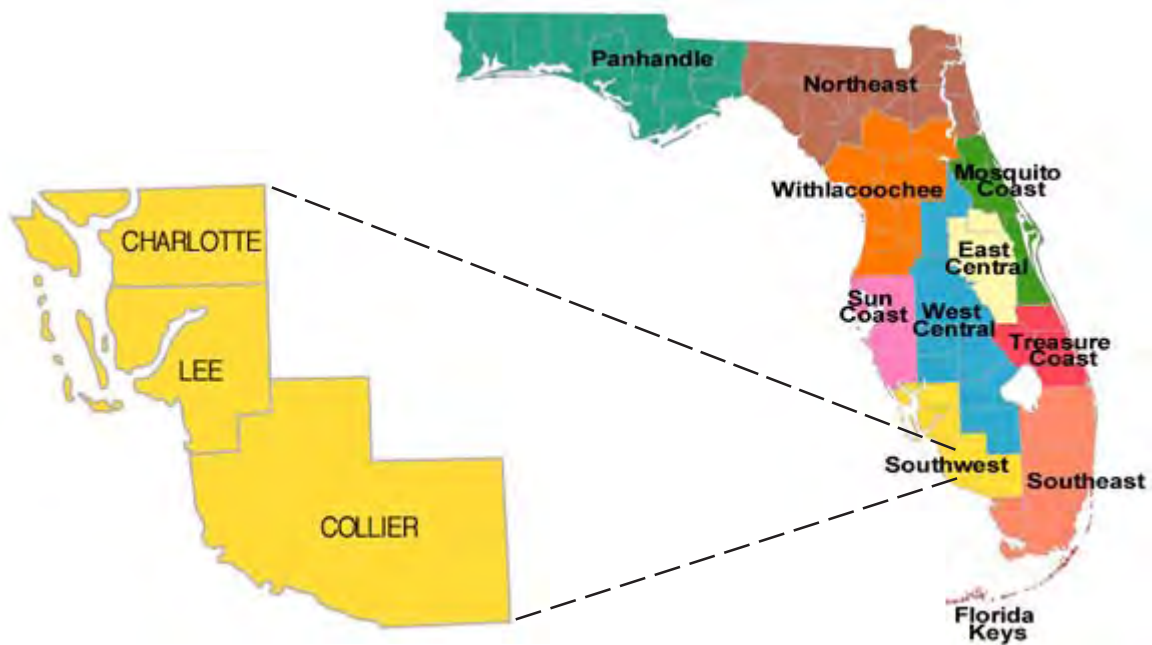


J.W. Corbett Wildlife Management Area



Old World climbing fern, as the name implies, climbs up and over everything in its path. Because it is a fern and reproduces through millions of wind-dispersed microscopic spores, *Lygodium microphyllum* may soon be recognized as the ‘new kudzu’ in Florida.

Southwest Regional Working Group



The Southwest Regional Working Group liaison is Mr. Roger Clark, Lee County Parks and Recreation, 3410 Palm Beach Boulevard, Ft. Myers, Florida 33916, phone: 239-338-3343, fax: 239-338-3333, e-mail: roger@leegov.com

Barefoot Beach Preserve

County: Collier

PCL Size: 342 acres

Project ID: SW-051 1.69 acres \$15,000

Project Manager: Collier County Natural Resources Department

Melissa Hennig, Environmental Specialist

2800 North Horseshoe Drive, Naples, Florida 34104

Phone: 941-732-2505, Fax: 941-213-2960

E-mail: melissahennig@colliergov.net

The project area consisted of coastal dune and strand, maritime hammock, and intertidal mangrove forest habitats. A large stand of mature Australian pine trees and several Brazilian pepper shrubs infested approximately 0.5 acres of the upland property at a density of approximately 95%. Some small Australian pines had spread onto the adjoining managed property. BIPM funded \$15,000, USFWS Partners for Fish and Wildlife funded \$4,500, and Collier County funded \$5,300 for a total project cost of \$24,800.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump/mechanical	Garlon 4
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump/mechanical	Garlon 4





Australian pines tower over other coastal trees and the landscape (background left). After removal (right), it's clear skies for the natives—and happy smiles for the land managers.



You can't see the hammock for the trees, the invasive Australian pine trees that is.



Oh look, there were palm trees back there!
Who knew?

Picayune Strand State Forest

County: Collier

PCL Size: 65,436 acres

Project ID: SW-055 697 acres \$233,000

Project Manager: Division of Forestry (FDACS)

Sonja Durrwachter, Forestry Supervisor II

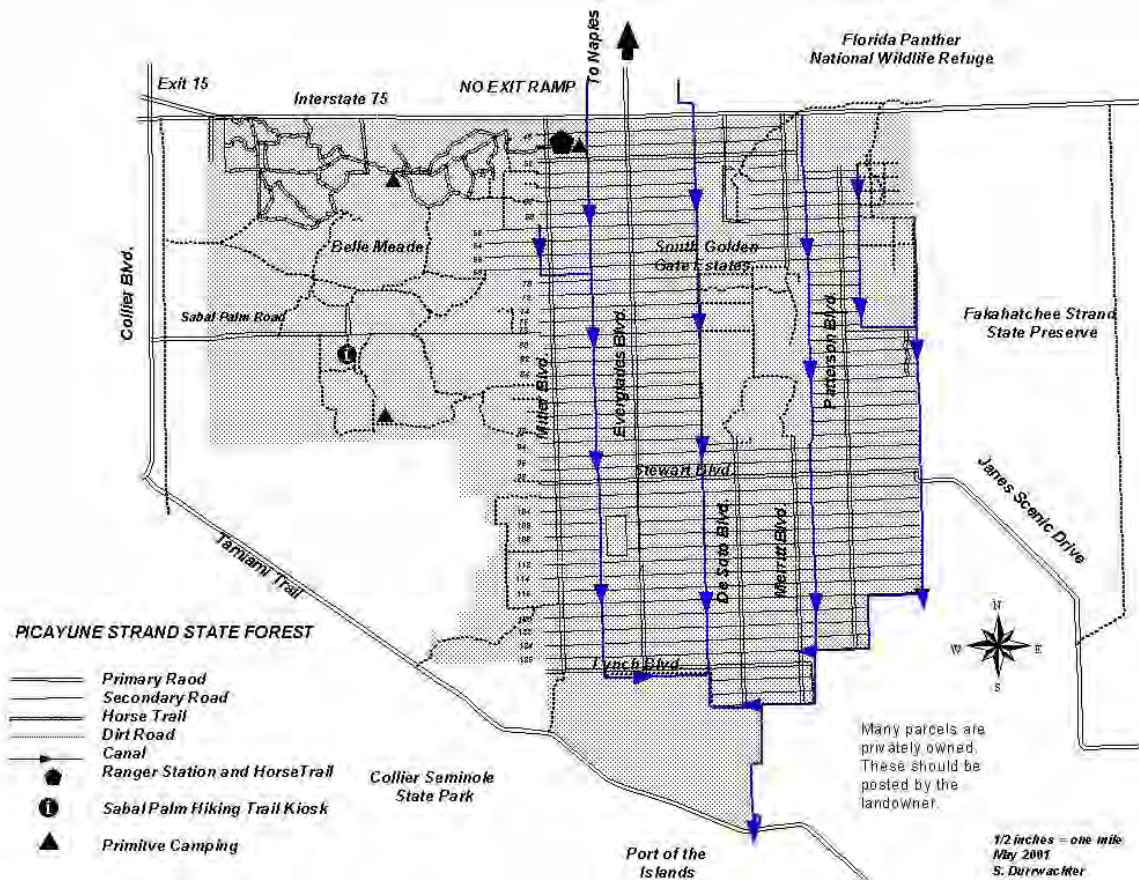
2121 52nd Ave SE, Naples, Florida 34114

Phone: 941-348-7557, Fax: 941-348-7559

Email: durrwas@doacs.state.fl.us

“South Golden Gate Estates” was the prototypical Florida land scam of the 1960s and 1970s, selling swamp land as developable property. After several decades, public land acquisition of the tens of thousands of lots is in the final phase. Approximately 44 miles of roads will be left for management and monitoring efforts after the completion of the hydrological restoration of SGGE. Brazilian pepper will be removed along with the roads scheduled for demolition as part of the restoration project. This project targeted exotics on the remaining roads. A low volume foliar application, or “lacing,” of Arsenal with methylated seed oil as a surfactant was used to treat the Brazilian pepper.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Glypro+Patriot
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	lacing	Arsenal
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4



Collier-Seminole/Fakahatchee Strand

County: Collier

Collier-Seminole State Park PCL Size: 7,271 acres

Fakahatchee Strand State Preserve PCL Size: 70,376 acres

Project ID: SW-057 463.5 acres \$17,917.50

Project Manager: Florida Park Service (DEP)

Andrea Bishop, Environmental Specialist II

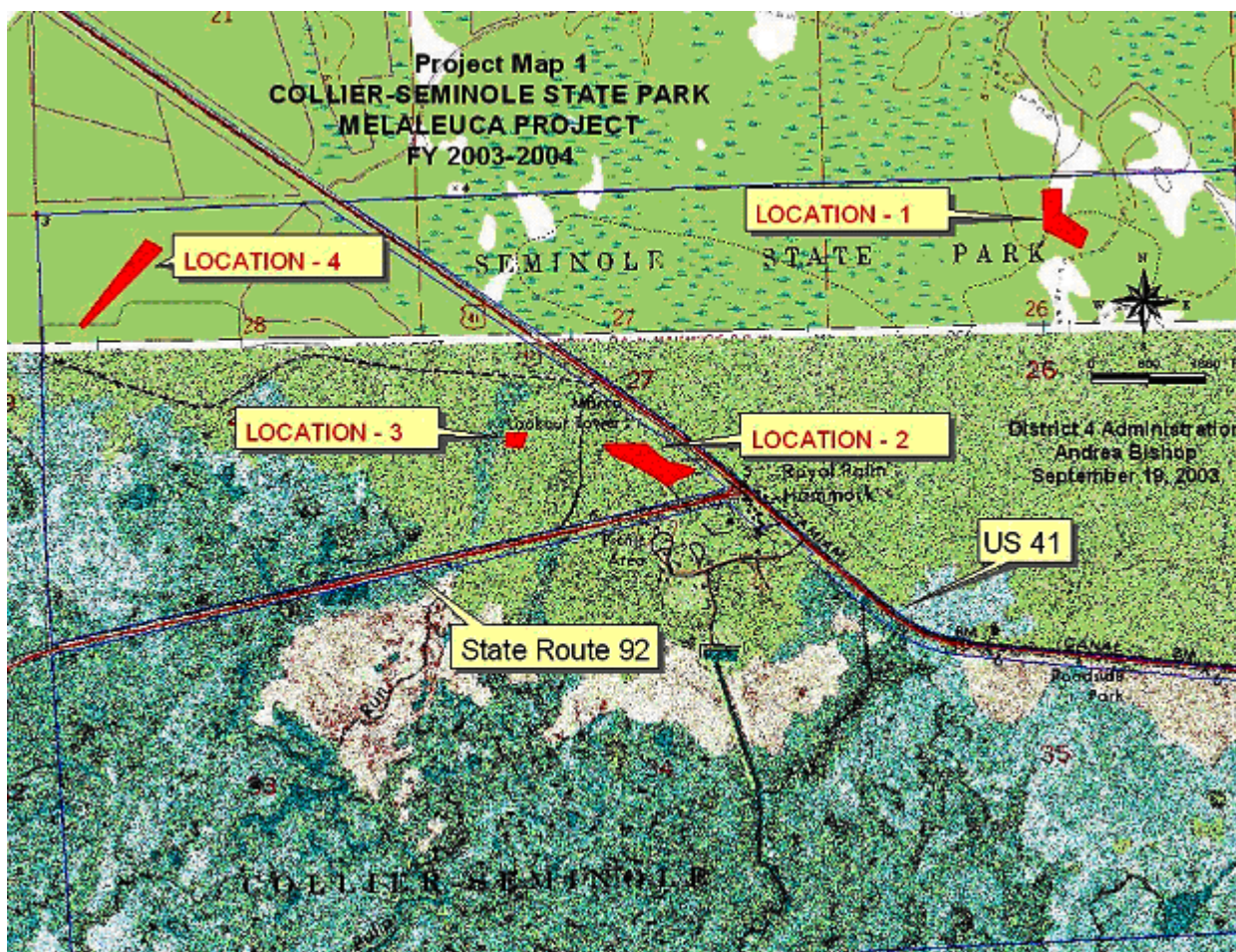
1843 South Tamiami Trail, Osprey, Florida 34229

Phone: 941-486-2055, Fax: 941-483-5941

Email: andrea.s.bishop@dep.state.fl.us

This project targeted melaleuca in two southwest Florida state parks. There were four primary melaleuca infestation areas and four minor infestations within Collier-Seminole State Park (CCSP), and three primary areas and several minor infestations within Fakahatchee Strand Preserve State Park (FSPSP). The four primary CCSP locations occurred within wet flatwoods and rockland hammock natural communities. One infestation occurred in a natural drainage in the wet flatwoods that carried seeds from the northern park to the southwest. The three primary FSPSP locations occurred within wet and mesic flatwoods, marl prairie, and prairie hammock natural communities. There are many smaller isolated infestations on the north side of US 41, an area outside the scope of this project.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal



Ten Thousand Islands National Wildlife Refuge

County: Collier

PCL Size: 19,650 acres

Project ID: SW-054 50 acres \$124,806.37

Project Manager: U.S. Fish and Wildlife Service

Jim Krakowski, Refuge Manager

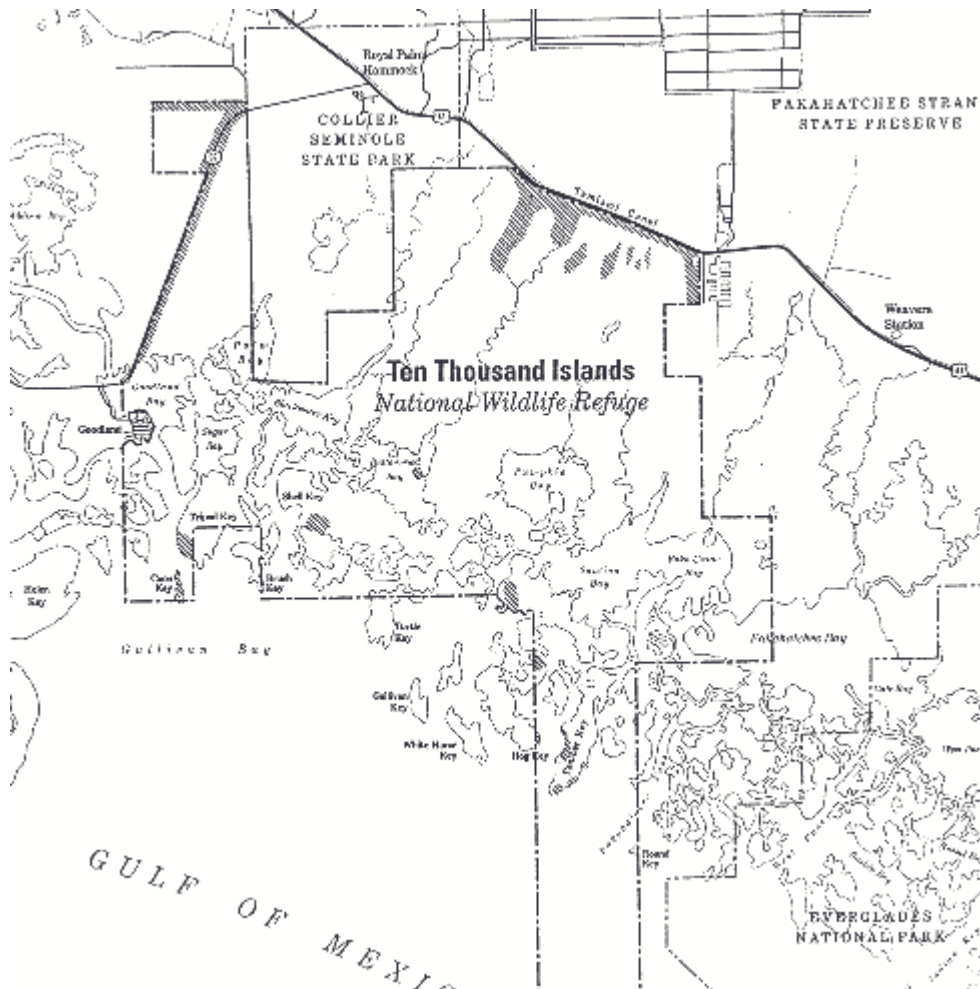
3860 Tollgate Boulevard, Suite 300, Naples, Florida 34114

Phone: 239-353-8442 ext 228, Fax: 239-353-8640

E-mail: jim_krakowski@fws.gov

Ten Thousand Islands National Wildlife Refuge is located 12 miles southeast of Naples, contiguous with Rookery Bay National Estuarine Research Reserve. The project area contained coastal marsh invaded by Brazilian pepper along the north side of the refuge and scattered other exotics (see cross-hatching on map below).

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Acacia auriculiformis</i>	earleaf acacia	Category I	basal	Garlon 4
<i>Bischofia javanica</i>	bishopwood	Category I	basal	Garlon 4
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Nandina domestica</i>	heavenly bamboo	Category I	hand pull	n/a
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4



Rookery Bay National Estuarine Research Reserve

County: Collier

PCL Size: 110,000 acres

Project ID: SW-052 20 acres \$26,364.20

Project Manager: Office of Coastal and Aquatic Managed Areas (DEP)

Pamela Keyes, Resource Management Specialist

300 Tower Road, Naples, Florida 34113

Phone: 941-417-6310, Fax: 941-417-6315

Email: pamela.keyes@dep.state.fl.us

Rookery Bay NERR is located 10 miles southeast of Naples, Florida. The Reserve has a northern boundary at Gordon Pass and a southern boundary at Camp LuLu Key in the Ten Thousand Islands. Rare and endangered plants occurring in the Reserve area include barbed wire cactus, satinleaf, wild cotton, bay cedar, common wild pine, giant wild pine, and many-flowered grass pink.

The project site was the recently acquired Krantz parcel, which is bordered on the north, east, and west sides by Reserve land. The lands surrounding the parcel were previously cleared of melaleuca. Both melaleuca and downy rose-myrtle heavily infested the project site, with Brazilian pepper found along the perimeter of the parcel.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Rhodomyrtus tomentosa</i>	downy rose-myrtle	Category I	foliar	Roundup
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4



The northwest corner of the Krantz parcel before (left) and after (right) melaleuca control.



Piles of cut melaleuca trees.

The Krantz parcel (yellow outline) was an inholding in the Rookery Bay NERR.



A “swamp buggy” is useful for reaching remote wet areas.

Big Hickory Island Preserve

County: Lee

PCL Size: 186 acres

Project ID: SW-050 7 acres \$49,342

Project Manager: Lee County Department of Parks and Recreation

Roger S. Clark, Land Stewardship Manager

3410 Palm Beach Boulevard, Fort Myers, Florida 33916

Phone: 239-461-7453, Fax: 239-461-7460

Email: roger@leegov.com

Big Hickory Island Preserve falls within the boundaries of the Estero Bay State Buffer Preserve. The project site ran along an artificial berm. Brazilian pepper also extended into the high marsh and mangrove forest. Native plant species occurring on the berm include strangler fig, sea grape, cabbage palm, wild olive, white indigo berry, buckthorn, passion vine, wild sage, and gray nickerbean. The southern portion of the site consisted of a stand of Brazilian pepper that formed a canopy ranging from twenty-five to one hundred percent cover, along with Australian pine and scattered melaleuca. Brazilian pepper and melaleuca occurred on the northern portion of the site in densities ranging from twenty-five to one hundred percent. The contractor used a Brontosaurus mower to remove dense Brazilian pepper thickets.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	mechanical	n/a
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	mechanical	n/a
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	mechanical	n/a



Exotic shrubs get short shrift from the shredding Brontosaurus.



Heavy machinery like the Brontosaurus mower is typically a ‘weapon of last resort’ to be used when exotics have completely overtaken an area. The advantage of such equipment is that acres can be cleared in a day...



...whereas chainsaw-wielding crews work an area tree by tree. The control methods are chosen by land managers to maximize removal of invasive exotics while minimizing non-target damage.

Estero Bay Preserve State Park

County: Lee

PCL Size: 10,405 acres

Project ID: SW-053 3 acres \$23,455

Project Manager: Florida Park Service (DEP)

Robert Baker, Manager

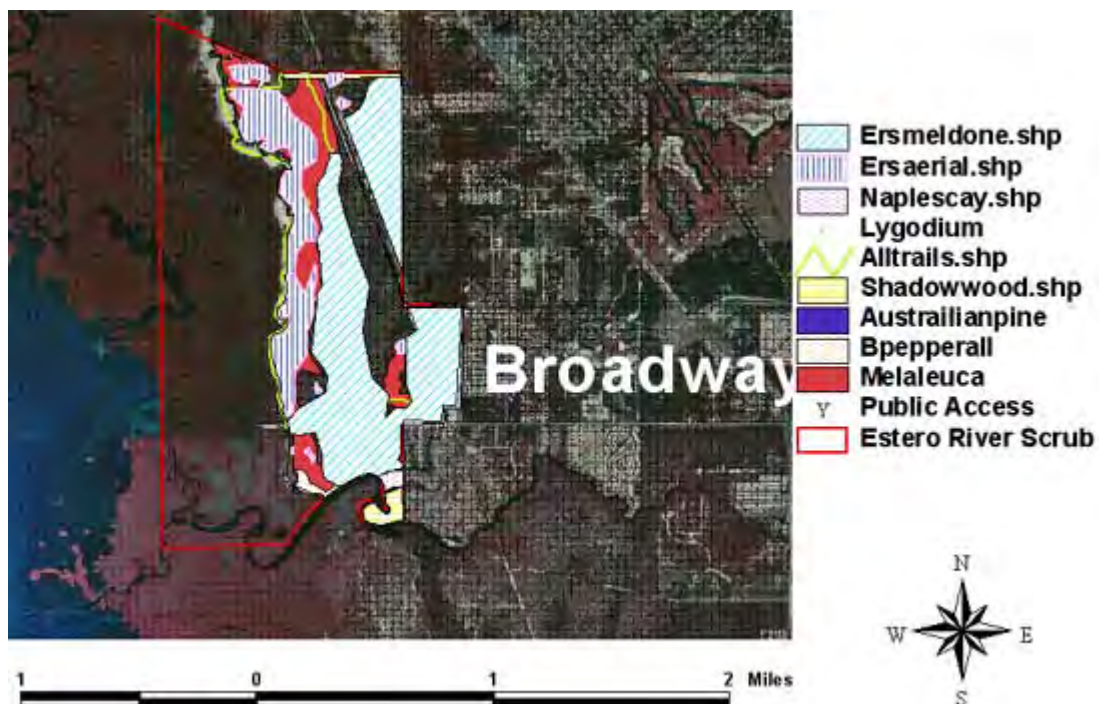
700-1 Fisherman's Wharf, Ft. Myers Beach, Florida 33931

Phone: 239-463-3240, Fax: 239-463-3634

E-mail: robert.baker@dep.state.fl.us

The project site is located within the Estero River Scrub parcel (map below) and lies within a newly established cultural and historical resource site, Seaboard Air Line Archaeological Site 8LL2034. The site is an approximately 3-acre area running parallel along an FPL power line easement for approximately one mile. The project area is an old railroad bed that cut through pine flatwoods, altering the site to an elevated, drier, sandy soil habitat that subsequently transformed into a scrubby flatwoods type habitat containing oaks, rosemary, and slash pine, and several active gopher tortoise burrows. Exotic vegetation within the project site was estimated at approximately 15% coverage of melaleuca with a comparatively miniscule amount of Brazilian pepper. Exotic vegetation occurred only along the edges of the project area.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Garlon 4



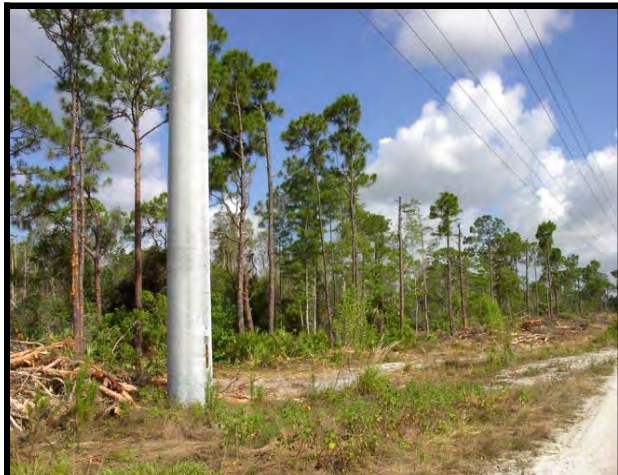
Aerial overview of site before work began.



Before: December 23rd, 2003



After: June 11th, 2004



After: June 11th, 2004



Cayo Costa State Park (Barrier Islands GEOPark)

County: Lee

PCL Size: 2,412 acres

Project ID: SW-058 850 acres \$3,004.50

Project Manager: Florida Park Service (DEP)

Michael Hensley, Assistant Park Manager

880 Belcher Road, Boca Grande, Florida 33921

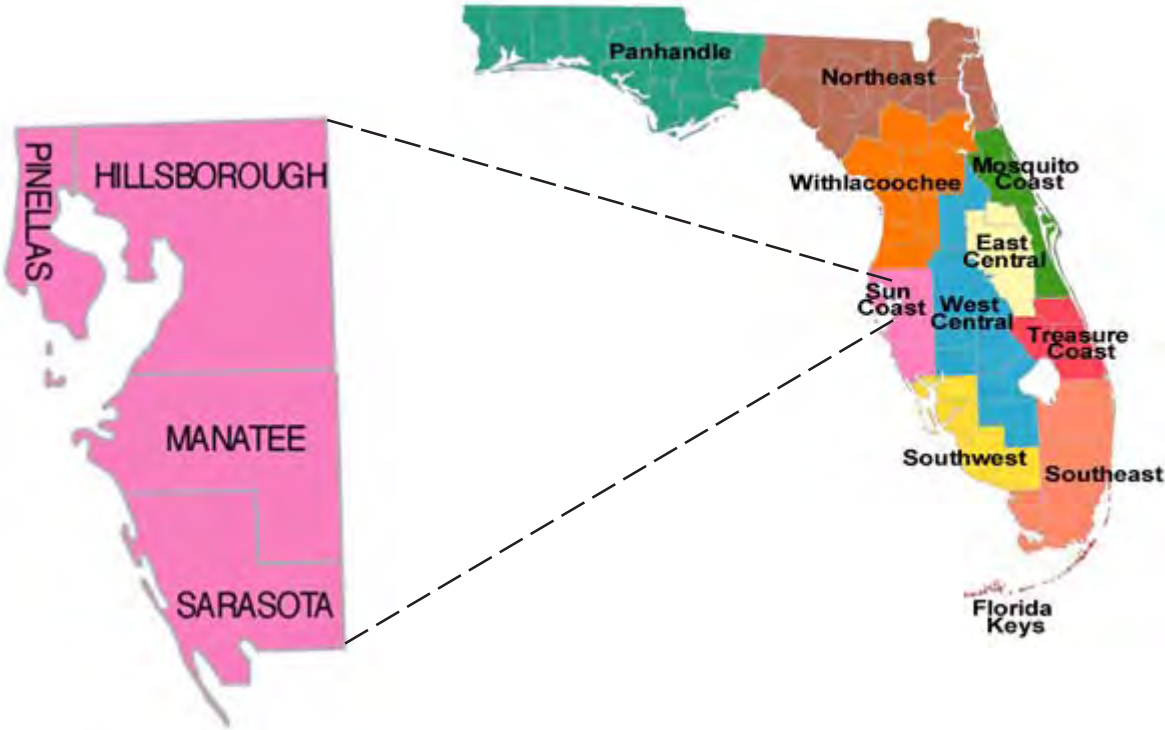
Phone: 239-633-3391

E-mail: michael.hensley@dep.state.fl.us

Cayo Costa State Park is managed as part of the Barrier Islands GEOPark. Natural communities of the park include Beach Dune, Coastal Grassland, Maritime Hammock, and Shell Mound. The park beaches are sea turtle nesting habitat, and several rare plant and animal species are found in the park. The park staff and volunteer team are engaged in ongoing efforts to eliminate Brazilian pepper, Australian pine, and mother-in-laws tongue on Cayo Costa and Punta Blanca Islands (Punta Blanca is part of Cayo Costa State Park).

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Sansevieria trifasciata</i>	mother-in-laws tongue	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4

Sun Coast Regional Working Group



The Sun Coast Regional Working Group liaison is Ms. Debbie Chayet, Pinellas County Parks Department, 631 Chestnut Street, Clearwater, Florida 33756, phone: 727-464-3347, fax: 727-464-3379, e-mail: dchayet@co.pinellas.fl.us

Alafia River State Park

County: Hillsborough

PCL Size: 6,345 acres

Project ID: SC-047 250 acres \$56,250

Project Manager: Florida Park Service (DEP)

Kimberlee Tennille, Park Services Specialist

15402 US 301 North, Thonotosassa, Florida 33592

Phone: 813-987-6870, Fax: 813-987-6773

E-mail: kimberlee.tennille@dep.state.fl.us

Alafia River State Park is a part of the Heritage Rivers State Parks complex and is located in southeastern Hillsborough County about thirty miles southeast of Tampa. The park connects with county property to the north and SWFWMD property along the Alafia River. The park was a donation to the State of Florida by Cytec Industries. Prior to acquisition by the state, the property was a phosphate mine called Lonesome Mine, named after the nearby community of Fort Lonesome which was itself named after a frontier outpost of the US Army that occupied the site during the Third Seminole War. The land includes part of the Alafia River Corridor Save Our River Project designed to protect part of the 100-year floodplain of the river.

Cogon grass arrived early to mid-1970s during mining and later restoration efforts and rapidly spread to several areas of the park. Control of cogon grass was essential in order to revegetate reclaimed uplands with local native plants. Japanese climbing fern was a more recent invader, spreading rapidly by climbing into trees to smother the foliage.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	glyphosate+Arsenal
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	glyphosate+Patriot

Alafia River Corridor Preserve

County: Hillsborough

PCL Size: 4,047 acres

Project ID: SC-052 300 acres \$146,879.06

Project Manager: Hillsborough County Parks, Recreation, and Conservation

Richard Sullivan, Environmental Scientist

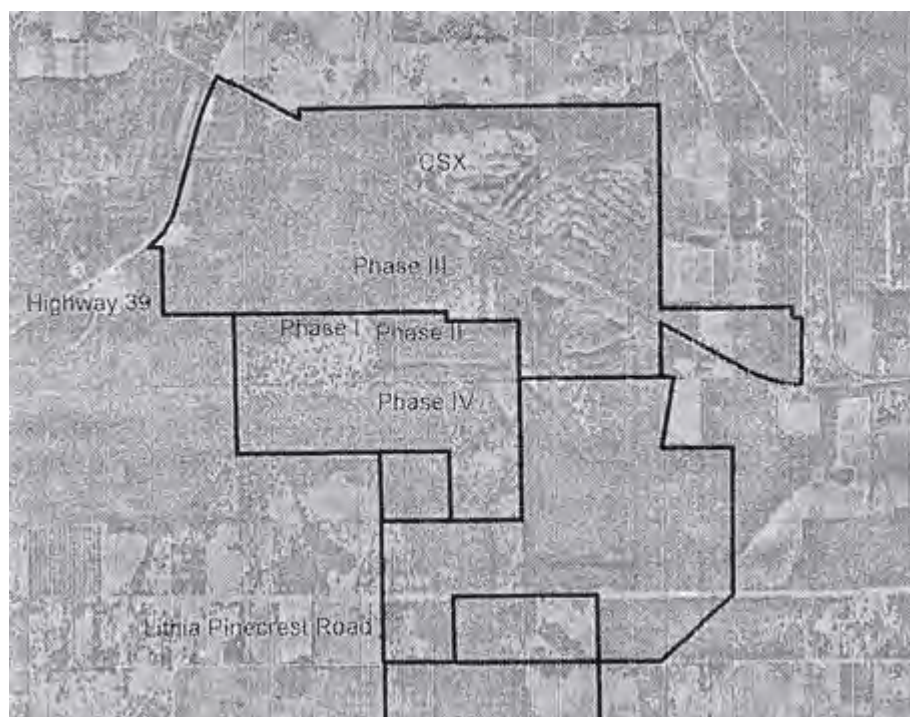
3709 Gulf City Road, Ruskin, Florida 33579

Phone: 813-671-7754, Fax: 813-671-7758

E-mail: hcprdelapp@aol.com

The preserve is located on the north prong of the Alafia River from Alderman's Ford Park to the Polk County Line, and the south prong of the Alafia River, southeast of Alderman's Ford Park. Habitats found within the site include pine flatwoods, dry prairie, hardwood hammock, and riverine swamp hardwood forest. The project addressed primarily skunk vine and Japanese climbing fern, which occurred in medium to high density on the site. The three phases of this project were begun in the previous fiscal year (FY03), with work being completed during this year.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	glyphosate+Escort
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	glyphosate+Escort
<i>Paederia foetida</i>	skunk vine	Category I	foliar	glyphosate+Escort
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal/cut stump	Garlon 4
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	glyphosate+Escort



Bower Tract Preserve

County: Hillsborough

PCL Size: 1,549 acres

Project ID: SC-050 172 acres \$50,000

Project Manager: Hillsborough County Parks, Recreation, and Conservation

Richard Sullivan, Environmental Scientist

3709 Gulf City Road, Ruskin, Florida 33579

Phone: 813-671-7754, Fax: 813-671-7758

E-mail: sullivanj@hillsboroughcounty.org

The Bower Tract Preserve is situated along 4 miles of the upper shore of Old Tampa Bay and sits between channel “A” and Double Branch Creek, on the south side of Hillsborough Avenue. Tidal wetlands account for 1,377 acres and consist of a diverse estuarine system of mangrove islands, salt marshes, mud flats, oyster bars, creeks, small bays, and bayous. The uplands constitute 172 acres separated from the tidal wetlands by a salt barren transition zone. The uplands are mostly pine flatwoods with occasional hammocks, perched ponds, and small creeks.

In addition to the control methods below, contractors also hand pulled Brazilian pepper and melaleuca seedlings, and *Lygodium* vines.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	foliar	Garlon 4



Rocky Creek Nature Preserve

County: Hillsborough

PCL Size: 250 acres

Project ID: SC-049 150 acres \$156,392.30

Project Manager: Hillsborough County Parks, Recreation, and Conservation

Richard Sullivan, Environmental Scientist

3709 Gulf City Road, Ruskin, Florida 33579

Phone: 813-671-7754, Fax: 813-671-7758

E-mail: sullivanj@hillsboroughcounty.org

The Rocky Creek Nature Preserve is one of the few undeveloped parcels remaining along Upper Tampa Bay. Habitats on Rocky Creek are mostly wetlands comprising mangrove swamps, salt marshes, salterns, and a freshwater blackrush and leatherfern marsh. The uplands consist of low-lying coastal hammocks dominated by live oak, cabbage palm, and slash pine.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump/girdle	Arsenal+Roundup
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4

Rocky Creek Nature Preserve Future Needs



Sometimes the problem is larger than a single project can handle. Planning a project over multiple phases/years makes it easier to address the more critical needs first, while identifying remaining areas for future needs.

Rocky Creek Nature Preserve



Melaleuca (above) and Australian pine (below) were controlled on the site. But managers must always be on the lookout for new invaders sneaking in, like this air-potato vine (right).



Egmont Key National Wildlife Refuge

County: Hillsborough

PCL Size: 350 acres

Project ID: SC-055 50 acres \$40,884.85

Project Manager: U.S. Fish and Wildlife Service

Joyce Kleen, Biologist

1502 SE Kings Bay Drive, Crystal River, Florida 34429

Phone: 352-563-2088, Fax: 352-795-7961

E-mail: joyce_kleen@fws.gov

Egmont Key National Wildlife Refuge and State Park was established in 1974 to protect brown pelicans, which had been listed as an endangered species, and to protect historical structures of national significance. The U. S. Fish and Wildlife Service owns the majority of the island and the Service has a cooperative agreement with Florida Park Service to manage public use on the island. Egmont Key is one of three Tampa Bay Refuges that include Passage Key, just south of Egmont, and the mangrove islands of Pinellas Refuge.

Brazilian pepper and Australian pine occurred throughout the interior of Egmont Key, interspersed with cabbage palms, red cedar, wax myrtle, and strangler fig. There is an ongoing control program for Brazilian pepper and Australian pine on the island. The pepper and pine are being systemically removed from individual units beginning at the southern end of the island where the wildlife sanctuary is located. Florida Park Service staff, volunteers from the Egmont Key Alliance, and the USFWS staff continue to treat existing trees and to remove seedlings from the areas where pepper and pine were previously treated.

Atlantic loggerhead turtles nest from May to October along the shoreline and benefit from removal of Australian pine whose shallow root system interfere with nest building. Controlling Brazilian pepper and Australian pine restores habitat to a healthier condition and enhances nesting habitat for least terns, a state threatened species.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4

Egmont Key National Wildlife Refuge



Controlling invasive exotic plants isn't a day at the beach
(...well, maybe sometimes it is).



Hillsborough River State Park

County: Hillsborough

PCL: PCL Size: 3,383 acres

Project ID: SC-051 100 acres \$15,000

Project Manager: Florida Park Service (DEP)

John Baust, Park Manager

15402 US 301 North, Thonotosassa, Florida 33592

Phone: 813-987-6870, Fax: 813-987-6773

E-mail: john.baust@dep.state.fl.us



Hillsborough River State Park is a part of the Heritage Rivers GEOpark complex and is located in northern Hillsborough County about seven miles south of the town of Zephyrhills. The Park is one of Florida's earliest parks, created in the original Civil Conservation Corps (CCC) era, 1934. The park features both natural and cultural or historic resources. The Hillsborough River flows over a limestone outcrop to create rapids; a hammock of live oak, sabal palm, magnolia and hickory trees border the river. Cypress swamps, pine flatwoods, and marshes make up the most of the remaining acreage.

As for historical resources, Fort Foster (now reconstructed on its original site) guarded a bridge crossing the Hillsborough River, which was part of the Fort King Military Road in 1836 during the Second Seminole Indian War. The Fort was a crucial supply depot. The park contains the area in which Major Francis Dade crossed the Hillsborough River en route to a defeat by the Seminoles.

This project involved re-treatment of 100 acres from the original project area that was treated in FY02.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Glyphosate+2,4-D
<i>Paederia foetida</i>	skunk vine	Category I	foliar	Glyphosate+2,4-D
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Glyphosate+2,4-D
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Glyphosate+2,4-D
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Glyphosate+2,4-D
<i>Albizia julibrissin</i>	mimosa	Category I	foliar	Glyphosate+2,4-D
<i>Xanthosoma sagittifolium</i>	elephant ear	Category II	foliar	Glyphosate+2,4-D
<i>Broussonetia papyrifera</i>	paper mulberry	Category II	foliar	Glyphosate+2,4-D
<i>Clerodendrum</i> spp.	glory bower	n/a	foliar	Glyphosate+2,4-D

Little Manatee River State Park

County: Hillsborough

PCL Size: 2,416 acres

Project ID: SC-046 91.05 acres \$20,486.25

Project Manager: Florida Park Service (DEP)

John Baust, Park Manager

215 Lightfoot Road, Wimauma, Florida 33598

Phone: 813-671-5005, Fax: 813-671-5009

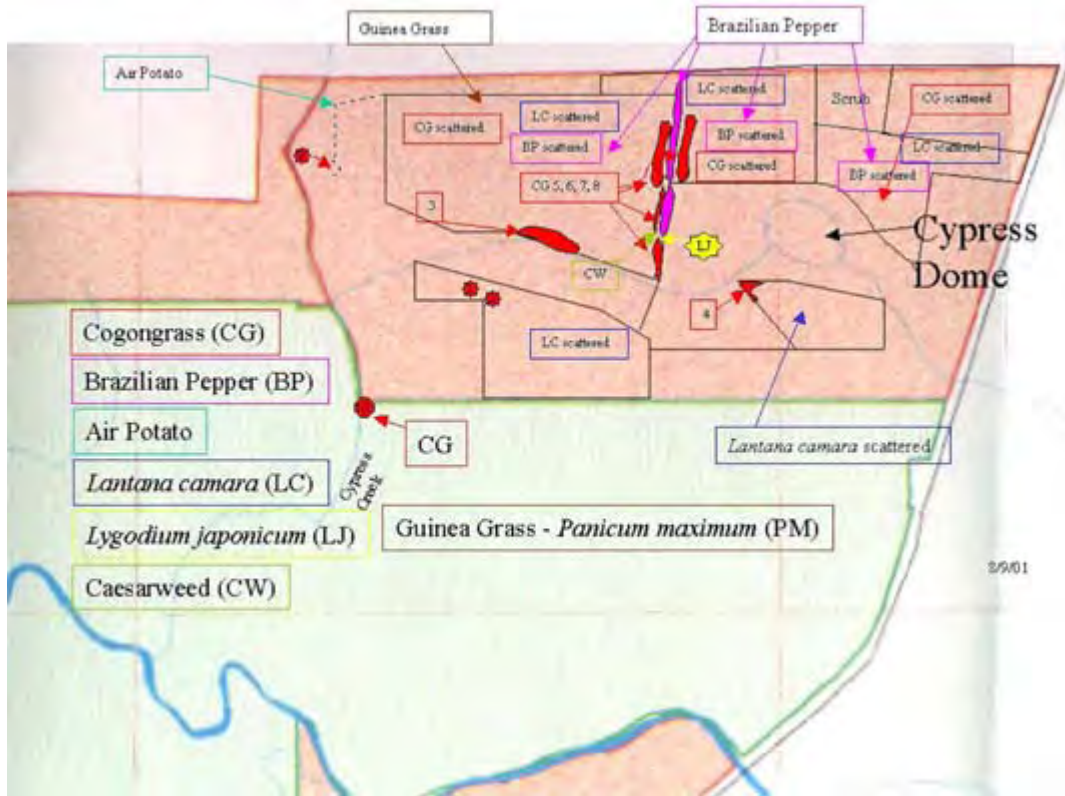
E-mail: john.baust@dep.state.fl.us

Little Manatee River State Park encompasses 4.5 miles of the Little Manatee River. The Park contains eleven distinct natural communities, plus ruderal and developed acres. Floodplain forest makes up most of the park acreage, while mesic flatwoods, sandhill, scrub, scrubby flatwoods, upland mixed forest, xeric hammock, baygall, depression marsh, and hydric hammock make up most of the remaining acreage. There are twelve prehistoric and historic sites documented within park boundaries, ranging in size from 100 sq. meters to 9000 sq. meters. These include shell middens, a burial mound, and a village site, the earliest of which is dated to 7,000 BP.

Cogon grass is the most significant problem in the park and covers 50 acres of the project area. Brazilian pepper is a common exotic in the park, particularly along the banks of the river, and along the edges of abandoned crop fields in the northeastern portion of the park, where it has reached the size of large trees. The Park engages in the removal of invasive exotic plants using a combination of several techniques that involve volunteers, Americorps, community service workers, and park staff. The park enlists help from the local community through the PARKnership program, monthly Exotic Removal Weekends, Boy and Girl Scout Service projects, public educational programs, planting projects, partnerships, and grant opportunities.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	Roundup+2,4-D
<i>Albizia lebbek</i>	woman's tongue	Category I	foliar	Roundup+2,4-D
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Roundup+2,4-D
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup+2,4-D
<i>Lantana camara</i>	lantana	Category I	foliar	Roundup+2,4-D
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Roundup+2,4-D
<i>Macfadyena unguis-cati</i>	cat's-claw vine	Category I	foliar	Roundup+2,4-D
<i>Nephrolepis</i> spp.	sword fern	Category I	foliar	Roundup+2,4-D
<i>Paederia foetida</i>	skunk vine	Category I	foliar	Roundup+2,4-D
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	foliar	Roundup+2,4-D
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Roundup+2,4-D
<i>Leucaena leucocephala</i>	lead tree	Category II	foliar	Roundup+2,4-D
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Roundup+2,4-D
<i>Citrus</i> spp.	citrus	n/a	foliar	Roundup+2,4-D

Little Manatee River State Park



Japanese climbing fern (*Lygodium japonicum*) is a prolific invader of Florida forests.

Robinson Preserve

County: Manatee

PCL Size: 482 acres

Project ID: SC-045 49 acres \$22,944.37

Project Manager: Manatee County

Danny Smith, Conservation Lands Division Manager

2649 Rawls Road, Duette, Florida 33834

Phone: 941-776-2295, Fax: 941-721-6898

E-mail: danny.smith@co.manatee.fl.us

Robinson Preserve consists of 256 acres of mangrove tidal swamp, 41 acres of coastal grassland, 1.5 acres of shell midden, 12 acres of coastal hammock, 6 acres of coastal berm, and 165 acres of disturbed uplands (former agricultural land). The western area of the property is composed of intact mangrove swamp and coastal hammock. The exotic species occurred primarily on the fringes of the mangrove swamp areas, with some exotics scattered within the mangroves on small spoil islands.

Manatee County annually commits approximately \$120,000 in contracted services for exotic species removal on its conservation lands. The Preserve has undergone exotic removal over the last two years, with over 100 acres of exotics already removed from the upland portion. The Conservation Lands Management Division has an inmate work crew from the Manatee County Sheriffs Department attached to it for full time work on conservation properties. This crew performs work for the conservation lands division on a full time basis, with much of their time devoted to removal of exotics.

The Bureau funded the control of 20 acres within the mangrove swamp area primarily infested with Australian pine and Brazilian pepper at moderate density. Manatee County funded 29 acres of exotic plant control and removal of the entire 49 acres of treated biomass at an approximate cost of \$50,000.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Glypro
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Glypro
<i>Sorghum halepense</i>	Johnson grass	n/a	foliar	Glypro

Robinson Preserve



Terra Ceia State Buffer Preserve

County: Manatee

PCL Size: 1,424 acres

Project ID: SC-053 17 acres \$48,100

Project Manager: Office of Coastal and Aquatic Managed Areas (DEP)

Lee Hughes, Park Service Specialist

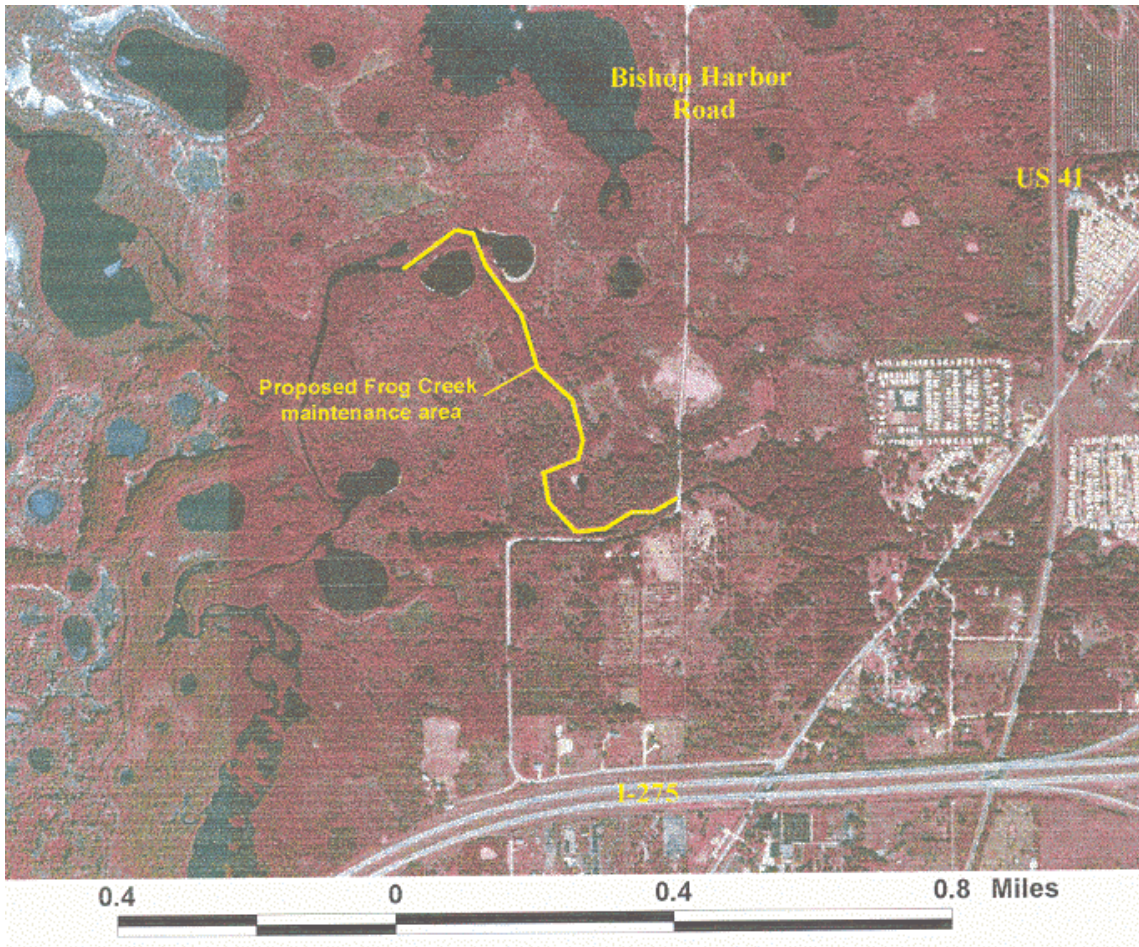
3804 Coconut Palm Avenue, Tampa, Florida 33619

Phone: 813-744-6100 x429, Fax: 813-744-6090

E-mail: lee.hughes@dep.state.fl.us

Frog Creek is a blackwater stream that runs through the Terra Ceia State Buffer Preserve (TCBP) and empties into Terra Ceia Bay. The goal of this maintenance project was to remove the dead trees and debris associated with the prior fiscal year control operation, which targeted Brazilian pepper along the banks of Frog Creek. A number of scattered live trees and seedlings were also treated.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Arsenal
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	foliar	Rodeo



Myakka River State Park

County: Manatee, Sarasota

PCL Size: 36,945 acres

Project ID: SC-044 6 acres \$4,020

Project Manager: Florida Park Service (DEP)

Diana Donaghy, Park Biologist

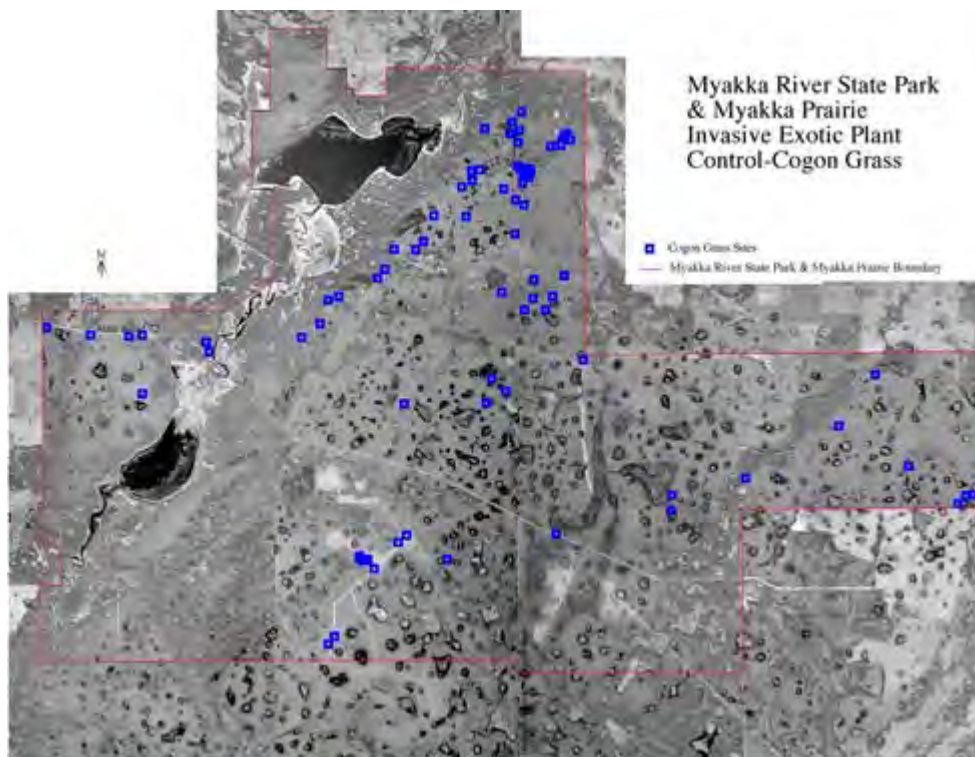
13207 State Road 72, Sarasota, Florida 34241

Phone: 941-361-6512

E-mail: diana.donaghy@dep.state.fl.us

Myakka River State Park is comprised of dry prairie, hydric and mesic hammocks, mesic flatwoods, and scrubby flatwoods. The adjacent Myakka Prairie tract consists of dry prairie, mesic hammock, and mesic flatwoods. Areas of cogon grass infestation occurred throughout Myakka River State Park and Myakka Prairie. There were 92 cogon grass sites identified, totaling approximately 6 acres. The sites ranged from ten to ninety-five percent cogon grass cover. A monoculture of cogon grass dominated a few sites within the project, while others were a mixture of cogon grass, palmetto, native grasses, forbs, and shrubs. The cogon grass infestations occurred in dry prairie, both hammock types, and mesic flatwoods. Park staff previously eradicated some cogon grass sites (approximately eleven percent).

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Arsenal+Roundup



Myakka River State Park



Cogon grass (*Imperata cylindrica*) has been called “the world’s worst weed.” While it may not be the worst invasive plant in Florida, it ranks very high on the list. Cogon grass grows in dense monocultures (as seen above) that carpet acres of land and push out native species such as saw palmetto. Large areas of cogon grass are typically treated by foliar application with high-volume spraytrucks.

Sawgrass Lake Park

County: Pinellas

PCL Size: 400 acres

Project ID: SC-056 82 acres \$65,157.53

Project Manager: Pinellas County Park Department

Deborah J. Chayet, Grants Specialist

631 Chestnut Street, Clearwater, Florida 33756

Phone: 727-464-5111, Fax: 727-464-3379

E-mail: dchayet@co.pinellas.fl.us

Sawgrass Lake Park is owned by the Southwest Florida Water Management District, with the park operated and maintained by the Pinellas County Park Department for passive recreational use. The Anderson Environmental Education Center located at the park offers a wide range of environmental education programs. Invasive plants infested oak hammock, maple swamp, and ecotones at varying densities ranging from twenty to seventy percent. There were six control sites, ranging from 1 to 35 acres in size. The park department contributed labor, equipment, and materials for an in-kind match worth \$63,629.98.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Colocasia esculenta</i>	wild taro	Category I	foliar	Rodeo
<i>Cupaniopsis anacardioides</i>	carrotwood	Category I	basal	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Rodeo
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Rodeo
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Nephrolepis</i> spp.	Boston fern	Category I	foliar	Rodeo
<i>Psidium guajava</i>	guava	Category I	basal	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Syngonium podophyllum</i>	arrowhead vine	Category I	foliar	Rodeo
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4
<i>Ricinus communis</i>	castor bean	Category II	foliar	Rodeo
<i>Ricinus communis</i>	castor bean	Category II	basal	Garlon 4
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Rodeo
<i>Sansevieria trifasciata</i>	mother-in-law's tongue	n/a	basal	Garlon 4



Ft. De Soto Park

County: Pinellas

PCL Size: 1,136 acres

Project ID: SC-054 86 acres \$9,125.62

Project Manager: Pinellas County Parks Department

Debbie Chayet, Grants Specialist

631 Chestnut Street, Clearwater, Florida 33756

Phone: 727-464-3347, Fax: 727-464-3379

E-mail: dchayet@co.pinellas.fl.us

Ft. De Soto Park provides passive recreation including camping, fishing, and nature trails. The park includes over seven miles of nationally-ranked beaches. Natural communities include scrub, pine flatwoods, coastal dunes, mangrove swamps, and oak hammock. This project consisted of re-treatment of Brazilian pepper and Australian pine on six sites. Infestations were light to moderate with only small specified areas needing heavier control. Control and maintenance operations are ongoing on the Park, with efforts including park staff conducting mechanical and chemical removal, as well as prescribed burning, and *Pepperbuster* volunteer assistance from local groups.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4



All-terrain vehicles (ATV) are popular among contractors for getting around on sites. An ATV fitted with a 50 or 100 gallon tank of herbicide is useful for foliar treatments (and easier than lugging around several backpack sprayers).

Lake Seminole Park

County: Pinellas

PCL Size: 255

Project ID: SC-048 97 acres \$49,393.81

Project Manager: Pinellas County Park Department

Deborah J. Chayet, Grants Specialist

631 Chestnut Street, Clearwater, Florida 33756

Phone: 727-464-5111, Fax: 727-464-3379

Email: dchayet@co.pinellas.fl.us



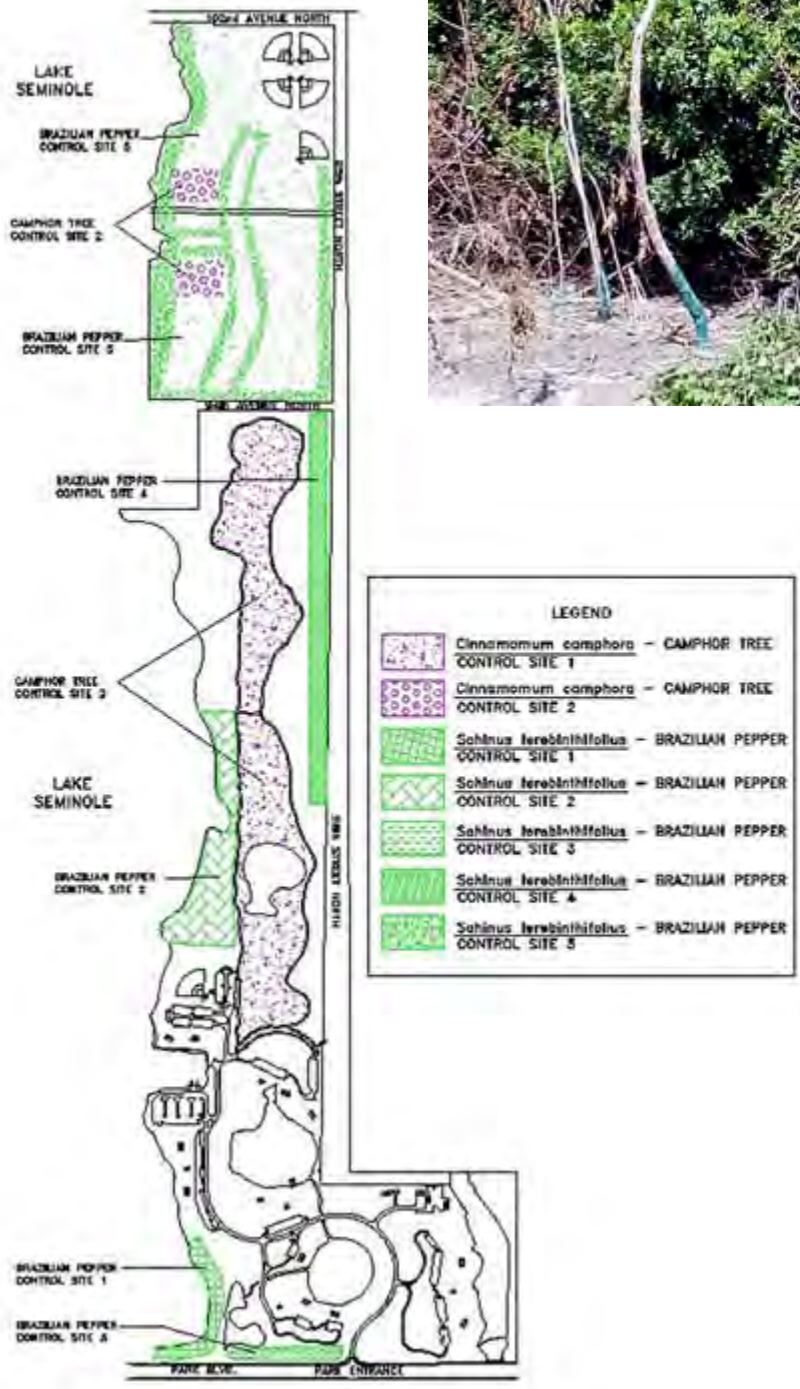
Lake Seminole Park is located in central Pinellas County and provides passive recreation for over one million visitors each year. Natural communities in the park include pine flatwoods, bayheads, and wetlands transitioning into mesic hammock. Also present are small areas of mangroves near the southern border of the park. Brazilian pepper was the emphasis of this project, with five control sites. A few camphor trees and other exotics were scattered over the project area.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Cupaniopsis anacardioides</i>	carrotwood	Category I	basal	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Roundup+Escort
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4
<i>Ricinus communis</i>	castor bean	Category II	basal	Garlon 4

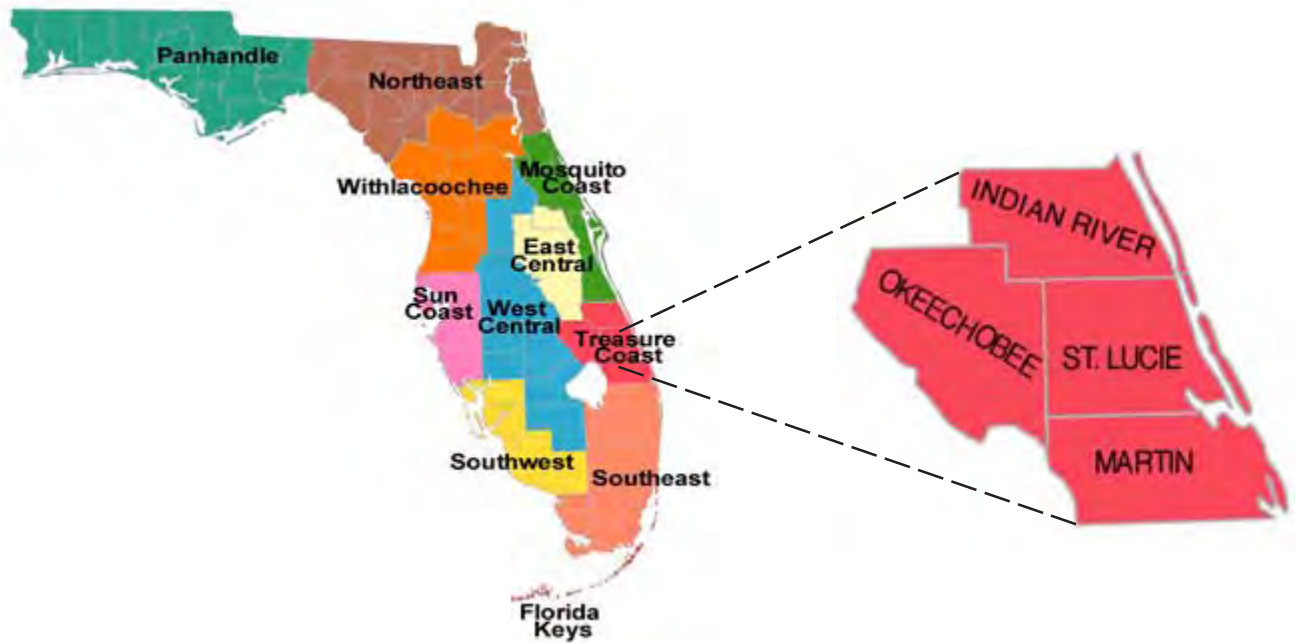


A dense thicket of Brazilian pepper.

Lake Seminole Park



Treasure Coast Regional Working Group



The Treasure Coast Regional Working Group liaison is Ms. Jackie Smith, DEP Bureau of Invasive Plant Management, 3111 B-13 Fortune Way, Wellington, Florida 33414, phone: 561-722-2479, fax: 561-791-4722, e-mail: jackie.smith@dep.state.fl.us

Jonathan Dickinson State Park

County: Martin

PCL Size: 11,480 acres

Project ID: TC-048 200 acres \$82,589.95

Project Manager: Florida Park Service (DEP)

Mark Nelson, Park Manager

16450 SE Federal Highway, Hobe Sound, Florida 33455

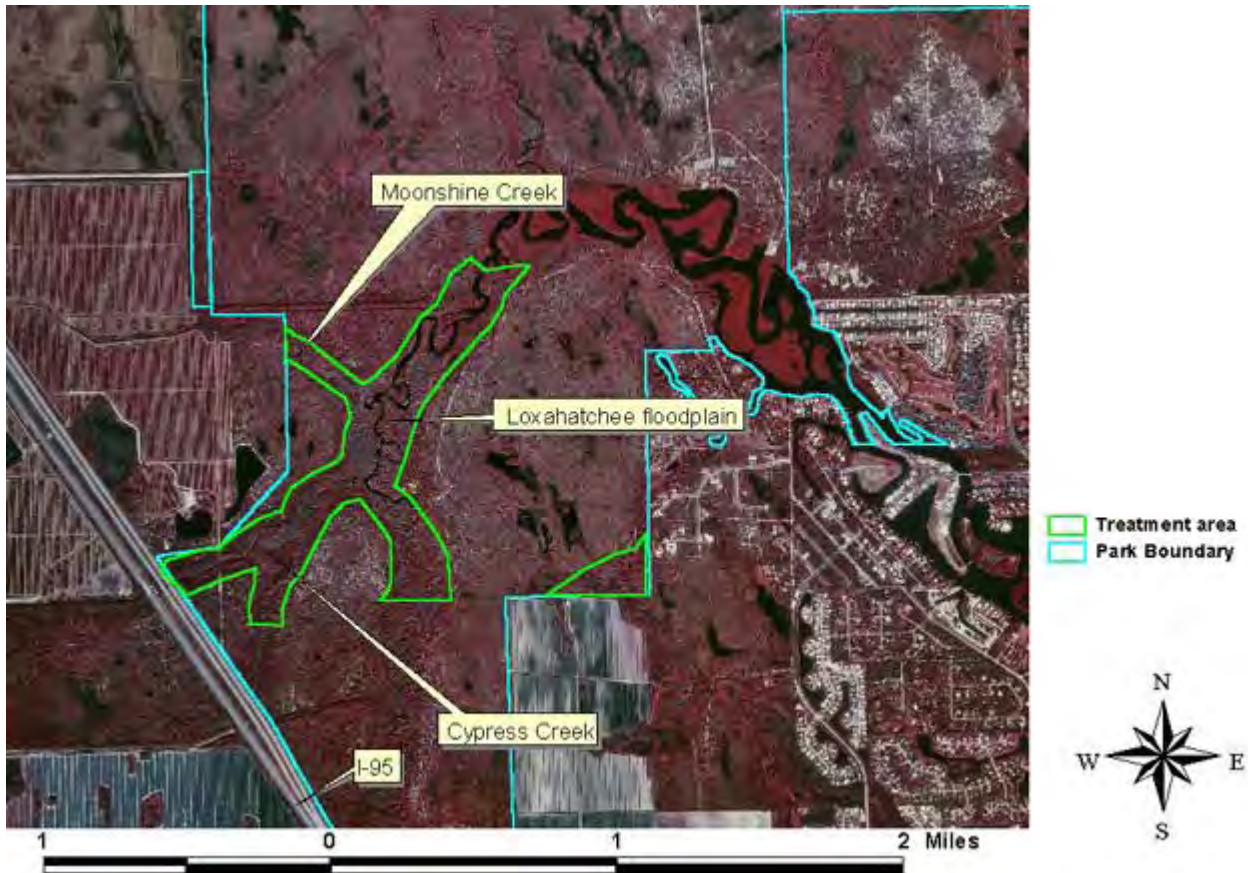
Phone: 561-744-9814, Fax: 561-744-7604

E-mail: mark.nelson@dep.state.fl.us

The natural communities in the project area include floodplain swamp, pine flatwoods, scrub, scrubby flatwoods, and sandhill. *Lygodium* most affected the floodplain swamp associated with the Loxahatchee River and two of its main tributaries, Cypress and Moonshine Creeks. The Loxahatchee River is a National Wild and Scenic River and is home to numerous endangered plant and animal species. The project area also contains the Trapper’s historical site.

The Park Service provided \$12,000 of work removing Old World climbing fern from the upper Loxahatchee River property as an in-kind match.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro+Escort
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4+Stalker



Jonathan Dickinson State Park



Old World climbing fern was first found established in Martin County in 1965. The fern today infests over 200,000 acres in southern Florida. The first biological control agent was approved for release in 2004.



Foliar application of a metsulfuron methyl and glyphosate herbicide mixture has proven effective for controlling this invasive fern.

Jonathan Dickinson State Park

County: Martin

PCL Size: 11,480 acres

Project ID: TC-053 507 acres \$151,230

Project Manager: Florida Park Service (DEP)

Philip Myers, District Biologist

13798 SE Federal Highway, Hobe Sound, Florida 33455

Phone: 772-546-0900, Fax: 772-223-2591

E-mail: philip.myers@dep.state.fl.us

This project was located near the northwestern boundary of JDSP in two units, Zones E-1 and E-2. These two zones are close to the introduction point of downy rose-myrtle into JDSP and therefore were the most heavily infested areas in the park. Work began in these two zones in the previous fiscal year and finished in the current year. The natural communities in Zone E-1 are mostly Pine Flatwoods and Cypress Slough but with some Wet Prairie. This zone also contained a large amount of melaleuca. Zone E-2 is an integral component of a 2,600-acre State Wilderness Preserve in JDSP where human-related influences are kept to a minimum. This zone is composed of Pine Flatwoods and Cypress Slough. Overall, the project was designed to remove Old World climbing fern and downy rose-myrtle from the tributaries of the Loxahatchee River located in the northwest section of the park.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Ardisia elliptica</i>	shoebuttan ardisia	Category I	basal	Garlon 4+Stalker
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro+Escort
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	girdle	Arsenal
<i>Psidium cattleianum</i>	strawberry guava	Category I	cut stump	Garlon 4+Stalker
<i>Rhodomyrtus tomentosa</i>	downy rose-myrtle	Category I	basal/cut stump	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/cut stump	Garlon 4+Stalker

Atlantic Ridge State Park

County: Martin

PCL Size: 5,650 acres

Project ID: TC-035 106.8 acres \$500.16

Project Manager: Florida Park Service (DEP)

Philip Myers, District Biologist

13798 SE Federal Highway, Hobe Sound, Florida 33455

Phone: 772-546-0900, Fax: 772-223-2591

E-mail: philip.myers@dep.state.fl.us

Atlantic Ridge lies slightly north of Jonathan Dickinson State Park. Natural communities within the park include high quality wet prairie, pine flatwoods, and scrub. Treatment was conducted by two AmeriCorps members, two OPS employees, and the district biologist. Initial control work was done on both ARSP and JDSP. BIPM provided the herbicide only for this project through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Escort
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4

Seabbranch Preserve State Park

County: Martin

PCL Size: 919 acres

Project ID: TC-049 142 acres \$54,050

Project Manager: Florida Park Service (DEP)

John Griner, Park Manager

16450 SE Federal Highway, Hobe Sound, Florida 33455

Phone: 561-744-7603, Fax: 561-744-7604

E-mail: john.griner@dep.state.fl.us

The project area encompassed a baygall seepage wetland, which during most of the year does not have standing water but has hydric soils. Lygodium patches of various sizes were scattered throughout the baygall. Brazilian pepper occurred as isolated large trees, small clumps, and in large patches. Strawberry guava existed as individual plants and small clumps and was a relatively minor problem. Numerous rare and endangered species utilize Seabbranch, including 22 plants and 29 animals. Several live specifically in the baygall, including the endangered vanilla orchid (*Vanilla mexicana*).

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro+Escort
<i>Psidium cattleianum</i>	strawberry guava	Category I	basal	Garlon 4+Stalker
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4+Stalker



Seabbranch Preserve State Park Exotic Removal Project. The park boundary is in green and the treatment area is in yellow

South Fork St. Lucie River

County: Martin

PCL Size: 347.34 acres

Project ID: TC-051 347.34 acres \$69,500

Project Manager: Martin County Parks and Recreation

Gina M. Paduano, PhD

Environmentally Sensitive Lands Division

2401 S.E. Monterey Road, Stuart, Florida 34996

Phone: 561-288-5476, Fax: 561-221-1333

E-mail: gpaduano@martin.fl.us



The South Fork consists of two parcels of land including the 100-acre Save Our Rivers (SOR) property owned and managed by South Florida Water Management District (SFWMD) and the contiguous 247.34-acre Florida Forever property. The South Fork is part of approximately 465 acres of publicly owned conservation and recreation land lying along a 1.4 mile segment of the pristine south fork of the St. Lucie River. The South Fork consists of a mosaic of habitat types including scrubby, mesic and wet flatwoods, depression marsh, hydric hammock, and bottomland forest. Two county-owned properties are contiguous to the South Fork on the north side. Martin County provided a cost-share match of \$52,806.23 from funds acquired through SFWMD for a total project cost of \$122,306.23.

A series of borrow pits were excavated in 1985 and are now manmade lakes. Invasive exotic species occurred in many of the vegetative communities on the South Fork and were characterized as moderate to heavy (50-85% cover) within the Florida Forever tract and light to moderate (10-50% cover) within the SOR tract. At least fifteen FLEPPC Category I and II invasive species were known to occur on the property with Brazilian pepper, melaleuca, Old World climbing fern, earleaf acacia, strawberry guava, rosary pea, air-potato, torpedo grass, Caesar's weed, and wedelia particularly problematic. Old World climbing fern was dense in all or portions of the wet prairies and in some regions of the bottomland forest found on the South Fork. Melaleuca occurred in many of the wetlands of the property, along with numerous individual trees throughout the mesic and hydric portions of the pine flatwoods area. Torpedo grass was prevalent in frequently inundated portions of the centralized wetlands and other wet prairie and freshwater marsh areas.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	basal	Garlon 4
<i>Acacia auriculiformis</i>	earleaf acacia	Category I	basal	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Roundup
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Roundup+Escort
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Panicum repens</i>	torpedo grass	Category I	foliar	Roundup
<i>Psidium cattleianum</i>	strawberry guava	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Roundup
<i>Wedelia trilobata</i>	wedelia	Category II	foliar	Roundup

Hungryland Wildlife and Environmental Area

County: Martin, Palm Beach

PCL Size: 10,294 acres

Project ID: TC-054 130 acres \$70,606.78

Project Manager: Florida Fish and Wildlife Conservation Commission

Beth Morford, Biological Scientist III

8535 Northlake Boulevard, West Palm Beach, Florida 33412

Phone: 561-625-5122, ext. 142, Fax: 561-625-5129

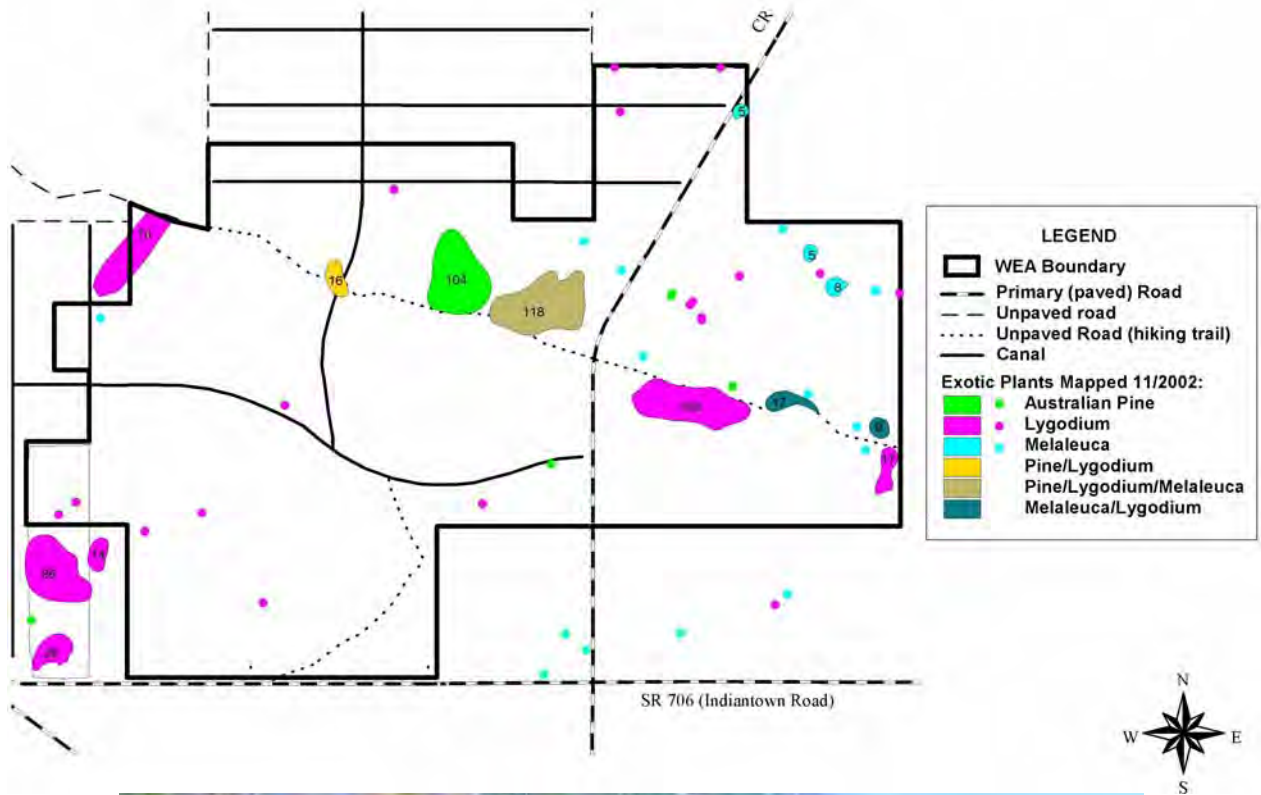
E-mail: morforb@fwc.state.fl.us

Hungryland Wildlife and Environmental Area (HWEA) is located in southern Martin County and northern Palm Beach County. The natural communities of HWEA are comprised primarily of mesic and wet flatwoods, interspersed with depression marshes and wet prairies. The South Florida Water Management District and DEP purchased this property as part of the Pal-Mar CARL/SOR project. *Florida Conservation Lands 2001* describes HWEA (i.e., Pal Mar) as “one of the highest quality pine flatwoods in south Florida.”

Three disjunct parcels separated by private lands make up the HWEA. Area 1, the original project area, consisted of 9,415 acres and was the only area surveyed for exotic plants. A combination of aerial and ground surveys identified approximately 950 acres infested by melaleuca, Brazilian pepper, *Lygodium*, and Australian pine. This project targeted 130 acres for maintenance treatment. BIPM also provided herbicide purchased for \$500.75 through its Herbicide Bank for this project. FWC treated an additional 50 acres for Australian pine and melaleuca as an in-kind match with a value of \$13,750.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4+Stalker
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro+Escort
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	mechanical	n/a

John C. and Mariana Jones/Hungryland WEA Exotics Map - Area 1



Using a helicopter to reach remote infestations is an efficient and cost effective method of treatment. This melaleuca was killed with an aerial application of Velpar®.

Hungryland Wildlife and Environmental Area



Old World climbing fern (*Lygodium microphyllum*) has surpassed all other species as the worst invasive plant in Florida. The four hurricanes in 2004 dispersed spores of this fern across millions of acres of the Everglades and southern Florida. Aerial application of herbicide is effective, as pictured on this page; unfortunately, the plant is difficult to detect until it has overgrown the tree canopy and a great deal of damage has already been done to native plant communities.



Kissimmee Prairie Preserve State Park

County: Okeechobee

PCL Size: 54,000 acres

Project ID: TC-050 20 acres \$11,350

Project ID: TC-058 10 acres \$1,500

Project Manager: Florida Park Service (DEP)

Christopher Tucker, Park Biologist

33104 NW 192nd Avenue, Okeechobee, Florida 34972

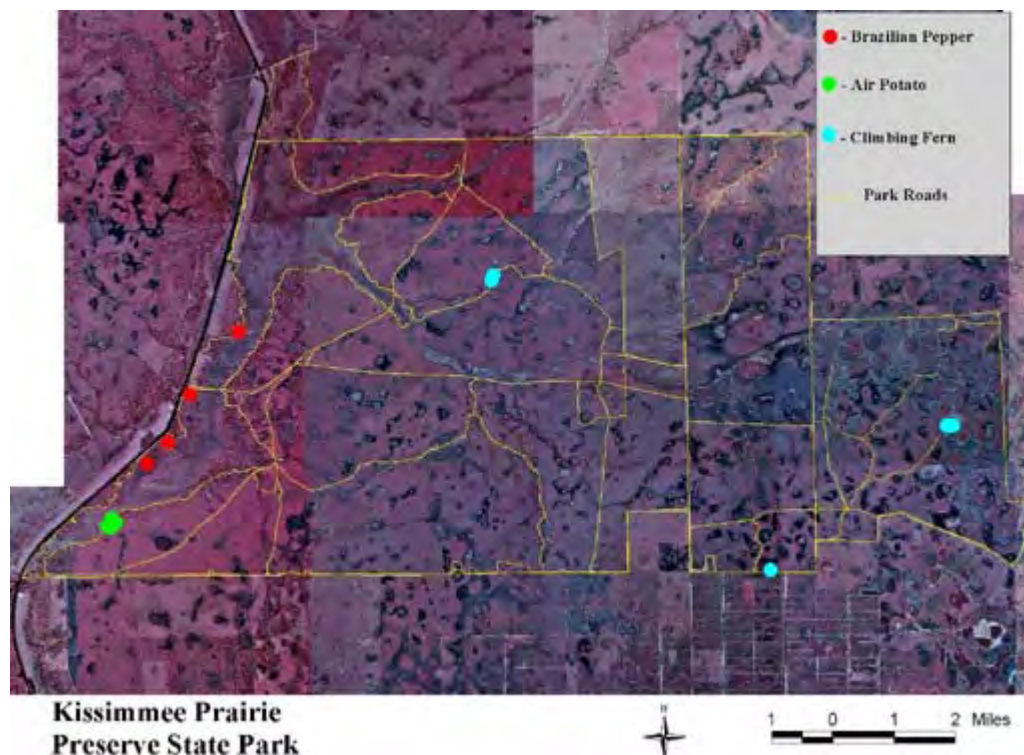
Phone: 863-462-5360, Fax: 863-462-5276

E-mail: christopher.l.tucker@dep.state.fl.us

Kissimmee Prairie Preserve protects the largest remaining tract of dry prairie habitat east of the Kissimmee River, which the park borders for nine miles. Dry prairie is an endemic natural community listed as globally and state imperiled by FNAI. Dry prairie covers approximately 20,000 acres of the property. The preserve hosts several rare plants, including the state-endangered spreading pinweed (*Lechea divaricata*) and giant wild pine (*Tillandsia utriculata*) and the state-threatened Catesby's lily (*Lilium catesbaei*), blue butterwort (*Pinguicula caerulea*), yellow butterwort (*P. lutea*), and little butterfly orchid (*Pteroglossapsis ecristata*).

Air-potato occurred in a single dense stand in the river hammock line. Brazilian pepper grew in scattered clumps along the spoil banks created when the Kissimmee River was channelized into the C-38 canal. A retreatment of 10 acres of air-potato was conducted as a separate project at the end of the year. The Park Service provided \$3,000 in matching funds toward the initial control work for a total project cost of \$14,350.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Rodeo+Escort
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4



Bluefield Natural Area

County: St. Lucie
 PCL Size: 3,285 acres
 Project ID: TC-052 97.6 acres \$119,981.31

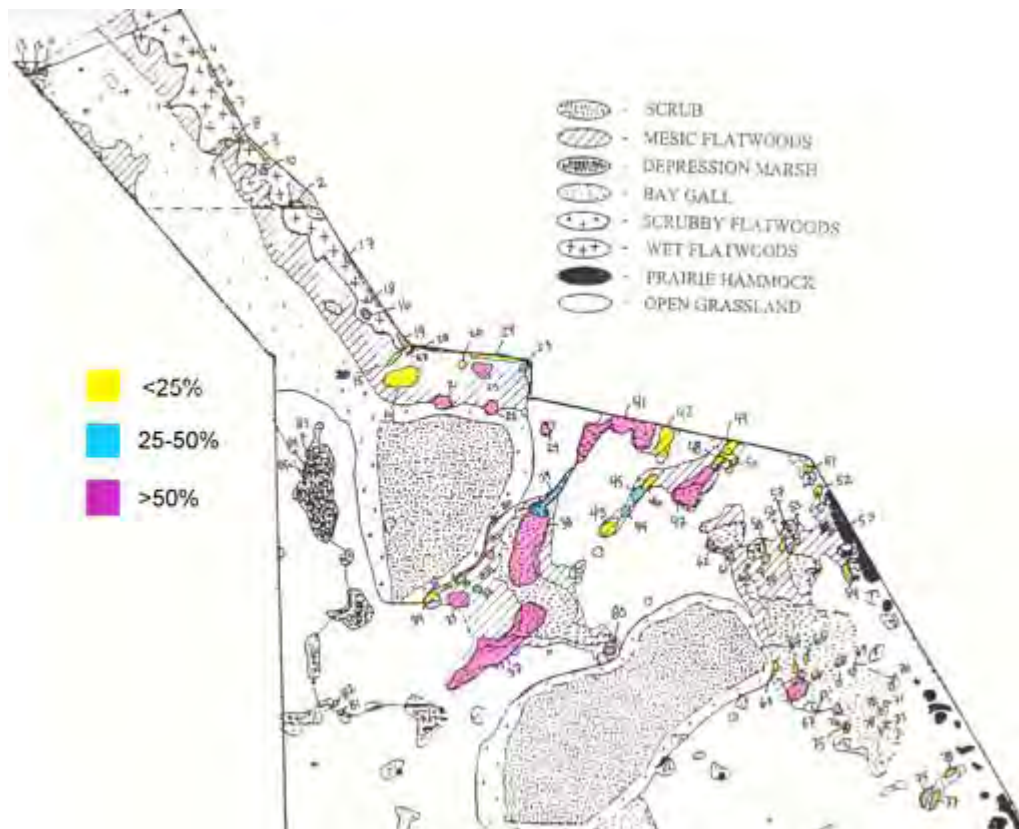
Project Manager: St. Lucie County
 Steven Fousek, Environmental Lands Specialist
 2300 Virginia Avenue, Ft. Pierce, Florida 34982
 Phone: Phone: 772-462-2525, Fax: 772-462-1684
 E-mail: stevef@stlucieco.gov



Bluefield consists primarily of scrub, scrubby flatwoods, baygall, wet flatwoods, and prairie hammock. The areas of infestation occurred mainly in the baygall community, but were also in wet flatwoods, mesic flatwoods, and the edges of depression marsh communities. Densities ranged from less than twenty-five percent to over fifty percent (see map below), with some areas of infestation that approached one hundred percent coverage. A total of 79.62 acres of climbing fern was treated.

Strap fern (*Campyloneurum spp.*), seen above, is an endangered species located within the project area. Several plants have been identified in areas where *Lygodium* is moderate to absent. The absence of strap fern in some areas may have been caused by shading from the climbing fern.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Glypro



Bluefield Natural Area



Old World climbing fern engulfs the landscape in a green carpet of death.

The overwhelming mass of the climbing fern can be clearly seen once it has been treated with herbicide.



Indrio Savannahs Natural Area

County: St. Lucie

PCL Size: 296 acres

Project ID: TC-056 8.83 acres \$14,213.48

Project Manager: St. Lucie County

Steven Fousek, Environmental Lands Specialist

2300 Virginia Avenue, Ft. Pierce, Florida 34982

Phone: Phone: 772-462-2525, Fax: 772-462-1684

E-mail: stevef@stlucieco.gov

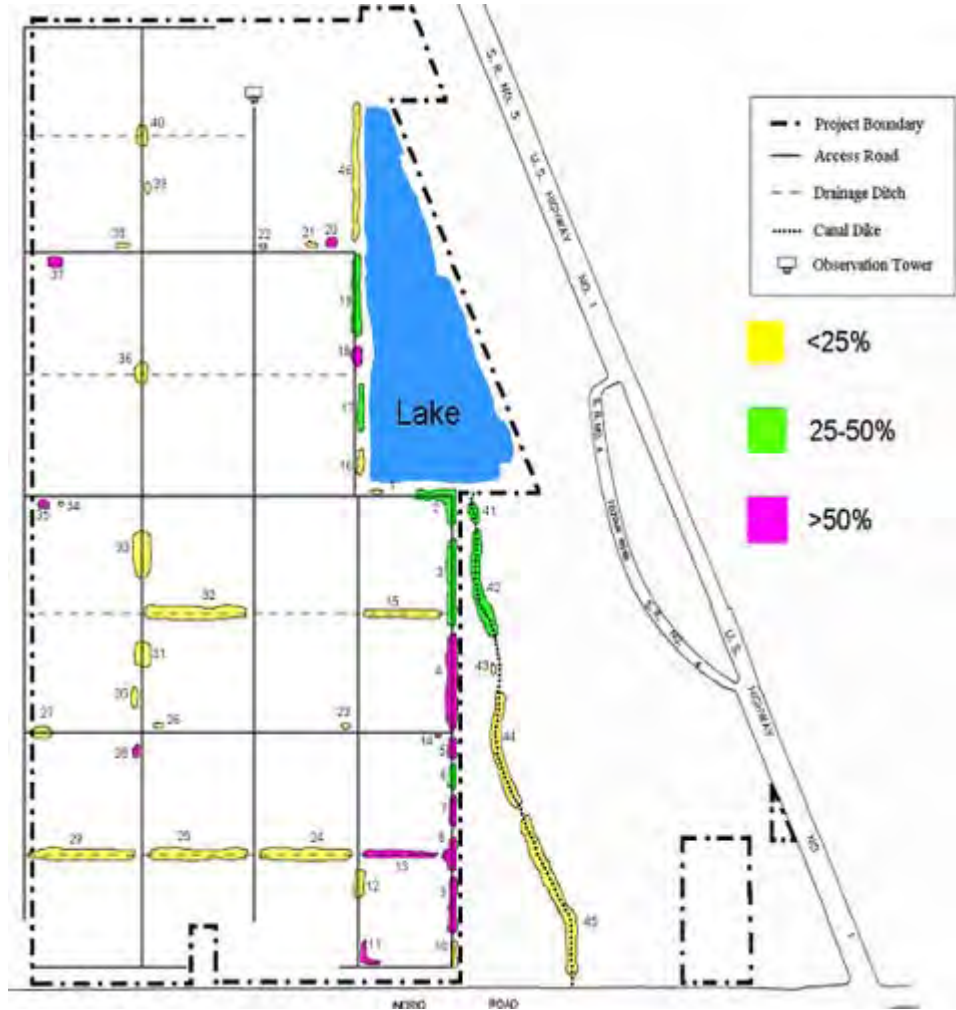
The Indrio Savannahs Natural Area includes the southern portion of the larger North Savannahs ecosystem. Indrio Savannahs includes a variety of natural communities, including scrub, scrubby flatwoods, mesic flatwoods, wet prairie, depression marsh, and freshwater swamp. The rare Lakela's mint occurs on the site, but not within the treatment area. Climbing fern densities ranged from less than twenty-five percent to over fifty percent (see map next page), with some areas of infestation that approached one hundred percent coverage.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Rodeo



St. Lucie County, like other coastal counties in southeast Florida, is inundated by *Lygodium*.

Indrio Savannahs Natural Area



A project map illustrating the location and extent of climbing fern on the property. Numbers represent percent cover of *Lygodium*.

Blind Creek Park

County: St. Lucie

PCL Size: 409 acres

Project ID: TC-057 17 acres \$94,000

Project Manager: St. Lucie County

Steven Fousek, Environmental Lands Specialist

2300 Virginia Avenue, Ft. Pierce, Florida 34982

Phone: 772-462-2525, Fax: 772-462-1684

E-mail: stevef@stlucieco.gov

Blind Creek Park lies at the southern end of Hutchinson Island, a barrier island that is important nesting habitat for the endangered leatherback, green, and loggerhead sea turtles. The beach dune community within the project area is approximately 30 acres in size. Existing in small scattered clumps are the following species: sea oats (*Uniola paniculata*), seagrape (*Coccoloba uvifera*), cabbage palm (*Sabal palmetto*), scaevola (*Scaevola plumeri*), saw palmetto (*Serenoa repens*), and coastal panicgrass (*Panicum amarum*). Rare plants found in or near the project area include sand-dune spurge (*Chamaesyce cumulicola*), Johnson's seagrass (*Halophila johnsonii*), and beach peanut (*Okenia hypogaea*).

Within the northern section of the project area, a dense stand of Australian pine extended from the surf west to the mangrove line and south to where the maritime hammock begins. This area ranges in widths of about 150-300 feet and is approximately 4300 feet in length (@17 acres). On top of the dune, the trees ranged in diameter size between 8-24" (average @ 14") and are 30-50' in height. West of this area, the trees ranged in size between 2-16" (average @ 6-8") and are about 20-40' in height.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina</i> spp.	Australian pine	Category I	cut stump/mechanical	Garlon 4

North Fork St. Lucie River State Buffer Preserve

County: St. Lucie

PCL Size: 987 acres

Project ID: TC-055 77 acres \$45,676.10

Project Manager: Southeast Florida Aquatic Preserves (DEP)

Jeff Beal, Environmental Specialist II

9737 Gumbo Limbo Lane, Jensen Beach, Florida 34957

Phone: 772-873-6590, Fax: 772-873-6599

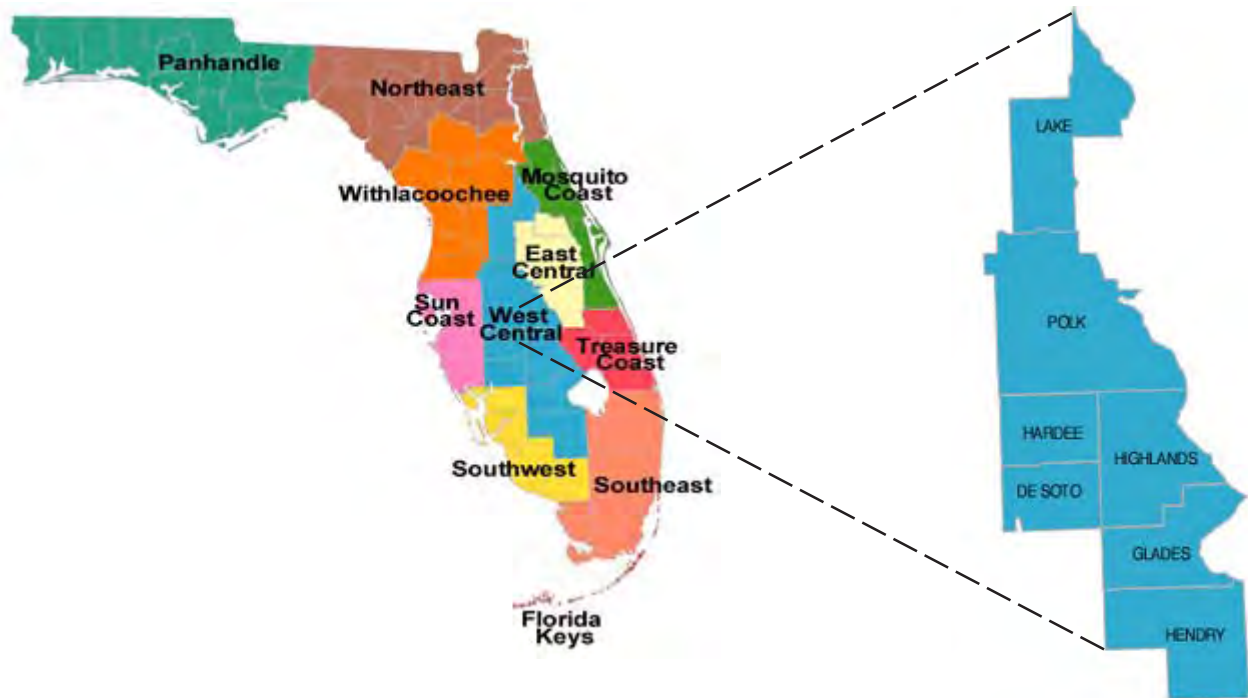
E-mail: jeffbeal@hotmail.com

The project area (Island #3 and adjacent smaller islands) is a set of three islands along the North Fork St. Lucie River stretching from the south side of Port St. Lucie Boulevard within the city limits of Port St. Lucie to Mud Cove. Typical vegetation communities on the preserve include sand pine scrub, mesic and scrubby flatwoods, hydric hammock, floodplain forest, estuarine tidal swamp, and basin marsh. Rare species present include giant leather fern (*Acrostichum danaeifolium*), shoestring fern (*Vittaria lineata*), red wild pine (*Tillandsia fasciculata*), and green wild pine (*T. utriculata*), and possibly hand fern (*Cheiroglossa palmata*).

BIPM conducted the initial control of this project area. Overall, results from the original treatment were successful; however, a combination of new occurrences, re-sprouts, overlooked pockets, and maintenance control created a need for re-treatment of the area. All target species were scattered throughout the project area, with spoil banks continuing to be most heavily impacted by some species. Brazilian pepper and other exotics had an estimated coverage of five to ten percent.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/girdle	Garlon 4

West Central Regional Working Group



The West Central Regional Working Group liaison is Mr. Matt Phillips, DEP Bureau of Invasive Plant Management, 2001 Homeland Garfield Road, Bartow, Florida 33830, phone: 941-534-7074, fax: 941-534-7143, e-mail: matt.phillips@dep.state.fl.us

Fisheating Creek Wildlife Management Area

County: Glades

PCL Size: 18,272 acres

Project ID: WC-024 7,492 acres \$196,187.90

Project Manager: Fish and Wildlife Conservation Commission

Grant Steelman, Wildlife Biologist

3010 Banana Grove Road, Moore Haven, Florida 33471

Phone: 863-946-1194, Fax: 863-946-1087

E-mail: steelmg@fwc.state.fl.us

Fisheating Creek is the only undammed tributary to Lake Okeechobee. Natural communities in the WMA include floodplain swamp, bottomland forest, freshwater marsh, dry prairie, prairie hammock, and hydric hammock. This project targeted wetland nightshade and Old World climbing fern throughout the 40.3-mile Fisheating Creek channel, from the Highlands-Glades county line to State Road 78. Dense patches of wetland nightshade (*Solanum tampicense*) inhibited and out-competed native vegetation in the cypress swamp understory. Wetland nightshade and Old World climbing fern averaged a combined cover of forty percent of the entire project area, including patches of one hundred percent cover ranging in size from one acre to fifty acres.

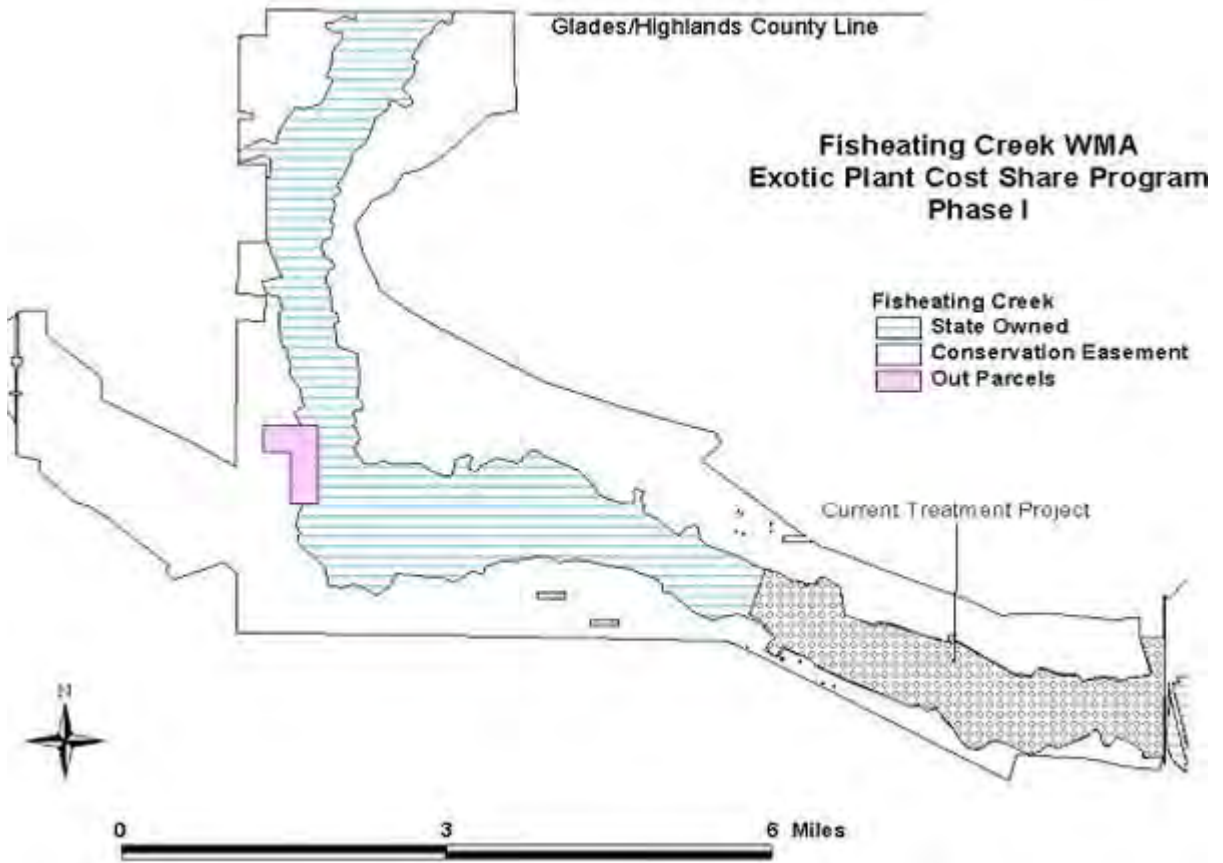
This was a cost-share project with FWC providing \$55,00 during the 2003-2004 phase of the project.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Rodeo+Escort
<i>Solanum tampicense</i>	wetland nightshade	Category I	foliar	2,4-D



Wetland nightshade growing profusely at Six-Mile Crossing before treatment.

Fisheating Creek Wildlife Management Area



Okaloacoochee Slough State Forest

County: Hendry, Collier

PCL Size: 35,039 acres

Project ID: WC-023 4,556 acres \$199,383.40

Project Manager: Florida Division of Forestry

Kevin Podkowka, Senior Forester

10941 Palm Beach Boulevard, Ft. Myers, Florida 33905

Phone: 863-612-0776, Fax: 863-612-0780

E-mail: podkowk@doacs.state.fl.us

The Okaloacoochee Slough State Forest was purchased in 1998 as a single contiguous tract without inholdings. The Forest is generally hydric in nature, with approximately 12,000 acres of mesic flatwoods and oak-cabbage palm hammocks persisting on the driest sites. The remaining two-thirds of the area includes a variety of plant communities such as dome swamps, swale, depression marshes, and swamps. The targeted exotic species affected all of the plant community types on the Forest.

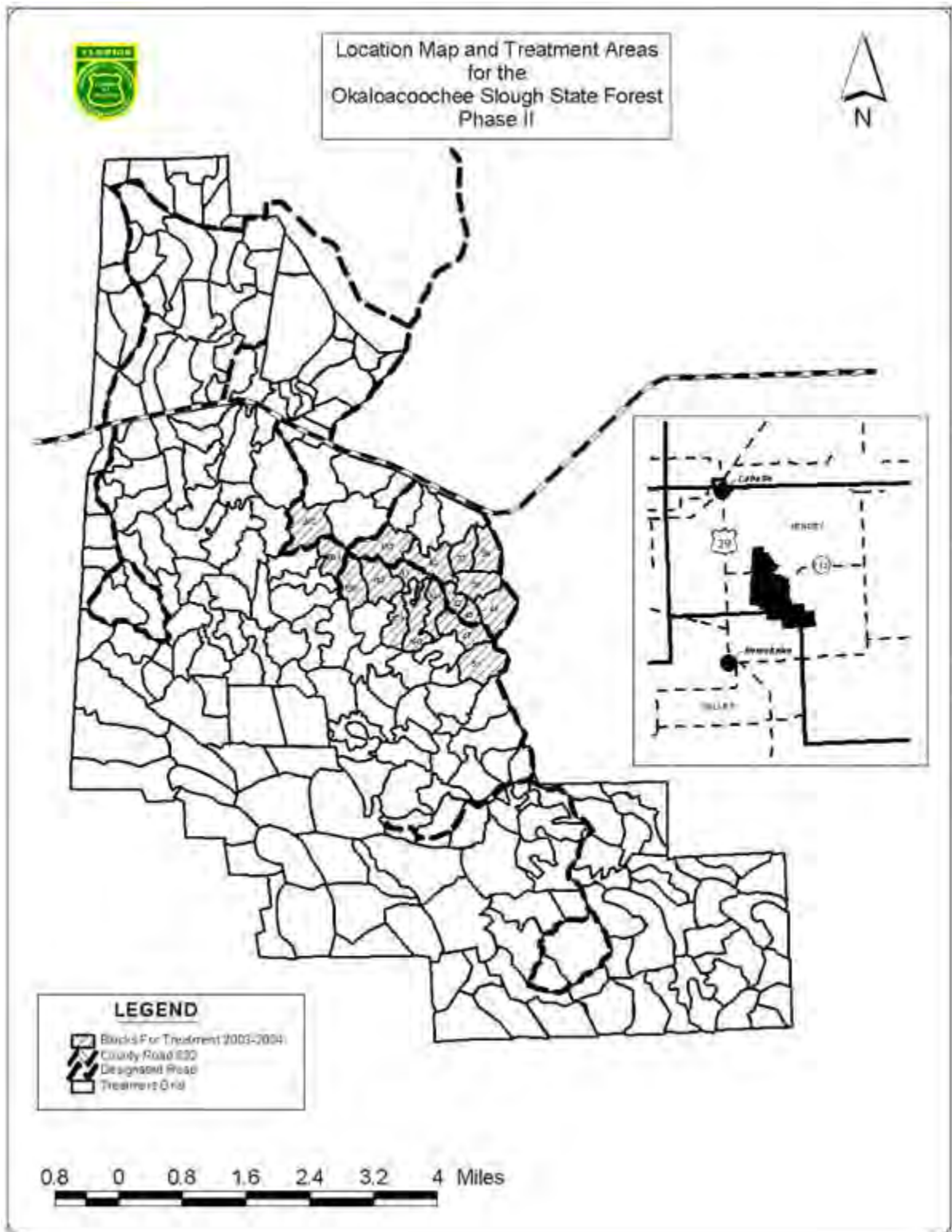
Timber and cattle operations comprised the historical use of land in the project area. Areas of exotic vegetation occur throughout the Forest, except within the Okaloacoochee Slough itself. The total area needing control is approximately 19,000 acres. This area was broken down into blocks ranging from 30 to 500 acres to allow for a phased project approach. Within blocks, the infested acres are not contiguous and the concentrations of targeted species vary from only a few plants over the block, to potentially thousands. No areas were known to contain more than 1 acre of contiguous infestation; instead, most blocks had scattered infestations of the target species.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4



Careful application of herbicide allows the selective killing of exotics amongst native species.

Okaloacoochee Slough State Forest



Okaloacoochee Slough State Forest

County: Hendry, Collier

PCL Size: 35,039 acres

Project ID: WC-028 5,000 acres \$32,133.57

Project Manager: Florida Division of Forestry

Kevin Podkowka, Senior Forester

10941 Palm Beach Boulevard, Ft. Myers, Florida 33905

Phone: 863-612-0776, Fax: 863-612-0780

E-mail: podkowk@doacs.state.fl.us

The 'OK' Slough State Forest received funding for initial control operations in the previous fiscal year. This project was directed at maintenance control of that Phase I treatment area. The treated portion of the project area included 3,000 acres where all FLEPPC Category I and II exotic species present (except torpedo grass and Caesar's weed) were treated. The dominant exotic species were Brazilian pepper and cogon grass, which occurred throughout the area, but generally not in the depressional wetlands. Other species included West Indian marsh grass, tropical soda apple, melaleuca, and Old World climbing fern. Another 2,000 acres received treatment for Brazilian pepper and other exotics.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Hymenachne amplexicaulis</i>	West Indian marsh grass	Category I	foliar	Roundup+Arsenal
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup+Arsenal
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Roundup
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal+Glypro
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	foliar	Roundup+Arsenal
<i>Solanum viarum</i>	tropical soda apple	Category I	hand pull	n/a

Avon Park Air Force Range

County: Highlands, Polk

PCL Size: 106,110 acres

Project ID: WC-029 498 acres \$52,912.51

Project Manager: Department of Defense, U. S. Air Force

Steve Orzell, OLA, DET 1, 347 OG/CEVN

29 South Boulevard, Avon Park Air Force Range, Florida 33825-5700

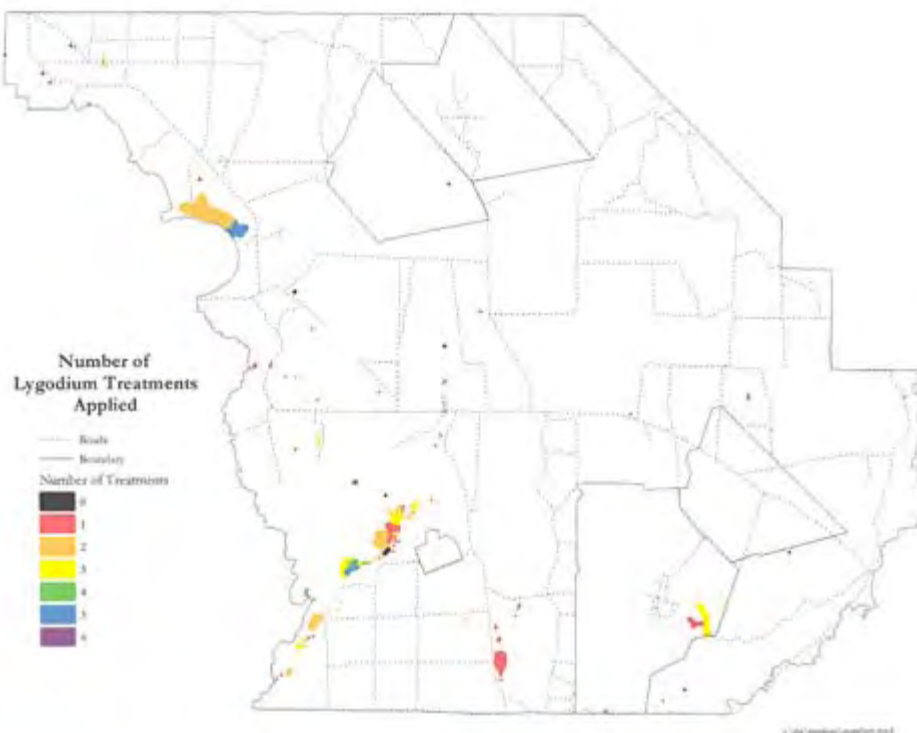
Phone: 941-452-4119 Ext 317, Fax: 941-452-4161

E-mail: steve.orzell@avonpark.macdill.af.mil

Avon Park Air Force Range (APAFR) is the largest parcel of natural land in the Greater Arbuckle Ecosystem. Its numerous natural communities include the rare scrub, dry prairie, and cutthroat grass seeps. The APAFR supports an amazing array of rare plants and animals, including twelve animals and two plants that are listed as federally endangered or threatened species.

Controlling invasive exotic plants at APAFR assists in preventing the spread of exotics into adjacent or nearby natural areas and endangered species habitats such as Kissimmee Prairie State Preserve, Kissimmee River WMD properties, Lake Wales Ridge State Forest, and Lake Arbuckle State Park, among others. This project provided ground-based maintenance control for Japanese climbing fern and Old World climbing fern that infested approximately 3,100 acres of cypress and hardwood swamps at APAFR.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Aquastar/Glypro
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Aquastar/Glypro



Lake Letta

County: Highlands

PCL Size: 90 acres

Project ID: WC-031 40 acres \$19,697.70

Project Manager: Highlands County Parks and Recreation

Vicki Pontius, Director

4344 George Boulevard, Sebring, Florida 33875

Phone: 863-402-6813, Fax: 863-402-6899

E-mail: vpontius@bcc.co.highlands.fl.us

Lake Letta has undergone treatment for melaleuca twice within the past three years. Through joint cooperative efforts of the Southwest Florida Water Management District Peace River Basin Board and the Highlands County Board of County Commissioners, the trees along the shoreline of the residential section of the lake were treated.

This project on Lake Letta concluded initial treatment of all infested lakes within Highlands County that have public access. County work crews monitor treated lakes for re-growth and remove any new seedlings. In addition, the residents on Lake Letta worked diligently to remove fallen trees and branches and pulled up seedlings. County forces hauled away debris stacked up by residents. However, a large portion of the trees along the sparsely populated areas of the lake were not treated due to funding limitations.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	girdle	Arsenal



Fog shrouds the corpses of vanquished melaleuca trees on Lake Letta.

Highlands Hammock State Park

County: Highlands

PCL Size: 9,244 acres

Project ID: WC-030 7.75 acres \$7,013.29

Project Manager: Florida Park Service (DEP)

Peter Anderson, Park Manager

5931 Hammock Road, Sebring, Florida 33872

Phone: 863-386-6099, Fax: 863-386-6095

E-mail: peter.anderson@dep.state.fl.us

Highlands Hammock State Park is unique for its hardwood hammock that is one of the few remaining large virgin hammocks in Florida. Other natural communities include floodplain swamp, marsh, baygall, flatwoods, scrub, and cutthroat seeps. Originally purchased by a group of private citizens, the Park was dedicated for public use in 1931. The Civilian Conservation Corps developed the park and the Park Service later assumed management in 1935 of one of Florida's first State Parks.

The project area included two treatment sites. Both sites have cutthroat grass (*Panicum abscissum*), a species that is state listed as endangered. Both sites also harbor the southernmost populations in the United States of hooded pitcher-plant (*Sarracenia minor*).

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Roundup+Escort

General James A. Van Fleet State Trail

County: Lake, Polk, Sumter

PCL Size: 471 acres

Project ID: WC-025 2 acres \$1,700

Project Manager: Office of Greenways and Trails (DEP)

Mike McCarthy

7305 US Highway 27, Clermont, Florida 34711

Phone: 352-394-2280

E-mail: michael.mccarthy@dep.state.fl.us

The General James A. Van Fleet Trail State Park extends 29 miles from Mabel, on State Road 50 in Sumter County, to Polk City, on State Road 33 in Polk County. The trail is approximately 100 feet wide for most of its length. The trail passes through the Green Swamp Area of Critical State Concern. Exotic vegetation occurred along the length of the trail, but primarily and most extensively in the trailhead areas. Chinese privet was the most abundant exotic species.

The Florida Park Service provided a cost-share of \$250 for a total project cost of \$1,950.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Ligustrum sinense</i>	Chinese privet	Category I	basal	Garlon 4
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Antigonon leptopus</i>	coral vine	Category II	foliar	2,4-D+Aquaneat
<i>Broussonetia papyrifera</i>	paper mulberry	Category II	basal	Garlon 4
<i>Xanthosoma sagittifolium</i>	elephant ear	Category II	foliar	2,4-D+Aquaneat

Lake Louisa State Park

County: Lake

PCL Size: 4,450 acres

Project ID: WC-009 4.3 acres \$1,463

Project Manager: Florida Park Service (DEP)

Rosi Mulholland, District Biologist

12549 State Park Drive, Clermont, Florida 34711

Phone: 352-394-3436, Fax: 352-394-1318

E-mail: rosi.mulholland@dep.state.fl.us

Much of the uplands of the park are former sandhills that were converted to orange groves. The citrus froze out in the late 1980s, before state acquisition. Two endangered plants can be found in the park; Curtiss' milkweed (*Asclepias curtissii*) and Florida bonamia (*Bonamia grandiflora*).

Rosary pea and lantana occurred throughout the park, primarily growing over sour citrus shrubs. The project area included sandhill lake margins along an area where partial restoration of the former sandhill community had begun. This work targeted scattered lantana patches and was a follow-up to the FY03 project on the same site. BIPM provided herbicide only for this project through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lantana camara</i>	lantana	Category I	foliar	Garlon 4



Lake County Water Authority Properties

County: Lake

PCL Size: *various*

Project ID: WC-026 216.35 acres \$4,847.88

Project Manager: Lake County Water Authority
R. D. VanderBleek, Land Management Specialist
107 N. Lake Avenue, Tavares, Florida 32778
Phone: 352-343-3777, Fax: 352-343-4259
E-mail: deanv@lcwa.org

The Oklawaha Basin Recreation and Water Conservation and Control Authority, commonly called the Lake County Water Authority (LCWA), was created by state law in 1953. The LCWA has acquired over 6,000 acres for protection through its Land Preservation Program. An active and expanded invasive plant control program is integral to LCWA's land management goals.

The Bourlay Historic Nature Park is an 83-acre property located on the southwest shore of Lake Griffin that includes a planted pine forest and 1930s era house. The former owner collected and grew a wide variety of exotic tropical plant species on the site. The property slopes gradually from the pine plantation to the shoreline, with transitional hardwood hammock species giving way to statuesque bald cypress. The 68-acre Sabal Bluff Preserve is located on the southeast shore of Lake Griffin and contained planted pine with a lantana understory, an isolated 10-acre marsh, and an abandoned orange grove.

There were no large acreages completely dominated by invasive species, rather pervasive populations intermixed with native species. Fifteen different species were targeted, with coverage ranging from 0.25 acres to 40 acres. BIPM provided herbicide for this project while LCWA provided labor, equipment, and additional herbicide as an in-kind match worth 15,230.96.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Abrus precatorius</i>	rosary pea	Category I	foliar	Roundup/Rodeo
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Garlon 4/Roundup
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Garlon 4
<i>Lantana camara</i>	lantana	Category I	basal/foliar	Garlon 4
<i>Lantana camara</i>	lantana	Category I	foliar	Roundup/Rodeo
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Garlon 4/Roundup
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Melia azedarach</i>	Chinaberry	Category I	foliar	Roundup
<i>Psidium guajava</i>	guava	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Alternanthera philoxeroides</i>	alligator weed	Category II	foliar	Rodeo
<i>Koeleruteria elegans</i>	flamegold tree	Category II	foliar	Roundup
<i>Rhynchelytrum repens</i>	Natal grass	Category II	foliar	Roundup
<i>Ricinus communis</i>	castor bean	Category II	basal	Garlon 4
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Garlon 4/Roundup
<i>Sorghum halepense</i>	Johnson grass	n/a	basal	Garlon 4
<i>Sorghum halepense</i>	Johnson grass	n/a	foliar	Roundup

Circle B Bar Reserve

County: Polk

PCL Size: 1,267 acres

Project ID: WC-027 650 acres \$42,835

Project Manager: Polk County Natural Resources Division

Gaye Sharpe, Environmental Lands Coordinator

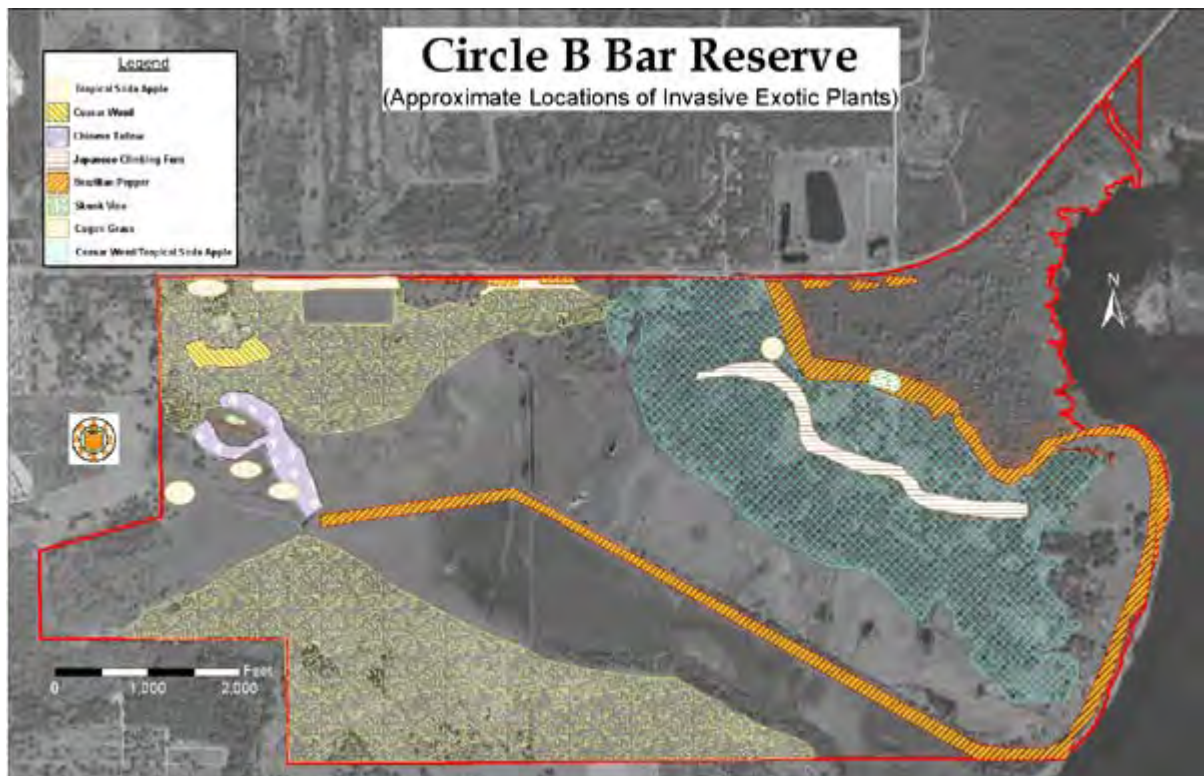
4177 Ben Durrance Road, Bartow, Florida 33830

Phone: 863-534-7377 x203, Fax: 863-534-7374

E-mail: gayesharpe@polk-county.net

The Circle B Bar Reserve was a cattle ranch before public acquisition. The site consists of several vegetation communities such as cypress domes, wet prairie, mixed wetland hardwoods, bay swamp, live oak hammock, upland hardwood forest, and improved pasture. With the removal of the cattle in 2002, there was a tremendous increase in some of the invasive species populations, such as cogon grass and Chinese tallow. Overall, the invasive exotic plants were widely dispersed in densities ranging from ten to ninety percent with concentrations along the roadway, lake and swamp shoreline, and along the manmade berm.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Rodeo+Garlon 3A
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Rodeo+Garlon 3A



Lake Bonny Park

County: Polk

PCL Size: 116 acres

Project ID: WC-022 68.54 acres \$17,231.95

Project Manager: City of Lakeland

Gene Medley, Manager of Lakes & Stormwater

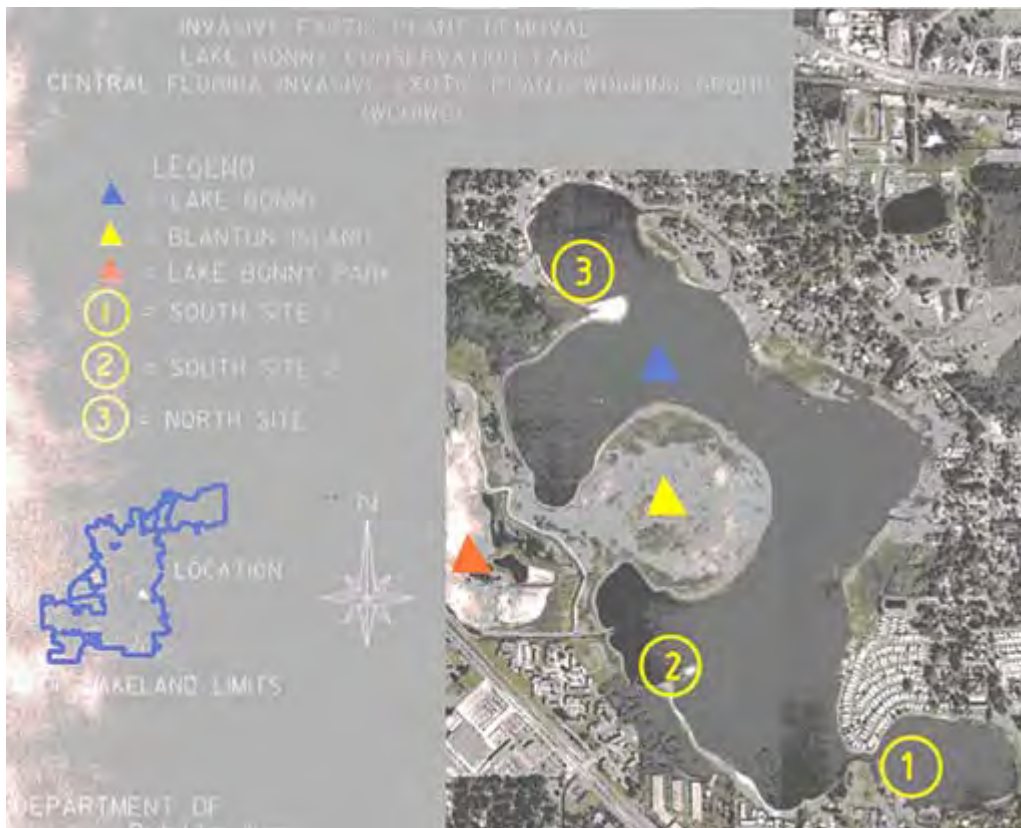
228 South Massachusetts Avenue, Lakeland, Florida 33801-5086

Phone: 863-834-6276, Fax: 863-834-8040

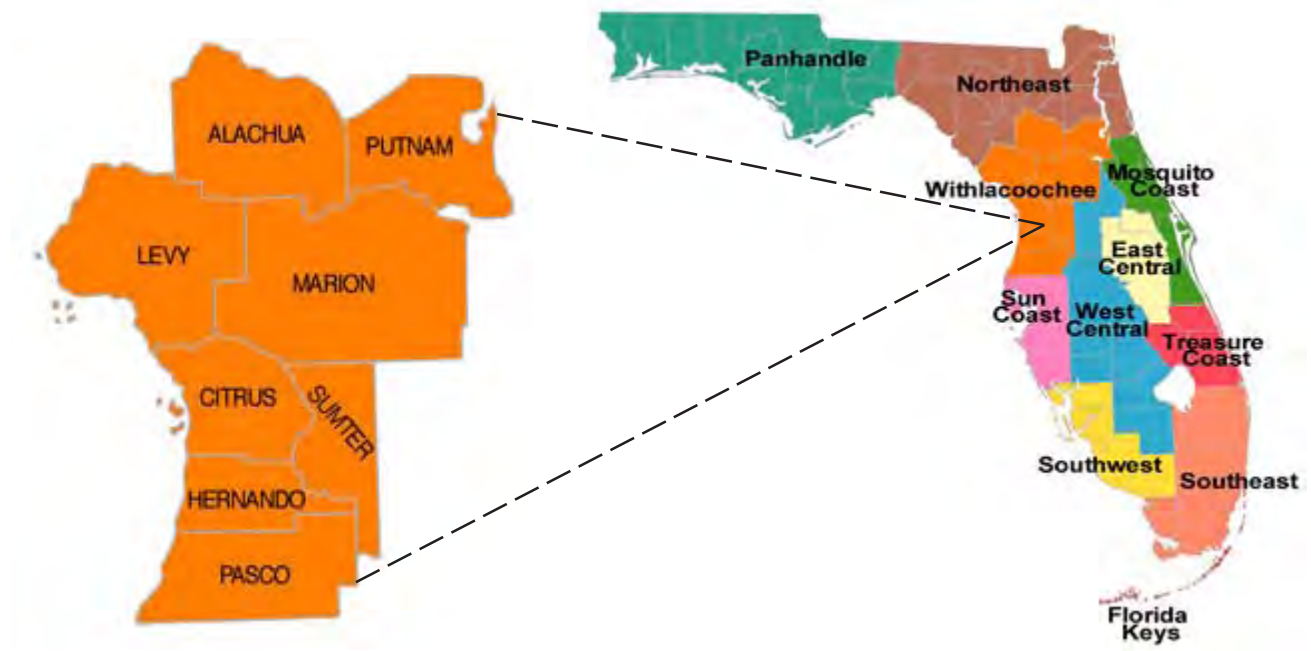
E-mail: gene.medley@lakelandgov.net

The conservation area of Lake Bonny (known as the Blanton Island Tract) had extensive Chinese tallow infestations, with random infestations of Brazilian pepper, air-potato, and castor bean on the island and surrounding shoreline. The City began an exotic control program by felling Chinese tallow and spraying castor bean, while volunteers helped control air-potato. The BIPM project helped efforts to reestablish beneficial vegetation on the Blanton Island Tract and surrounding shorelines by reducing the competition from invasive exotic species. The City earmarked funds to reestablish beneficial vegetation and restoration is ongoing.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Ricinus communis</i>	castor bean	Category II	cut stump	Garlon 4



Withlacoochee Regional Working Group



The Withlacoochee Regional Working Group liaison is Ms. Andrea VanLoan, FDACS Division of Forestry, P.O. Box 147100, Gainesville, Florida 32614, phone: 352-372-3505, fax: 352-334-0737, e-mail: vanloaa@doacs.state.fl.us

Paynes Prairie Preserve State Park

County: Alachua

PCL Size: 20,945 acres

Project ID: WR-046 112 acres \$27,000

Project Manager: Florida Park Service (DEP)

James Weimer, Preserve Biologist

100 Savannah Boulevard, Micanopy, Florida 32667

Phone: 352-466-8081, Fax: 352-466-4297

E-mail: jim.weimer@dep.state.fl.us

Paynes Prairie Preserve State Park is located immediately south of the City of Gainesville (and the University of Florida). The park is an Outstanding Florida Water, a National Natural Landmark, and a Priority Wetland Species Use Area. The park has a national reputation for the abundance and diversity of its plants and animals. The vertebrate list exceeds three hundred species and the vascular floral contains half of the species found in north central Florida. With its large size, the park is the central piece in the Orange Creek Corridor of public lands, which stretches over forty miles, extending from the Santa Fe River in the north to the Ocklawaha River to the southeast.

The total project size is 312 acres, divided into four annual phases. Each phase is divided into two parts, one treated by a contractor, and the other treated by park staff as an in-kind contribution. Of the total project area, 120 acres will be contractor treated and 192 acres will be staff treated. Phase 1 was completed in FY02 and Phase 2 was completed in FY03. Phase 3 included 32 acres treated by a BIPM contractor at a cost of \$27,000 and 80 acres treated by staff at a cost of \$17,697 for a total project cost of 44,697.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal/foliar	Garlon 4



Loblolly Woods

County: Alachua

PCL Size: 130 acres

Project ID: WR-045 25 acres Project Cost: \$1,272

Project Manager: City of Gainesville Recreation and Parks

Geoff Parks

1024 NE 14th Street, Building A, Gainesville, Florida 32602

Phone: 352-334-2231, Fax: 352-334-2234

E-mail: parksgr@ci.gainesville.fl.us

Natural communities in Loblolly Woods include seepage stream, floodplain forest, upland mixed forest, and bottomland forest. Three rare plants and two rare insects occur on the site. BIPM provided the herbicide only for this project through its Herbicide Bank. The City of Gainesville provided matching funds and in-kind services with a value of \$30,015 for a total project cost of \$31,287.

This project is Phase III of the Loblolly Woods Invasive Exotic Plant Removal Project. BIPM also funded Phases I and II. Phase III focused on high-density populations of *Tradescantia fluminensis* and growing populations of *Clematis terniflora*. High densities of both species occurred along the Hogtown Creek Greenway and both species were widespread but sporadic over the remainder of the project area, ranging from five to seventy-five percent coverage. A number of incidental species were also treated when found, including Chinese tallow, paper mulberry, coral ardisia, wild taro, nandina, Chinaberry, mimosa, camphor tree, Japanese climbing fern, and English ivy.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Glypro+Scythe or Escort
<i>Tradescantia fluminensis</i>	small-leaf spiderwort	Category I	foliar	Glypro+Scythe or Escort
<i>Clematis terniflora</i>	sweet autumn virginbower	n/a	foliar	Glypro+Scythe or Escort



Loblolly Woods

County: Alachua

PCL Size: 130 acres

Project ID: WR-051 25 acres \$31,800

Project Manager: City of Gainesville Recreation and Parks

Geoff Parks

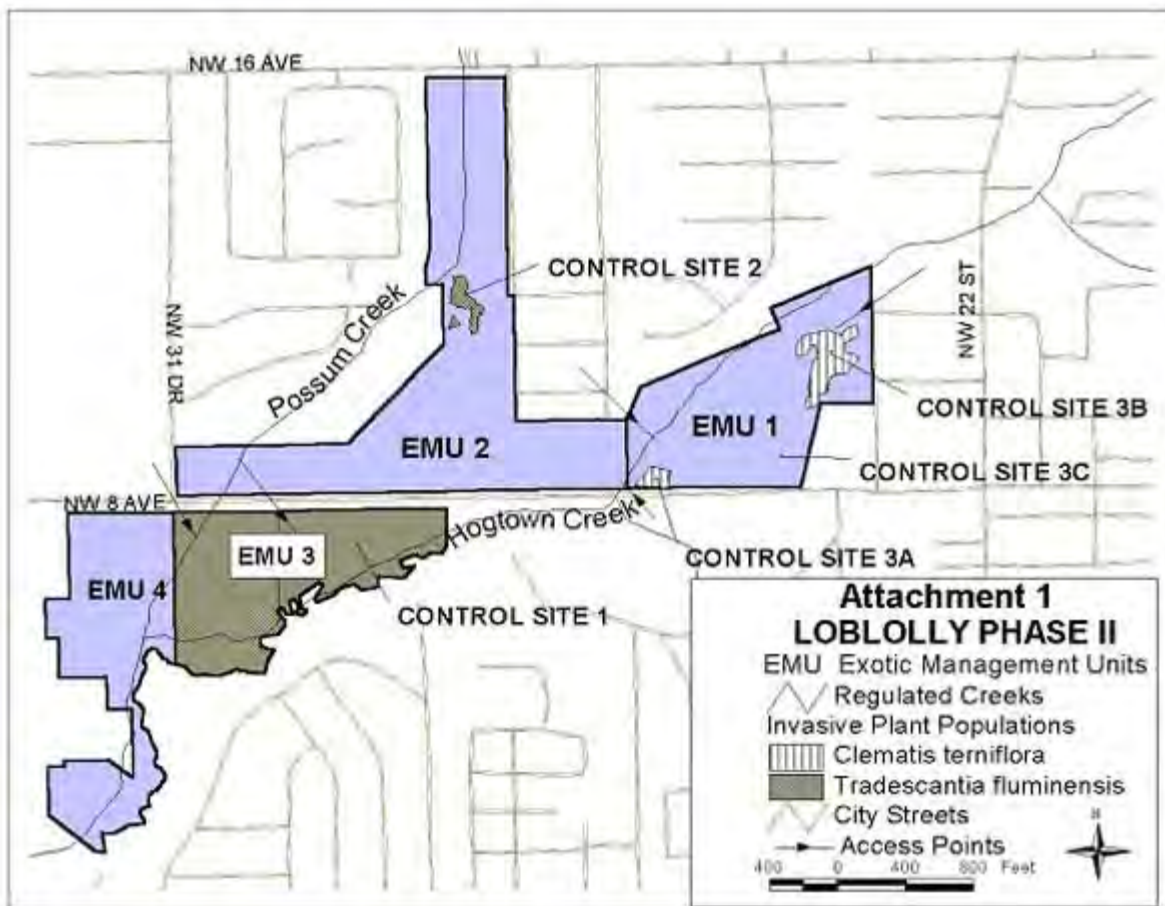
1024 NE 14th Street, Building A, Gainesville, Florida 32602

Phone: 352-334-2231, Fax: 352-334-2234

E-mail: parksgr@ci.gainesville.fl.us

The primary goal of this project was to retreat populations of air-potato, *Tradescantia*, and *Clematis*. A portion of the control work was initiated in the previous fiscal year, but could not be completed due to adverse weather conditions. A number of incidental species were also treated when found, including Chinese tallow, paper mulberry, coral ardisia, wild taro, nandina, Chinaberry, mimosa, camphor tree, Japanese climbing fern, and English ivy.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Dioscorea bulbifera</i>	air-potato	Category I	foliar	Glypro+Scythe or Escort
<i>Tradescantia fluminensis</i>	small-leaf spiderwort	Category I	foliar	Glypro+Scythe or Escort
<i>Clematis terniflora</i>	sweet autumn virginsbower	n/a	foliar	Glypro+Scythe or Escort



Crystal River Preserve State Park

County: Citrus

PCL Size: 38,000

Project ID: WR-042 114.5 acres \$125,000

Project ID: WR-047 10.5 acres n/a

Project Manager: Florida Park Service (DEP)

Nick Robbins, Park Manager

3266 N. Sailboat Avenue, Crystal River, Florida 34428

Phone: 352-563-0450, Fax: 352-563-0246

E-mail: nicholas.robbins@dep.state.fl.us

The Crystal River State Buffer Preserve (recently renamed as a state park) provides an upland buffer to the St. Martins Marsh Aquatic Preserve. The Buffer Preserve contains a diversity of natural areas such as Estuarine Tidal Marsh, Hydric Hammock, Marsh (Prairie) Hammock, Estuarine Tidal Swamp, Pine Flatwoods, and Scrubby Flatwoods. Fifty state and/or federally listed species occur on or immediately adjacent to the CRSBP. Brazilian pepper began to infest coastal Citrus County after the tidal surge associated with the “No-Name Storm.” Brazilian pepper occurred on brackish high marsh areas, hydric hammocks, shell mounds, and coastal spoil islands.

This project area compromised three treatment zones labeled as zones A, B, and C. Zone A consisted of St. Martins River, Head Creek, and Fish Creek. The pepper invaded coastal cedar-cabbage palm hammocks, shell mound, river spoil, and high marsh. The infestation densities ranged from very light (<5%) to high (~80%). Zone B consisted of the Salt River and the bays east of Pirates Cove. The pepper invaded cedar-cabbage palm hammocks, shell mound, river spoil, and high marsh, with densities similar to Zone A. Cogon grass grew south of the Crystal River Barge Canal, adjacent to Greenways and Trails property and also near the Florida Power property. Cogon grass covered about three acres within Zone C in pine flatwoods and hydric hammock on and adjacent to an old logging road.

Citrus County provided a cost-share of \$102,070 and the Florida Park Service provided matching funds of \$15,000 for a total project cost of \$242,070. BIPM also provided herbicide to the park at no cost for a second project through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Glypro+Arsenal
<i>Paederia foetida</i>	skunk vine	Category I	foliar	Glypro+Escort
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/foliar	Garlon 4/+Stalker

Crystal River Preserve State Park



*Photo Point BP-2. Photo taken September 25, 2003
(Pre-Treatment)*



*Photo Point BP-2. Photo taken January 30, 2004
(Post-Treatment)*



*Photo taken of spoil island in narrows of Salt River
on September 25, 2003 (Pre-treatment)*



*Photo taken of same spoil island on January 30, 2004
(Post-treatment)*

Withlacoochee State Forest

County: Hernando

PCL Size: 155,270 acres

Project ID: WR-033 75 acres \$1,299.75

Project Manager: Division of Forestry (DACS)

Vincent Morris

15019 Broad Street, Brooksville, Florida 34601

Phone: 352-754-6777, x125, Fax: 352-754-6751

E-mail: morrisv@doacs.state.fl.us

This project provided maintenance control for previously treated infestations of cogon grass in the northern portion of the Croom Tract, located in an area of frequently burned sandhill on the South Brooksville Ridge. Currently, 81 acres of cogon grass infestations are identified and mapped on the 21,639-acre Croom Tract. Also, 44.7 acres of cogon grass are mapped on the Headquarters Tract and 121.2 acres are mapped on the Citrus Tract. BIPM provided the herbicide only for this project through its Herbicide Bank.

In-house treatment included 50.6 acres of cogon grass in the Croom Tract, and 165.9 acres in the Citrus and Headquarters Tracts at a total cost of \$21,650. The per-acre cost was less since all of the in-house infestations had been treated in the past and cogon grass cover was relatively low.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup+Arsenal

Chinsegut Wildlife Environmental Area

County: Hernando

PCL Size: 828 acres

Project ID: WR-041 16 acres \$910

Project Manager: Fish and Wildlife Conservation Commission

Kristin Wood, Biological Scientist II

23212 Lake Lindsey Rd., Brooksville, Florida 34601

Phone: 352-754-6722, Fax: 352-540-6032

E-mail: kristin.wood@fwc.state.fl.us

The Chinsegut WEA consists of the Big Pine Tract and the Chinsegut Nature Center. The CWEA is dominated by sandhill, xeric hammock, upland mixed forest, basin marsh, and depression marsh. The Big Pine Tract is believed to be the second-largest stand of contiguous old-growth longleaf pine in Florida, with many longleaf pines over 200 years old. Cogon grass occurred on both tracts, mainly along firebreaks and in disturbed areas. In some areas, it extended well into the adjacent natural communities. This project provided maintenance control of the sites initially treated in the previous year. BIPM provided the herbicide only for this project through its Herbicide Bank.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Glypro+Arsenal



Hernando County Lands

County: Hernando
PCL Size: various

Project Manager: Hernando County Mosquito/Aquatic Weed Control
Dr. Guangye Hu, Manager
201 West Martin Luther King Jr. Blvd., Brooksville, Florida 34601
Phone: 352-754-4061, Fax: 352-754-4066
Project ID: WR-037 60 acres \$34,734.38

Ninety-five percent of all lands west of Highway 19 in Hernando County are public conservation lands. This maintenance effort focused on lands initially treated during FY 2002. Brazilian pepper was targeted in the following areas: Pine Island (McKethan) Park, Bayport Park, Hernando Beach Park, Jenkins Creek Park, Hernando Beach boat ramp, and spoil islands. Hernando County has adopted an ordinance to ensure long-term control of Brazilian pepper. The control of this species relies on the ordinance and enforcement, plus the ability of the county to attract new partners to assist with the project costs.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Paederia foetida</i>	skunk vine	Category I	foliar	Glypro+Escort
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal/hand pull	Garlon 4



Waccasassa Bay Preserve State Park

County: Levy

PCL Size: 32,500 acres

Project ID: WR-050 154 acres \$2,400

Project Manager: Florida Park Service (DEP)

Jeff DiMaggio

P.O. Box 187, Cedar Key, Florida

Phone: 352-543-5567, Fax: 352-543-6315

E-mail: jeffrey.dimaggio@dep.state.fl.us

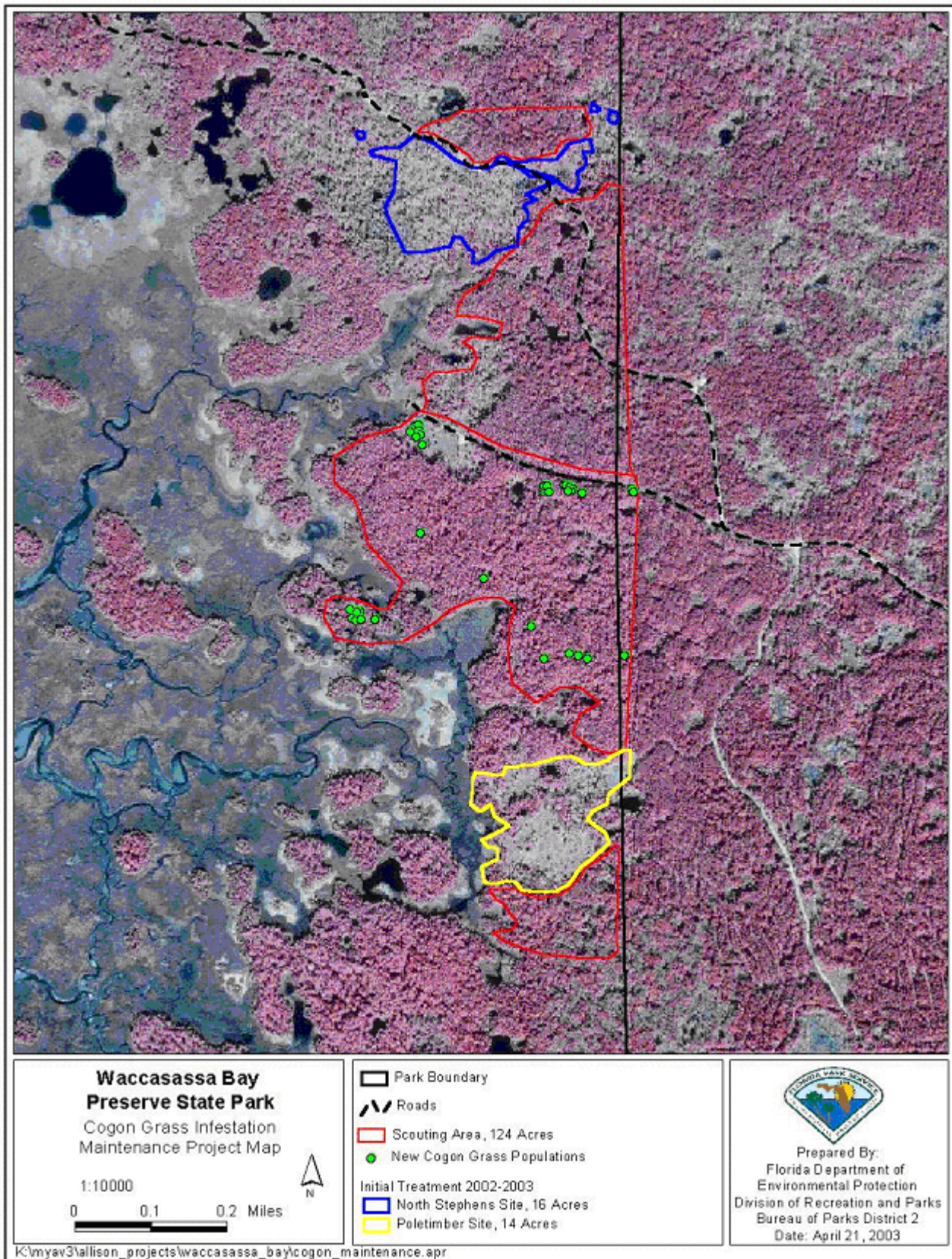


Waccasassa Bay Preserve State Park is located within the once vast Gulf Hammock. The bulk of Gulf Hammock, known as one of the largest hydric hammocks in the state (approximately 100,000 acres), is largely owned by timber companies. Waccasassa Bay Preserve is the only portion of Gulf Hammock that is under public ownership. Gulf Hammock continues to undergo profound changes as timber companies convert diverse hardwood forests to pine plantations. Gulf Hammock and Waccasassa Bay Preserve host a variety of rare plants and animals; at least 16 listed or tracked plant species and at least 28 listed or tracked animal species. Cogon grass in the hydric hammock threatens the rare corkwood, pinewoods dainties, or Florida pinkroot.

Cogon grass was found on sites that were logged in 1997 to control an outbreak of the Southern Pine Beetle and was presumably introduced on the logging equipment. The project area was divided into two treatment sites, one to be treated by contractors and the other by park staff. In all, contractors retreated 16 acres and staff retreated 14 acres of scattered infestation. In addition, staff treated new scattered infestations which were spread over 66 acres to the north of the pole timber site. Staff also scouted and treated an additional 58 new acres around both clear cuts.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	glyphosate

Waccasassa Bay Preserve State Park



Ocala National Forest

County: Marion, Lake

PCL Size: 383,573 acres

Project ID: WR-044 104.85 acres \$5,000

Project Manager: US Forest Service (USDA)

Laura Lowery, Wildlife Biologist

17147 East Hwy 40, Silver Springs, Florida 34488

Phone: 352-625-2520, x2528, Fax: 352-625-7556

E-mail: llowery@fs.fed.us

Ocala National Forest comprises a variety of natural communities such as sand pine scrub, scrub oak, longleaf pine/wiregrass/turkey oak, xeric hammock, pine flatwoods, floodplains, hardwood swamps, and bayheads. Federally listed species on the Forest include the endangered *Polygala lewtonii* (Lewton's polygala) and *Nolina brittoniana* (Britton's beargrass), and the threatened *Bonamia grandiflora* (Florida bonamia), *Eriogonum longifolium* var. *gnaphalifolium* (scrub buckwheat), and *Clitoria fragrans* (scrub pigeon-wings).

Since the initial establishment of cogon grass in the Forest in the late 1970s, this invasive plant has steadily spread along county road rights-of-way through the Forest, infesting adjacent forested areas and private in-holdings. Seed dispersion via wind and animal fur has enabled cogon grass to become established in remote parts of the Forest and along powerline rights-of-way. There were approximately 130 known cogon grass sites on the Forest, with sites varying from one-tenth to ten-acre monocultures, to sporadic sprigs or bunches intermixed with native vegetation across 10 acres.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Accord/Roundup

Silver River State Park

County: Marion

PCL Size: 4,230 acres

Project ID: WR-049 70 acres Project Cost: \$4,700

Project Manager: Florida Park Service (DEP)

Bob LaMont, Park Manager

1425 N.E. 58th Avenue, Ocala, Florida 34470

Phone: 352-36-7152, Fax: 352-36-7150

E-mail: robert.lamont@dep.state.fl.us

Sandhills are listed as imperiled in Florida because of their rarity. In addition, many of the other communities at Silver River are at-risk communities, including scrubby flatwoods, scrub, xeric hammock, depression marsh, and floodplain forest. All of these at-risk communities have the potential to be affected by the spread of cogon grass. There are numerous listed species that benefited from this exotic removal effort, including pinkroot (*Spigelia loganioides*), Godfrey's swamp privet (*Forestiera godfreyi*), and silver buckthorn (*Sideroxylon alachuense*), all state-listed endangered species.

Cogon grass was located throughout the park in natural mesic and wet flatwoods and sandhills. This project continued control of resprouts of cogon grass in the original treatment areas (in green on the below map) and also treated a new infestation along the park's southern boundary that was moving onto the park from adjoining private property. The Florida Park Service provided matching funds of \$2,800 for a total project cost of \$7,500.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup



Werner-Boyce Salt Springs State Park

County: Pasco

PCL Size: 3,400 acres

Project ID: WR-054 150 acres \$5,007.50

Project Manager: Florida Park Service (DEP)

Toby Brewer, Assistant Park Manager

#1 Causeway Boulevard, Dunedin, Florida 34698

Phone: 727-816-1890, Fax: 727-816-1888

E-mail: toby.brewer@dep.state.fl.us

This project continued in-house eradication and control of Brazilian pepper, cogon grass, Chinese tallow, air-potato, and lead tree in the southern region of the park. Natural communities in the project area include pine flatwoods, coastal strand, saltwater marsh, freshwater marsh, and hydric hardwood hammocks. Exotics were concentrated in areas of prior disturbance; several large stormwater ditches run through this area and many exotics occurred along the ditch edges. Brazilian pepper was most abundant, with cogon grass appearing in several patches. Chinese tallow, lead tree, and air-potato appeared in minimal amounts.

BIPM provided the herbicide only for this project from its Herbicide Bank; all labor and equipment were provided by the park.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Casuarina equisetifolia</i>	Australian pine	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Dioscorea bulbifera</i>	air-potato	Category I	bagged	n/a
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	basal	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Leucaena leucocephala</i>	lead tree	Category II	basal	Garlon 4

MELALEUCA was brought to Florida in the early 1900s as an ornamental tree. Its fast-growing nature led to it being planted extensively as wind breaks and fence rows. The U.S. Army Corps of Engineers originally introduced melaleuca to Lake Okeechobee in the late 1930s, planting trees on low-lying islands immediately lakeward of the levee to protect the levee system from storm generated wind and wave erosion. From these limited plantings, melaleuca spread into many thousands of acres of marsh within the lake.

During the 1980s and early 1990s, the South Florida Water Management District (SFWMD) was the primary source of funding for melaleuca control on public lands. In 1993, the Florida Legislature authorized an annual appropriation of \$1 million to the Department of Environmental Protection (DEP) for the specific purpose of melaleuca control. The Bureau of Invasive Plant Management (BIPM) initiated a cost-sharing program with this \$1 million, which the District matches dollar for dollar. This partnership, referred to by BIPM as the Melaleuca Program, has resulted in over \$20 million of melaleuca control to date. BIPM has expanded upon the contractual arrangement with SFWMD to provide melaleuca control on non-district lands, as well as control of other invasive plant species on public conservation lands in south Florida.

State and District efforts to control melaleuca, along with those of other governmental agencies and private groups, are containing its spread within the Everglades Water Conservation Areas (WCAs) and the marsh of Lake Okeechobee. Melaleuca has been completely cleared from Water Conservation Areas 2A, 3A, and 3B, north and south of Alligator Alley. These areas are now under “maintenance control.” Today, the melaleuca infestation is no longer increasing; in many areas it is being reduced. At the current level of funding, melaleuca could be eliminated from all Everglades Water Conservation Areas and Lake Okeechobee within the next five years.

Melaleuca Management—Melaleuca became a target of invasive plant control in the 1980s. Initial work was done on Everglades National Park (ENP), Big Cypress National Preserve (BCNP), Lake Okeechobee (Lake O), and the Water Conservation Areas (WCA), including the Loxahatchee National Wildlife Refuge (LOX). The National Park Service (NPS) treated 90,717 acres of melaleuca on ENP during 1986 to 1998 and 71,000 acres on BCNP from 1984 to 1997. The U.S. Fish and Wildlife Service treated 8,095 acres of melaleuca on LOX (a.k.a. WCA 1) prior to 1987 and 6,755 acres from 1987 to 1998. The South Florida Water Management (SFWMD) assisted with these early efforts, as well as treating Lake O and the WCAs.

The SFWMD pioneered the aerial treatment of melaleuca by helicopter in the 1990s. During 1994 to 1998, the District aerially treated 3,813 acres of Lake O, 1,643 acres of WCAs ('95-'97), and 1,322 acres of the Pennsuco Mitigation Area ('98 only). On areas that are aerially treated, ground crews are used for follow-up and maintenance control. With aerial treatment, large areas can be treated for relatively little cost; the primary factors being helicopter time and amount of herbicide used. In 2002, the SFWMD aerially treated 5,460 acres of melaleuca at an average cost per acre of \$125. Ground control, on the other hand, can cost three to ten times more than aerial treatment, depending upon the size and density of the trees, ease of access to the site, and labor and machinery costs. In 2002, the SFWMD treated 7,285 acres of low density melaleuca with ground crews at an average per acre cost of \$300.

In 1993, the SFWMD estimated there were 252,008 acres of melaleuca within its boundaries (melaleuca also occurs outside the District). Of these total acres, 52% were on public lands and 48% on private lands. In 2002, the estimated acreage was 154,423 acres, of which 22% were on public lands—a decrease of 97,071 acres through Florida’s dedicated funding for melaleuca control.

Management Strategy—To be effective, the integrated management of melaleuca requires a combination of control techniques; chemical, mechanical, and biological. The melaleuca snout beetle (*Oxyops vitiosa*) was released in WCA-3B near Holiday Park in Ft. Lauderdale in April 1997. The insect spread and, along with additional releases, is now successfully established within melaleuca populations throughout South Florida. A second insect, a sap-sucking psyllid (*Boreioglycaspis melaleucae*), was released in November 2002 and has also become well established. These two control agents have been observed to severely curtail flowering and new growth of melaleuca within their area of distribution.

Effective melaleuca management requires knowledge of its biology. The reproductive potential of melaleuca is tremendous. A mature tree may retain millions of seeds, all of which may be released from their protective capsules following a stressful event such as desiccation, fire, frost, physical damage, or herbicide application. Once released, 15-20% of the seeds will germinate. These new trees take approximately two years to mature and produce viable seeds. Follow-up treatment within the second year after the initial treatment is essential to eliminate new seedlings before they can produce viable seeds. Under ideal conditions, melaleuca can be eliminated from an area within two years. The first phase of control targets all existing trees and seedlings in a given area. Using navigational equipment, crews return to the same site to remove any seedlings resulting from the control activities of the previous year. The District's control operations consist of three phases:

Phase I. This phase focuses on the elimination of all mature trees and seedlings present in an area.

Phase II. Previously treated sites are revisited for follow-up treatment to control trees previously missed and remove seedlings that may have resulted from control activities of the preceding year.

Phase III. This phase entails the long-term management of melaleuca: surveillance and inspection of previously treated sites to monitor the effectiveness of the melaleuca control program and maintain reinfestation levels as low as possible.

The goal of the current melaleuca management program is to contain melaleuca on all District land and to maintain infestation levels as low as possible while minimizing impacts to non-target vegetation. The melaleuca management strategy is based on the quarantine strategy, where the least infested areas (outliers) are addressed first, in order to stop the progression of the existing population. Frill-and-girdle application of an herbicide solution (25% Arsenal[®], 25% Rodeo[®] and 50% water) is the primary method used to kill mature trees. Aerial application has become essential as control operations are directed to large areas of melaleuca monocultures. Acceptable results have been obtained using 3 quarts of Rodeo[®] and 3 quarts of Arsenal[®] with 4 quarts of methylated seed-oil surfactant in 20 gallons total volume per acre, in large-scale applications.

Regardless of the control method used, a comprehensive data collection and evaluation plan is essential for the success of melaleuca management initiatives. Record keeping is invaluable for making future management decisions. Data collection in the District's program includes: longitude and latitude coordinates at each treatment site, date and time of control, type of control method, type of herbicide and amount, method of application, number of trees and seedlings or hectares treated at each site, and labor and equipment hours. The data are used to produce maps of treatment progress and to keep track of individual melaleuca control sites.

Program Expenditures—BIPM provided funding of \$1,000,000 for melaleuca control in fiscal year 2004. Of this total, \$565,850 went to maintenance control operations on 2,500 acres of Lake O, Lake Letta, and the WCAs. The remaining funds were used for herbicide and ground work at Big Cypress National Preserve (see NP-034 report in the Southeast Working Group section), and Charlotte Harbor Preserve State Park and Myakka State Forest (see following page).



Dead melaleuca after an aerial treatment at Pal-Mar Natural Area in Palm Beach County.

Charlotte Harbor/Myakka River

County: Charlotte, Sarasota

Charlotte Harbor Preserve State Park

PCL Size: 43,614 acres

Myakka State Forest

PCL Size: 8,593 acres

Project ID: SE-067 903 acres \$84,076.80

Project Manager: South Florida Water Management District

Francois Laroche, Senior Environmental Scientist

3301 Gun Club Road, West Palm Beach, Florida 33406

Phone: 561-682-6193, Fax: 561-906-0885

E-mail: flaroche@sfwmd.gov

The melaleuca at Charlotte Harbor infested pine flatwoods, high coastal marsh, and buttonwood/mangrove forests. The understory was comprised of highly stressed *Juncus* and buttonwood. Land clearing and canal dredging in the 1960s impacted the areas currently affected by melaleuca, before the state halted further westward development in Cape Coral. At two of the sites melaleuca spread rapidly into pine flatwoods due to a wildfire that released seeds from scattered “outlier” trees five years ago. The total acreage of melaleuca treated was 350 acres.

Myakka State Forest is comprised primarily of mesic flatwoods and depression marsh, although some areas within the flatwoods were former improved pasture. The first treatment area was located in the southeastern corner of the forest and encompassed approximately 345 acres. Brazilian pepper (*Schinus terebinthifolius*) was controlled throughout this area in 2002 and melaleuca control was started and continued until available funding was exhausted. The site is adjacent to a 19-acre wetland restoration project that included removal of all invasive exotic vegetation. The infestation was very dense in some places and scattered in others. The second treatment area was located along the western boundary of the forest near the main entrance and encompassed 208 acres. The site is adjacent to a 25-acre wetland restoration project just outside the forest boundary that included the removal of all invasive exotic species. The moderately dense infestation followed Ainger Creek.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	aerial	Velpar L

Charlotte Harbor/Myakka River



Using a helicopter to apply herbicide can be useful when there are several treatment areas separated over a distance, as with these three sites at Charlotte Harbor Preserve.

Charlotte Harbor/Myakka River



National Park Service Projects

The Florida Exotic Plant Management Team Partnership

National Park Service (NPS) units in Florida have been actively controlling invasive exotic plants since the 1960s. In 2000, NPS established four Exotic Plant Management Teams (EPMT) to control invasive exotic plants on federal conservation lands. The EPMT are modeled after the “strike teams” used by the U.S. Forest Service to fight forest wildfires. Each highly trained, mobile strike force of plant management specialists stands ready to assist the national parks in the control of invasive exotic plants. The EPMT were created through the NPS Natural Resource Challenge. The Florida Exotic Plant Management Team (FLEPMT) is a partnership between the NPS and the Florida Department of Environmental Protection, Bureau of Invasive Plant Management (BIPM). Through this partnership, BIPM matches each Challenge dollar spent to control exotic plants in Florida’s eleven National Park units. While other EPMT rely on in-house crews, the efforts in Florida reflect the flexibility of the EPMT concept. Exotic plant control work in Florida is conducted under contractual agreement with private companies, allowing for reduced cost and increased efficiency, resulting in “*More Protection, Less Process.*”

Since its establishment in FY 2000, the FLEPMT has provided for the initial treatment of invasive plants on over 11,000 acres. Funding for the control has been provided by the NPS Natural Resource Challenge and is matched by BIPM. All control projects have been successful at controlling invasive plants and have also been very cost effective. Invasive plant control projects have been undertaken at Big Cypress NP, Biscayne NP, Canaveral NS, DeSoto NM, Dry Tortugas NP, Everglades NP, Fort Matanzas NM, and Gulf Islands NS. On four of these NPS units (Desoto NM, Dry Tortugas NP, Gulf Islands NS, and Fort Matanzas NM), initial treatment of all of the most invasive plant species has been completed. Significant strides have been made in the other parks receiving funding.

In FY 2004, the FLEPMT expanded its efforts to reign in the uncontrolled expansion of invasive plants, while maintaining a primary focus on initial treatment of invasive plants in Florida NPS areas. Two projects were selected for full funding by BIPM in FY 2004 at a cost of \$341,134 and totaling over 61,500 acres of invasive species controlled. Everglades NP received funds for initial treatment of *Lygodium microphyllum*. Big Cypress NP received funds to control melaleuca, Australian pine, Old World climbing fern, and other invasive species. The FLEPMT conducted several additional projects in Everglades NP with \$220,000 in NPS funds and \$780,000 from other funding partners, including the US Army Corps of Engineers, South Florida Water Management District, and Miami-Dade County.

The continued success of the EPMT concept relies upon building public and private partnerships to efficiently prevent, control, and manage damaging exotic species now and into the future. Exotic weeds recognize no boundaries and cooperative efforts are critical to addressing invasive species and protecting public natural areas. The Florida Partnership EPMT is involved with over 100 federal, state, regional, and local cooperators, and is broadening its participation to others, including outside of Florida. The Florida EPMT partnered with the University of Florida (UF) in addressing invasive plant problems in the U.S. Virgin Islands.

More information can be found at the NPS EPMT web site: <http://www.nature.nps.gov/epmt>. The FLEPMT liaison is Mr. Tony Pernas, Exotic Plant Management Specialist, National Park Service, Florida and Caribbean Office, 18001 Old Cutler Road, Miami, Florida 33157, phone: 305-242-7846, e-mail: tony_pernas@nps.gov

Everglades/Big Cypress *Lygodium*

County: Collier, Miami-Dade

Everglades National Park

PCL Size: 1,507,850 acres

Big Cypress National Preserve

PCL Size: 729,000 acres

Project ID: NP-033 1,016 acres \$97,061.32

Project Manager: National Park Service

Jonathan Taylor

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In Everglades National Park, Old World climbing fern (*Lygodium*) is rapidly colonizing scrub habitat in the coastal marsh communities from Cape Sable to Everglades City. *Lygodium* is a fern and like all ferns reproduces by producing numerous spores, which in this plant are transported by wind. This quickly spreading exotic pest plant rapidly and severely alters the Park's native flora. *Lygodium* readily invades most of south Florida's native plant communities, growing over trees and shrubs and smothering entire plant communities. *Lygodium* also alters natural fire behavior. Huge skirts of old fronds enclose trees and serve as ladder fuels to carry fire into canopies. Trees that may normally survive ground fires are killed when fire is brought into the canopy. *Lygodium* is a difficult plant to treat and requires several treatments to bring it to a maintenance level.

In Big Cypress National Preserve, the treated area is North of 1-75, just south of the Hendry County line. Pinelands and scattered cypress domes and strands dominate this area. The area was historically farmed and cattle grazing was common. Aerial reconnaissance in the 1990s detected no *Lygodium* in the Preserve; however, park staff discovered a 10-acre patch in 2001 and treated it in 2002.

Lygodium was reported on 10,117 acres in South Florida in 1993. This number grew to 100,000 acres by 2002. This project included aerial retreatment of 800 acres of land in the Flamingo District and Gulf Coast districts. Much of this area received treatment in the previous two years. Overall, climbing fern occurred in the project area with a 10-100% cover. Contractors used a helicopter to apply a foliar application of herbicide. This project is part of the National Park Service Natural Resource Challenge, which directs state and federal matching funds toward controlling invasive plants on national parks in Florida.

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	aerial	Escort

Big Cypress National Preserve

County: Collier, Miami-Dade

PCL Size: 729,000 acres

Project ID: NP-034 60,540.5 acres \$244,072.84

Project Manager: National Park Service

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Large expanses of cypress dominate the Loop Unit of Big Cypress. The eastern portion is mostly dwarf cypress habitat with extensive areas of prairie, while the western area is predominately cypress strand (Gator Hook Swamp). Pine islands and hardwood hammocks punctuate the entire Loop Unit. There are areas of soil disturbance around the periphery from agricultural activities. Melaleuca was present at 798 known sites within the treatment area. A systematic reconnaissance flight flown in 2002 revealed new infestations since the last treatment and severe seedling regeneration at previously treated sites in varying densities from a single stem to dense re-growth within the designated 128 square kilometers.

Dwarf cypress swamp and marl prairie dominate the southern area of the Corndance Unit of Big Cypress, while the northern area is predominantly pinelands and tropical hardwood hammocks. Melaleuca was present at 639 known sites within the 117 square kilometers of the treatment area.

Treatment in both areas included ground crews using a combination of hand pulling seedlings and cut stump treatment of larger stems. This project is part of the NPS Natural Resource Challenge, which directs state and federal matching funds toward controlling invasive plants on national parks in Florida. BIPM funded this project through its Melaleuca Program.

Plants Treated	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Casuarina equisetifolia</i>	Australian pine	Category I	cut stump	Arsenal+Glypro
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Arsenal+Glypro
<i>Lygodium microphyllum</i>	Old World climbing fern	Category I	foliar	Arsenal+Glypro
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	cut stump	Arsenal+Glypro
<i>Schefflera actinophylla</i>	Queensland umbrella tree	Category I	cut stump	Arsenal+Glypro
<i>Schinus terebinthifolius</i>	Brazilian pepper	Category I	cut stump	Arsenal+Glypro
<i>Syzygium cumini</i>	Java plum	Category I	cut stump	Arsenal+Glypro
<i>Hibiscus tiliaceus</i>	mahoe	Category II	cut stump	Arsenal+Glypro
<i>Terminalia catappa</i>	tropical almond	Category II	cut stump	Arsenal+Glypro

Herbicide Bank Report Bureau of Invasive Plant Management

Herbicide was ordered for maintenance control purposes for those projects in the Upland Exotic Plant Management Program where initial control work was completed in Fiscal Year 2002-2003 or earlier. Herbicide was also ordered for initial control projects where land managers chose to do exotic removal in-house and requested only herbicide funding through the Uplands Program. An Access database is used to organize and keep track of all the Herbicide Bank information, including amounts and costs.

Calculations for the amount of herbicide available for eligible retreatments are based upon twenty-five or fifty percent of the amount used for the initial treatments. Twenty-five percent of original usage was calculated for treatments including trees and/or shrubs, while fifty percent of original usage was given when treatment included vines and/or grasses. The amounts of surfactant ordered for treatment were based on the herbicide ordered. In most cases the herbicide ordered was Garlon 4 and thus the amount of surfactant ordered was based on a twenty-two percent ratio of herbicide to surfactant. Garlon 4 was ordered in 2.5-gallon jugs and surfactant (Diluent Blue) in 11.25-gallon drums. Upon request, amounts of herbicide and surfactant were ordered based on a lower percentage of mixture, usually ten percent. For herbicides other than Garlon 4, surfactant ordered was based on label recommendations.

The type of herbicide ordered is based on the daily project reports completed by the contractor. Generally, the herbicide ordered for re-treatment is the same as that initially applied by the contractor. Different herbicides are ordered only on request and when the need seems evident, such as an unacceptable non-target kill. For requests of herbicides different from what was originally used, the amount ordered is based upon an equal total price.

The following is a summary of Herbicide Bank maintenance control projects for FY 2004:

Total Gallons of Herbicide Ordered	4,040 gallons
Total Cost of Herbicide Ordered	\$153,773.68
Total Number of Maintenance Control Projects	27 projects
Total Acres Treated by Maintenance Control Projects	2,778.3 acres

The following is a summary of Herbicide Bank initial control projects for FY 2004:

Total Gallons of Herbicide Ordered	3,852 gallons
Total Cost of Herbicide Ordered	\$70,482.97
Total Number of Initial Control Projects	13 projects
Total Acres Treated by Initial Control Projects	1,874 acres

Other state agencies and other divisions within DEP receive funding to conduct land management activities, which may include invasive species control, on properties where they are designated as the manager by the state Board of Trustees of the Internal Improvement Trust Fund. The Bureau provides free assistance to these agencies by offering the use of its established contract procedures and contractors to perform invasive plant control projects, thus avoiding a duplication of effort. The Bureau handles all of the processing of these projects except for the actual release of funds, which are disbursed from the managing agency.

In FY04, five projects received funding through the DEP Division of Recreation and Parks (a.k.a. Florida Park Service), with BIPM overseeing the contractual arrangements. These projects are discussed below in alphabetical order by county. The Division of Recreation and Parks (DRP) also provided \$31,850 in matching funds for four BIPM projects (SE-071, WC-025, WR-047, WR-049) that are discussed under their respective working groups. Total DRP funding expended through the Uplands Program for invasive plant control in FY04 was \$125,419.73.

San Felasco Hammock Preserve State Park

County: Alachua

PCL Size: 6,927 acres

Project ID: RP-031 217 acres \$12,000

Project Manager: Florida Park Service (DEP)

Sam Cole, Park Biologist

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San Felasco Hammock Preserve supports a diverse assemblage of natural communities, including sandhills, upland mixed forest, mesic hammock, hydric hammock, bottomland forest, swamp, sinkholes, and springs. In 2001, four areas of the park underwent a salvage timber cut for southern pine beetle suppression. Various invading hardwood species, including Chinese tallow, mimosa, and Chinaberry, subsequently moved into these areas. In addition, native hardwoods such as laurel oak (*Quercus laurifolia* = *Q. hemisphaerica*), water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), and black cherry (*Prunus serotina*) encroached upon the former pinelands.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Cinnamomum camphora</i>	camphor tree	Category I	cut stump	Garlon 4

Charlotte Harbor Preserve State Park

County: Charlotte, Lee

PCL Size: 40,565 acres

Project ID: MR-007 100 acres \$22,500

Project Manager: Florida Park Service (DEP)

Robert Repenning, Resource Management Biologist

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The project area is adjacent to Tippecanoe Bay. The site is primarily comprised of mesic flatwoods, although infested throughout with melaleuca seedlings and saplings. This project was entirely funded by the Florida Park Service.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Melaleuca quinquenervia</i>	melaleuca	Category I	foliar	Roundup+Arsenal



0.4 0 0.4 0.8 Miles



Tarkiln Bayou/Big Lagoon

County: Escambia

Tarkiln Bayou Preserve State Park

PCL Size: 3,339 acres

Big Lagoon State Park

PCL Size: 731 acres

Project ID: RP-032 50 acres \$27,019.73

Project Manager: Florida Park Service (DEP)

Joe Smyth, Park Manager

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Tarkiln Bayou Preserve is home to vast areas of pitcher plant prairies. Other natural communities include maritime hammock, mesic hammock, and sandhill. The project area was 15 acres generally along two roads. Big Lagoon has sandy beaches, sand pine scrub on relict dunes, slash pine flatwoods, ti-ti thickets, and salt marshes. Invasive plants were scattered throughout the park, with a total treatment area of 35 acres.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Albizia julibrissin</i>	mimosa	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Roundup+Arsenal
<i>Ligustrum sinense</i>	Chinese privet	Category I	basal	Garlon 4
<i>Lonicera japonica</i>	Japanese honeysuckle	Category I	foliar	Roundup+Arsenal
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Panicum repens</i>	torpedo grass	Category I	foliar	Roundup+Arsenal
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Sapium sebiferum</i>	Chinese tallow	Category I	cut stump	Renovate
<i>Wisteria sinensis</i>	Chinese wisteria	Category II	girdle	Garlon 4



Tarkiln Bayou (left) and Big Lagoon (right) showing point locations of invasive plants.

Alfred B. Maclay Gardens State Park

County: Leon

PCL Size: 1,779 acres

Project ID: RP-033 62 acres \$17,050

Project Manager: Florida Park Service

Beth Weidner, Park Manager

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The majority of Maclay Gardens State Park consists of secondary growth upland mixed forest, interspersed with steep ravines and slope forests that exhibit high plant diversity and harbor a number of rare species. Slope forest canopy species such as magnolia, beech, and white oak are still present, even in the most severely infested portions of the project area. The project area also contains several wetlands.

Coral ardisia was the most widely spread exotic species throughout Zone A, the project area, with stem counts generally exceeding 1,000 stems per acre, and prioritized sections near the park's sinkholes having stem counts approaching 10,000 stems per acre. Nandina, Chinese tallow, and camphor tree were also abundant throughout the project area, particularly around the sinkholes. This zone was initially treated in FY02.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Ardisia crenata</i>	coral ardisia	Category I	basal	Garlon 4
<i>Cinnamomum camphora</i>	camphor tree	Category I	basal	Garlon 4
<i>Ligustrum sinense</i>	Chinese privet	Category I	basal	Garlon 4
<i>Lonicera japonica</i>	Japanese honeysuckle	Category I	foliar	Rodeo
<i>Lygodium japonicum</i>	Japanese climbing fern	Category I	foliar	Rodeo
<i>Melia azedarach</i>	Chinaberry	Category I	basal	Garlon 4
<i>Nandina domestica</i>	heavenly bamboo	Category I	foliar	Rodeo
<i>Pueraria montana</i>	kudzu	Category I	foliar	Rodeo
<i>Sapium sebiferum</i>	Chinese tallow	Category I	basal	Garlon 4
<i>Elaeagnus pungens</i>	silverthorn	Category II	basal	Garlon 4
<i>Wisteria sinensis</i>	Chinese wisteria	Category II	foliar	Rodeo
<i>Bambusa</i> spp.	bamboo	n/a	foliar	Rodeo
<i>Phyllostachys</i> spp.	bamboo	n/a	foliar	Rodeo

Allen David Broussard Catfish Creek Preserve State Park

County: Polk

PCL Size: 8,018 acres

Project ID: RP-030 1,730 acres \$15,000

Project Manager: Florida Park Service (DEP)

Erik Egensteiner, Park Biologist

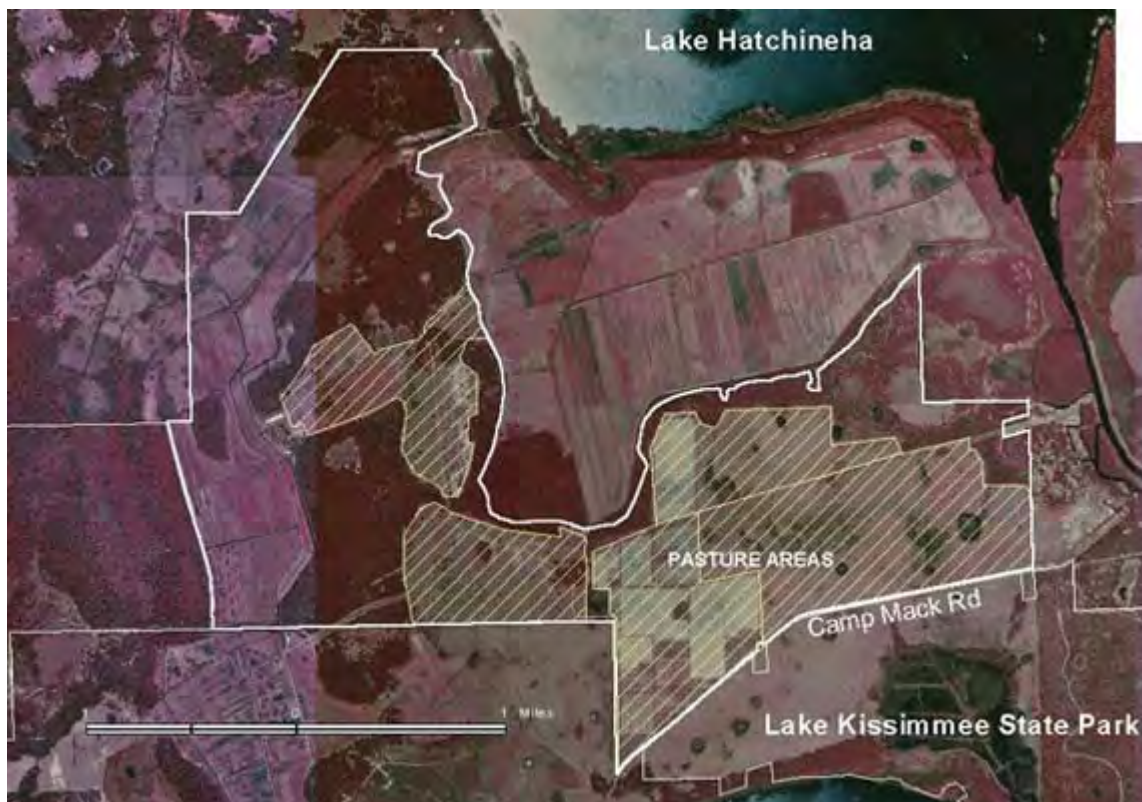
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The Rolling Meadows tract, a newly acquired part of the preserve, is located just west of Lake Kissimmee State Park (see map below). The tract includes hydric hammock, mesic and wet flatwoods, floodplain marsh, numerous depression marshes, baygall, and ruderal areas consisting of pasture and sod farming areas. Although found throughout the site, exotic plants were primarily in the pastures that make up about 1,730 acres of the site. Cogon grass existed as small scattered clumps in many of the pastures and along the many ditches on site, while other areas contained one to two-acre solid patches. Tropical soda apple was scattered, with higher concentrations in the southwestern pasture area. Much of the tropical soda apple was adjacent to areas of cogon grass. Caesar's weed was scattered amongst the other two exotic plants.

Target Plants	Common Name	FLEPPC Rank	Treatment	Herbicide
<i>Imperata cylindrica</i>	cogon grass	Category I	foliar	Glypro+Arsenal
<i>Solanum viarum</i>	tropical soda apple	Category I	foliar	Glypro+Arsenal
<i>Urena lobata</i>	Caesar's weed	Category II	foliar	Glypro+Arsenal



Uplands Operations Summary Bureau of Invasive Plant Management

Uplands Operations Summary 1997-2004

Acres Controlled, Cost/Acre, and Cost Range include all contractual control operations.
Operational data derived only from projects where contractors submitted Daily Progress Reports.

2003-2004					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees	81,209	\$63	\$4 - \$33,300	4.09	0.31
Vines	5,080	\$200	\$23 - \$11,856	13.27	0.75
Shrubs-Grasses	10,884	\$79	\$9 - \$8,352	1.54	0.1
TOTALS	96,992	\$141	\$4 - \$33,300	3.75	0.26

2002-2003					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees	16,036	\$329	\$36 - \$19,678	9.20	0.68
Vines	3,776	\$318	\$150 - \$7,577	21.36	1.60
Shrubs-Grasses	3,040	\$237	\$23 - \$1,480	21.88	1.55
TOTALS	22,852	\$315	\$23 - \$19,678	13.72	1.01

2001-2002					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees	17,521	\$350	\$93 - \$21,667	21.91	0.99
Vines	1,776	\$408	\$234 - \$12,997	14.40	0.80
Shrubs-Grasses	3,092	\$187	\$19 - \$3,158	8.39	0.26
TOTALS	22,389	\$322	\$19 - \$21,667	17.73	0.80

2000-2001					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees	11,503	\$228	\$17 - \$4,918	4.91	0.30
Vines	985	\$472	\$98 - \$5,082	7.05	0.16
Shrubs-Grasses	494	\$534	\$35 - \$1,786	13.98	1.07
TOTALS	12,982	\$258	\$17 - \$5,082	5.39	0.31

1999-2000					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees	1,964	\$727	\$60 - \$5,576	18.75	1.14
Vines	744	\$675	\$344 - \$5,186	13.67	1.15
Shrubs-Grasses	390	\$808	\$517 - \$2,256	13.81	1.44
TOTALS	3,098	\$725	\$60 - \$5,576	16.42	1.19

1998-1999					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees	1,677	\$489	\$32 - \$2,696	18.01	1.03
Vines	804	\$354	\$149 - \$1,832	15.41	0.42
Shrubs-Grasses	597	\$154	\$54 - \$730	7.66	0.55
TOTALS	3,078	\$389	\$32 - \$2,696	15.32	0.78

1997-1998					
	Acres Controlled	Cost/Acre	Cost Range	Hours/Acre	Gal Product/Acre
Trees (only)	1,112	\$486	\$422 - \$1,167	25.25	0.39