

**South Florida Water Management District
Land Stewardship Division
Save Our Rivers Program**



**DuPuis Management Area
General Management Plan
2003-2007**
(Previous plans dated 1990 and 1995)

November, 2003

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AGENCY SIGNATURE PAGE

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This Five-year General Management Plan for the DuPuis Management Area, located in the South Florida Water Management District in Palm Beach and Martin Counties, was presented and approved by the District Governing Board on this 12th day of November 2003.

**/s/ Nicolas J. Gutierrez, Jr., Esquire
Chairperson, Governing Board
South Florida Water Management District**

**/s/ Henry Dean
Executive Director
South Florida Water Management District**

**/s/ Fred Davis
Director, Land Stewardship Division
South Florida Water Management District**

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1. Executive Summary

This document compiles important management information concerning the DuPuis Management Area (DMA) and was written to comply with District policy 5.001 that requires development of general management plans for each designated Save Our Rivers (SOR) project. This plan lists management goals and objectives, provides historic and current site information, and describes specific management issues and activities relating to natural resources, public use, and project administration for the period 2003 through 2007.

The DuPuis Management Area was purchased by the District in 1986 through the SOR land acquisition program. Prior to District acquisition, the area was known as the White Belt Ranch and was operated as a livestock ranch. Area hydrology and vegetation had been significantly altered through ranch activities and from surrounding land developments. Initial District management involved the inventory and assessment of the area's vegetation and wildlife (David, 1991) and the subsequent implementation of a water resource protection and enhancement plan. In 1989 the area was opened to public use with the advent of a limited hunting program.

The management guidelines listed in this plan adhere to founding SOR legislation and District Land Stewardship Program (LSP) policy 05.001 that directs management to conserve and protect water resources, protect or restore the natural state and condition of natural and historic resources, and provide compatible public use. The South Florida Water Management District (District) cooperatively manages DuPuis with the Florida Fish and Wildlife Conservation Commission (FWC). Past management has included the District, the FWC and, from 1990-1995, the Florida Division of Forestry.

Natural resource management on the DMA includes the maintenance of natural vegetative communities; wildlife management; and the protection of rare, threatened, and endangered species. Prescribed fire, vegetation management, and forest management are used to preserve, protect or enhance natural resources. Past District management projects concentrated on the area-wide restoration of an improved seasonal hydroperiod, the initiation of an exotic vegetation control program, and the reintroduction of fire to unburned native habitats. Current natural resource management focuses on maintenance and monitoring of the area's restored hydroperiod, the restoration of natural structure to impacted forest communities through shrub control and limited timber thinning, the maintenance of a regular fire regime and exotic plant control program, and the reintroduction of the federally endangered red-cockaded woodpecker.

Cultural resource protection and management is an important goal of District stewardship on the DMA. The Land Stewardship Program has assisted the Florida Division of Historical Resources to complete investigations of the DMA historical sites as required by Chapter 276, Florida Statutes. The DMA contains several important Native American habitual sites that are documented in state records and protected through management activities.

Wildlife management on the DMA is coordinated between the District and the FWC through a contractual agreement (Contract C-2111). FWC management includes wildlife inventories and monitoring, game harvests, law enforcement, habitat improvement measures, and listed species protection. Resource protection is accomplished through regular FWC law enforcement patrols, controlled public access through specified gated entrances, and maintenance of complete perimeter fencing. Boundary posting and public information signage is used to encourage proper public use.

A public use program was initiated shortly after property acquisition and includes a variety of recreational activities. The property provides extensive hiking, equestrian, hunting, camping, and day use opportunities to a growing regional population. A daily-use fee is required to use the DMA. A visitor's center is being developed at the DuPuis office to provide educational programs and information to the public. The District publishes and distributes a *Public Use Guide to Land Management Areas* for property users that defines rules and regulations, location of facilities, and recreational opportunities. Rules pertinent to the DMA including hunting activities are identified in the *DuPuis Regulations Summary and Area Map* published and distributed by the FWC.

The DMA provides a field office for nine LSP staff, one Vegetation Management representative, one FWC biologist,

and one part-time contracted education specialist assigned to the property. Staff is supplemented through the use of area volunteers and through contractual agreements with other entities. Planning and budgeting of management activities are conducted annually and produce a written budget and annual work plan. DuPuis infrastructure includes 20 miles of graded roads, public campgrounds, trails, public entrances, an office, and an equipment compound. DuPuis also serves as the District-wide base for land stewardship operation and the main storage facility for the majority of LSP equipment.

2. Management Plan Purpose

The purpose of this general management plan is to consolidate relevant information about the DMA including goals and objectives, past and present land uses, resource data, restoration and management needs, public use programs, and administrative duties to guide management actions for the period 2003 to 2007. Management activities described in this plan are based on requirements and directives of legislative statutes and established District policies. District policy 05.001 requires that general management plans be developed for each designated Save Our Rivers project. General management plans are scheduled for review and revision every five years by the District and the Florida Fish and Wildlife Conservation Commission (FWC). The original DuPuis plan was authored in 1990 by the Florida Division of Forestry in cooperation with the District and FWC. The plan was updated in 1995 by the District and FWC.

District policy 05.0011 states that the Land Stewardship Program's (LSP) mission is to provide natural resource protection and management while allowing appropriate recreational use on designated public lands. This mission statement together with requirements set forth in Florida Statutes 373.139 and 373.1391 provide three primary goals for the LSP:

- Conserve and protect water resources
- Protect and/or restore land to its natural state and condition
- Provide public use

To accomplish these goals, the LSP performs six major functions:

- Strategic, project, and management planning
- Operation and maintenance of land resources
- Development of public use programs
- Development of restoration projects
- Evaluation of management activities
- Administration of land management service contracts

2.1 DuPuis Management Area Goals and Objectives

LSP functions are incorporated in specific DMA goals and objectives for the period of this management plan:

Goal 1: Manage natural communities and modified habitats to protect and enhance water, floral, and faunal resources.

Objectives:

- Maintain an appropriate hydroperiod through maintenance and modification of area water control structures as needed.
- Continue the regular application of fire through a well-planned and documented prescribed burning program. Prescribe burn 7,000 acres per year with at least 50% burned during the months of May through August.
- Continue an aggressive, integrated exotic plant management program. At least 10,000 acres will be surveyed per year and exotics treated as necessary. Treatments will be documented and coordinated with other management activities.
- Continue understory restoration by using heavy-duty shredding and mowing equipment to open up areas of

overgrown saw palmetto and wax myrtle. District staff and contractors will treat 500 acres each year.

- Continue appropriate forest management activities to enhance natural communities. Contract the thinning of 1000 acres of over-dense pine in FY 2004 using established forest management guidelines. Evaluate the need for additional forest thinning (including cabbage palms) and develop appropriate plans for FY's 2005-06.
- Continue to reforest deteriorated areas of the old citrus grove and cleared sections north of SR76 with slash pine.
- Continue and enhance the monitoring and evaluation of restoration activities on area vegetation and wildlife.
- Work with the FWC to manage and enhance area wildlife. Continue to work toward the reintroduction of the federally endangered red-cockaded woodpecker. In FY 2003, request birds for translocation from the Fish and Wildlife Service.
- Provide resource protection through partnership with the FWC. Review enhanced patrol activities biweekly and review program annually.

Goal 2: Provide resource-based public use opportunities.

Objectives:

- Maintain public use program focus and direction through continued coordination with the FWC and through quarterly meetings with the DuPuis Public Use Advisory Council.
- Maintain present public-use improvements (roads, signs, entrances, campgrounds, structures) using a combination of District maintenance, construction contracts, and user group involvement.
- Complete a self guided auto tour on the main grade in FY2003.
- Complete assessment and planning, and begin equestrian campground improvements in FY2004.
- Complete the DuPuis Visitor Center in FY 2003 and coordinate educational program development with the Center for Environmental Studies.
- Develop a short trail with boardwalk off DuPuis Grade in FY 2005.

3. Introduction and Site History

In 1981, the Florida Legislature established the Save Our Rivers (SOR) Program for the five water management districts to acquire environmentally sensitive land. The legislation (373.59 F.S.) produced the Water Management Lands Trust Fund and empowered the water management districts to acquire lands needed to manage, protect, and conserve the state's water resources.

The District manages over 250,000 acres through the LSP. As steward of District natural areas, the LSP provides natural resource protection and management while allowing compatible recreational use. Management and use of land acquired by the District under SOR and Preservation 2000 must satisfy several requirements in Florida statutes. The most significant of these is set forth in Section 373.59(4) (a) stating that money from the Water Management Lands Trust Fund should be used to acquire lands for water management, water supply, and the conservation and protection of water resources. Once lands are acquired, they are to be managed and maintained in an environmentally acceptable manner and in such a way as to restore and protect their natural state and condition. Districts may make certain capital improvements such as fencing, signs, fire lanes, access roads and trails, and provide minimum public accommodations such as primitive campsites, garbage receptacles, and toilets. In addition, habitat management such as control of exotic species, controlled burning, habitat inventory and restoration, and law enforcement may be conducted. All lands acquired under these provisions are to be used for general recreational purposes, unless such activities are incompatible with the purposes for which the land was acquired. The District is also encouraged to use volunteers and enter agreements with other governmental agencies to provide cost-effective land management.

The District purchased the DMA in 1986 through the SOR program. The DMA comprises 8,830 ha (21,875 acres) located in northwest Palm Beach and southwest Martin counties (Figures 1 and 2). Prior to acquisition, the property

was managed as the White Belt Ranch for the production of beef cattle, sheep, and goats. Ranch improvements included the construction of an extensive interior network of drainage ditches and the planting of exotic pasture grasses. As part of the initial environmental assessment, the District completed a wetland and hydroperiod restoration plan. Subsequently, a hydrologic restoration program was initiated to seasonally re-flood historic wetland areas. The LSP also developed a burn program to reintroduce regular fire to the property including those portions where fire had been suppressed. The District initiated exotic plant control, forest management, upland restoration, and development of an environmental education center.

Lead management responsibility for the DMA has changed over the course of public ownership. From acquisition until 1990, the District managed the DMA jointly with the Florida Fish and Wildlife Conservation Commission (FWC). During this time, initial resource management, restoration activities, and public use programs were started. In 1990, the Florida Division of Forestry (DOF) began a 5-year contract as lead manager of the area with the FWC and the District as cooperative managers. During this time the area was operated as the DuPuis State Forest. Continuation of this arrangement was contingent upon the Florida Legislature authorizing the necessary funds for DOF to conduct management beyond the contract expiration. With the Legislature's failure to authorize funding in 1995, the District solicited proposals to manage the property from the public/private sector. A cooperative management proposal submitted by the LSP and FWC was selected by the review committee and is currently in place.

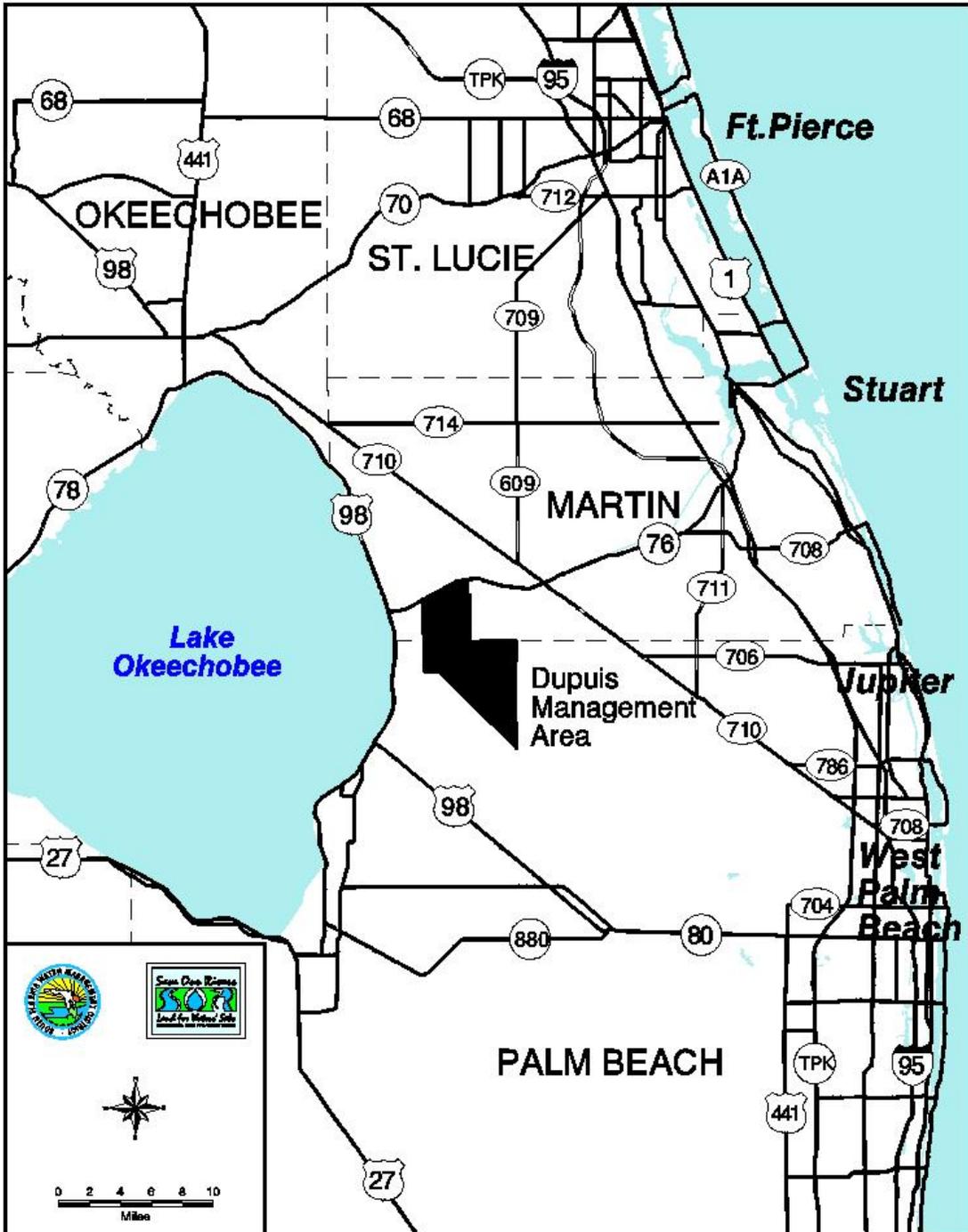
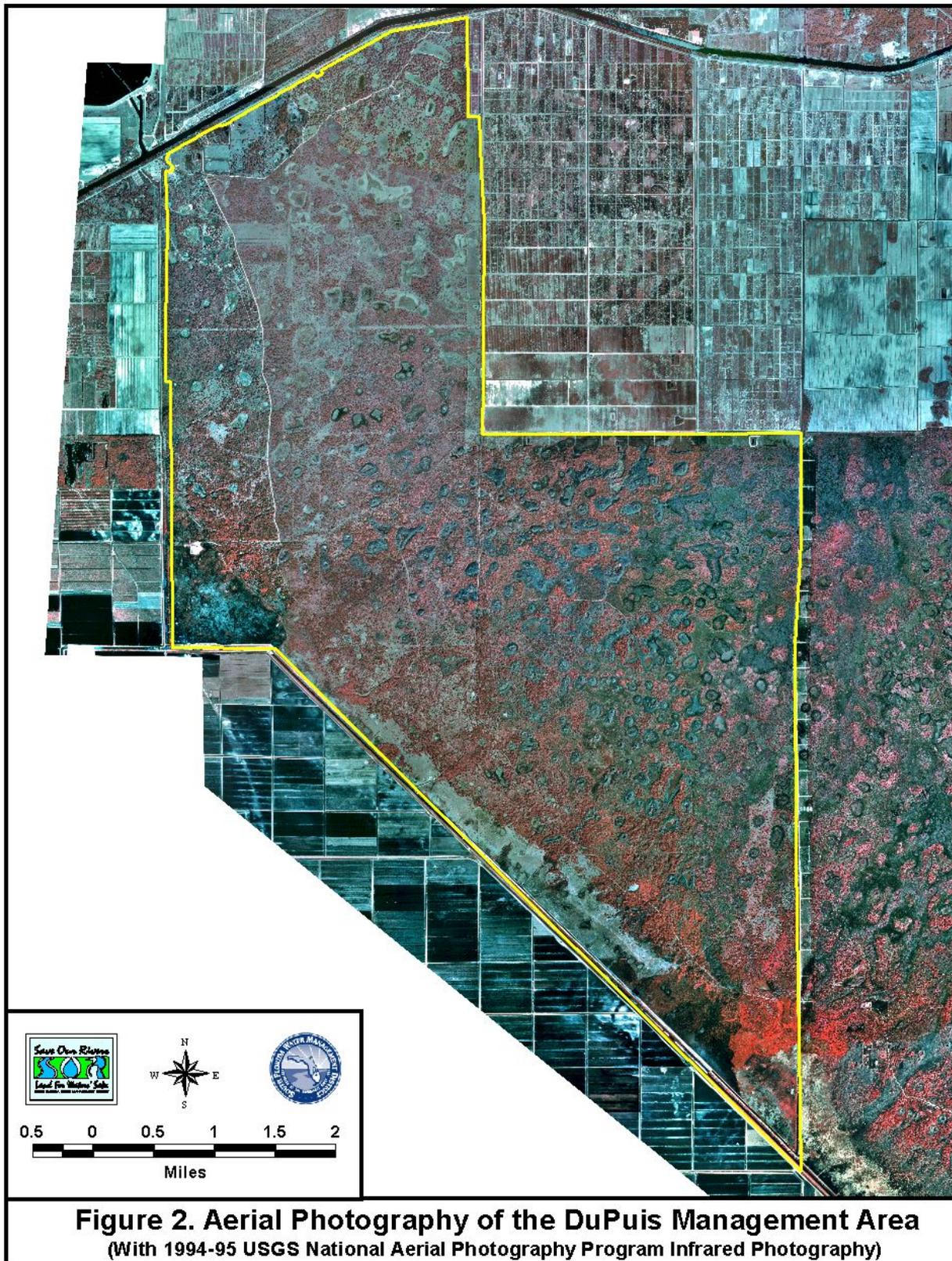


Figure 1. General Location of the DuPuis Management Area

Drawn by P. S. Ellis - 03/11/98
 Revised by P. S. Ellis - 09/04/03



4. Resource Inventory

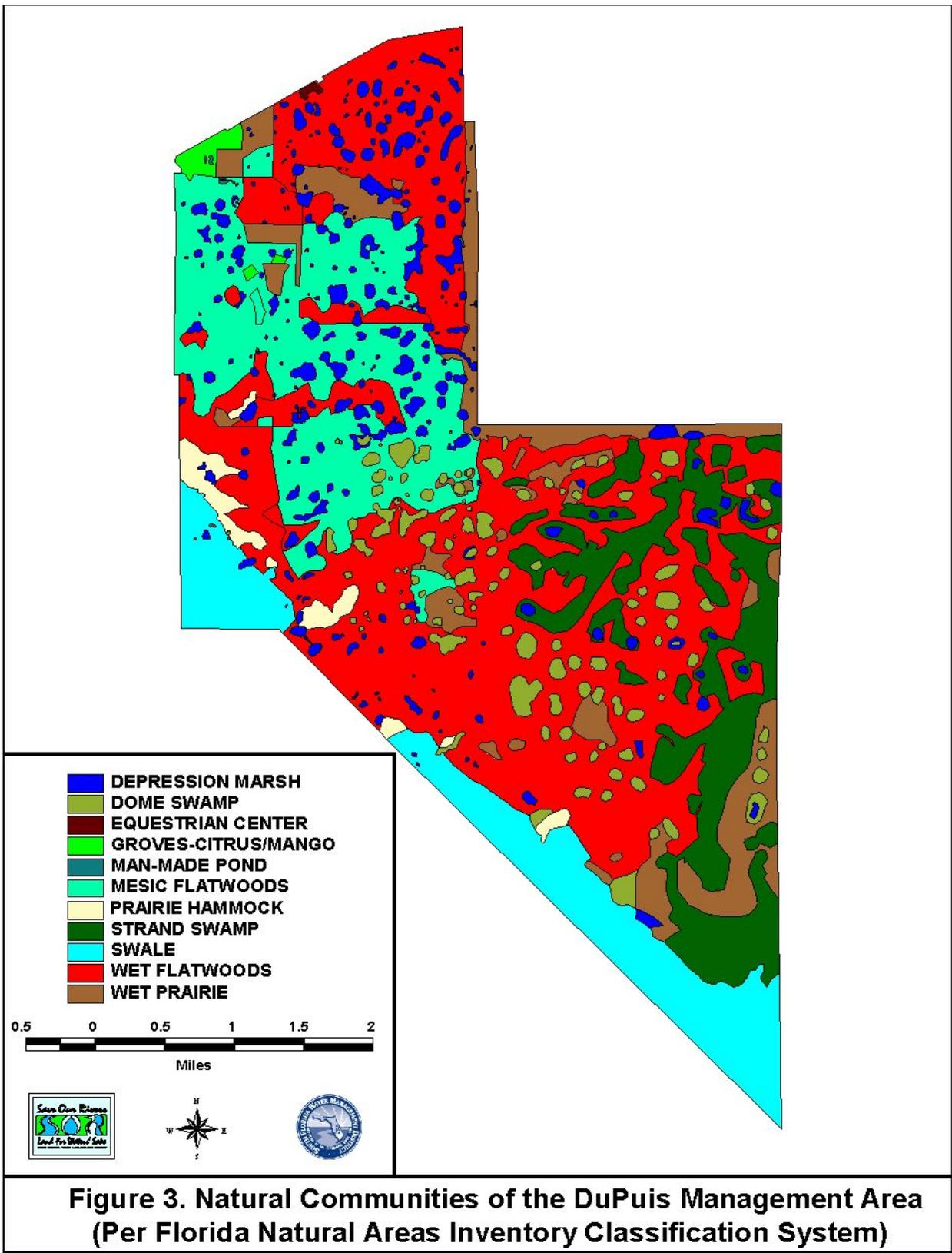
Policy 05.00113.6 Inventories of natural and historic resources shall be performed to provide information for

effective land management planning, natural community maintenance, and ecological restoration.

Vegetation and vertebrate species are inventoried and natural communities are mapped by either LSP personnel or contracted specialists (Figure 3). This data is made available to land managers for planning purposes.

Archaeological and historic sites considered significant are subject to inventories by contracted archeologists. Inventory data is on file within the Planning Section of the LSP and non-sensitive data available for review on the District's computer network server. LSP shares natural areas and species data with the Florida Natural Areas Inventory (FNAI) through a Memorandum of Understanding (MOU).

Floral and faunal inventories of the DMA were included in the environmental assessment initiated shortly after acquisition (David, 1991). Additional surveys have been completed with species' lists being updated regularly (Appendices AA-EE). Archaeological inventories were conducted by the Department of State, Division of Historical Resources and described in subsequent reports (section 4.5).



4.1 Hydrology

Policy 05.00111 The basis for the LSP is the protection and management of natural hydrologic resources.

In general, relief on the DMA is slight with ground elevations ranging between 23 and 25 feet National Geodetic Vertical Datum (NGVD) over most of the property. Elevation gradually declines from northeast to southwest (Figure 4). Overland sheet flow on the property occurs in a south-southwest direction through a connected series of wet prairie, marsh and cypress wetlands (Figure 5). Wetlands may be inundated for long periods, beginning with the wet season. The greatest change in elevation occurs in the L-8 marsh where elevation declines from 20 ft at the treeline to less than 15 ft at several locations near the canal levee. From the treeline, elevation increases gradually reaching 24 to 25 ft in the north and northeast sections of the property.

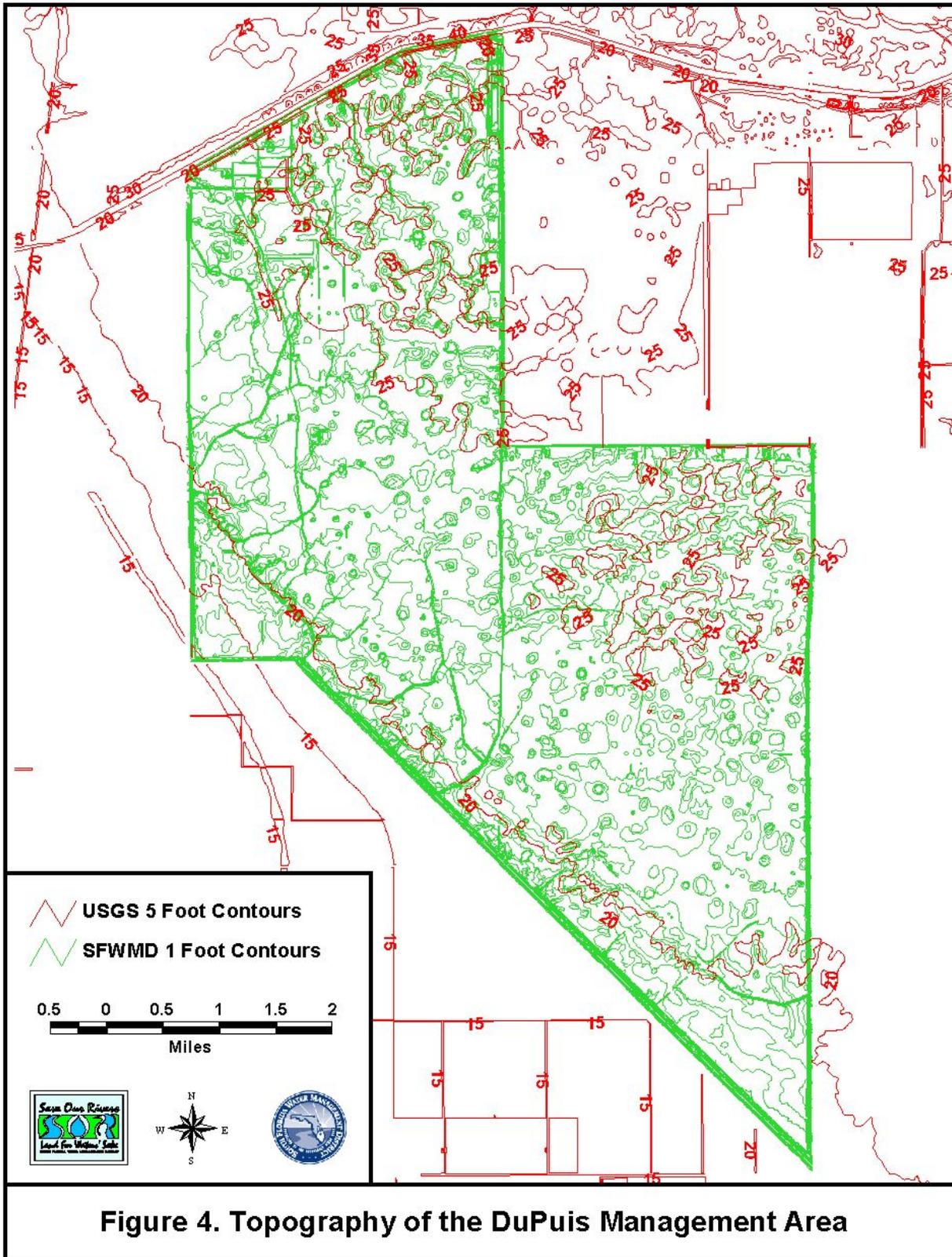
Elevations of pine flatwood communities in the Martin County portion approximate 25 ft with slight declines to 23-24 ft at the west property boundary. Broad leaf marsh and wet prairie depressions occur between the elevations of 20-23 ft, with the cypress dome centers representing the lowest elevations (20-21 ft). In the Palm Beach County portion, pine flatwoods and wet prairie communities fluctuate between 24 and 25 ft with cypress domes and strands occurring at elevations between 20 and 23 ft. Elevations decline to the southwest towards the L-8 marsh where elevations range from 15 ft to 19 ft.

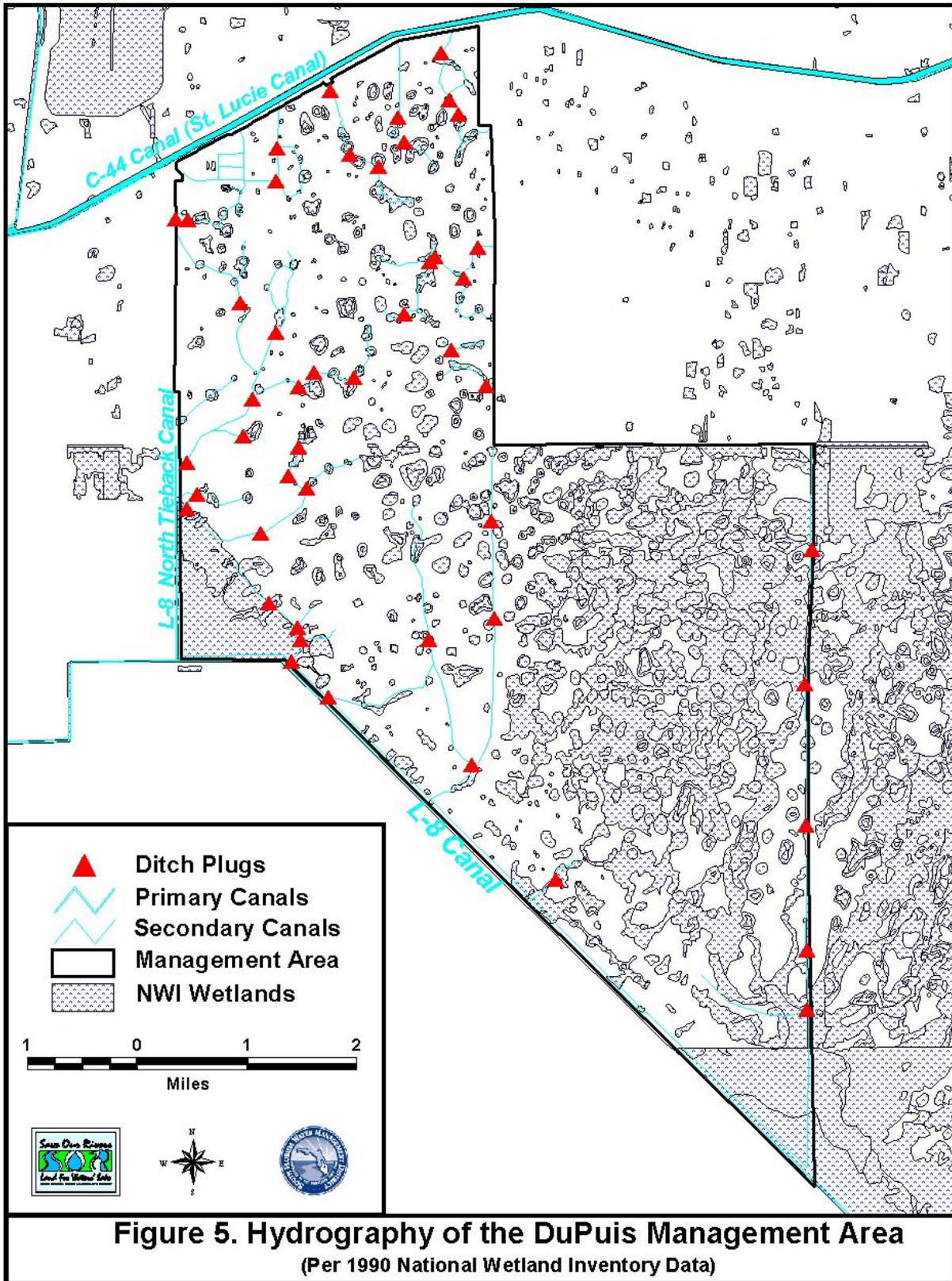
Over the years, three off-site developments had major impacts on area hydrology (Figure 6). In the 1920s, the St. Lucie Canal (C-44) was dredged parallel to the property's northern boundary completely severing historic inflows from the north while providing a means of increased offsite drainage. Along the southern boundary, the L-8 canal was completed in the early 1950s facilitating additional drainage. In the 1970s a canal and elevated road along the east boundary stopped historic inflows from the Corbett Management Area. During ranch development, an extensive network of interior canals and ditches was constructed that significantly decreased surface water retention and increased drainage offsite. One of the District's primary goals was to complete a hydroperiod restoration plan to reverse overdrainage and re-establish wetland structure and function.

4.2 Soils and Minerals

Soil Types

There are four distinct soil categories within the DMA as defined by the Natural Soil Landscape Positions (NSLP) soil classification system: flatwoods soils, flat soils, sand depression soils, and muck depression soils (Figure 7). The NSLP is a classification of 909 map units from 16 counties within District boundaries. The soil classification system was developed cooperatively by the District and the Natural Resources Conservation Service, formerly known as the Soil Conservation Service. The NSLP groups South Florida soils into 12 categories based on hydrology and soil morphology that reflect the local relative topography, hydrology, and vegetation of the area. Soil classification descriptions, vegetation associations, soils classification map and data files of NSLP can be accessed from http://glacier.sfwmd.gov:80/org/pld/proj/wetcons/nslp/nslp_data.htm





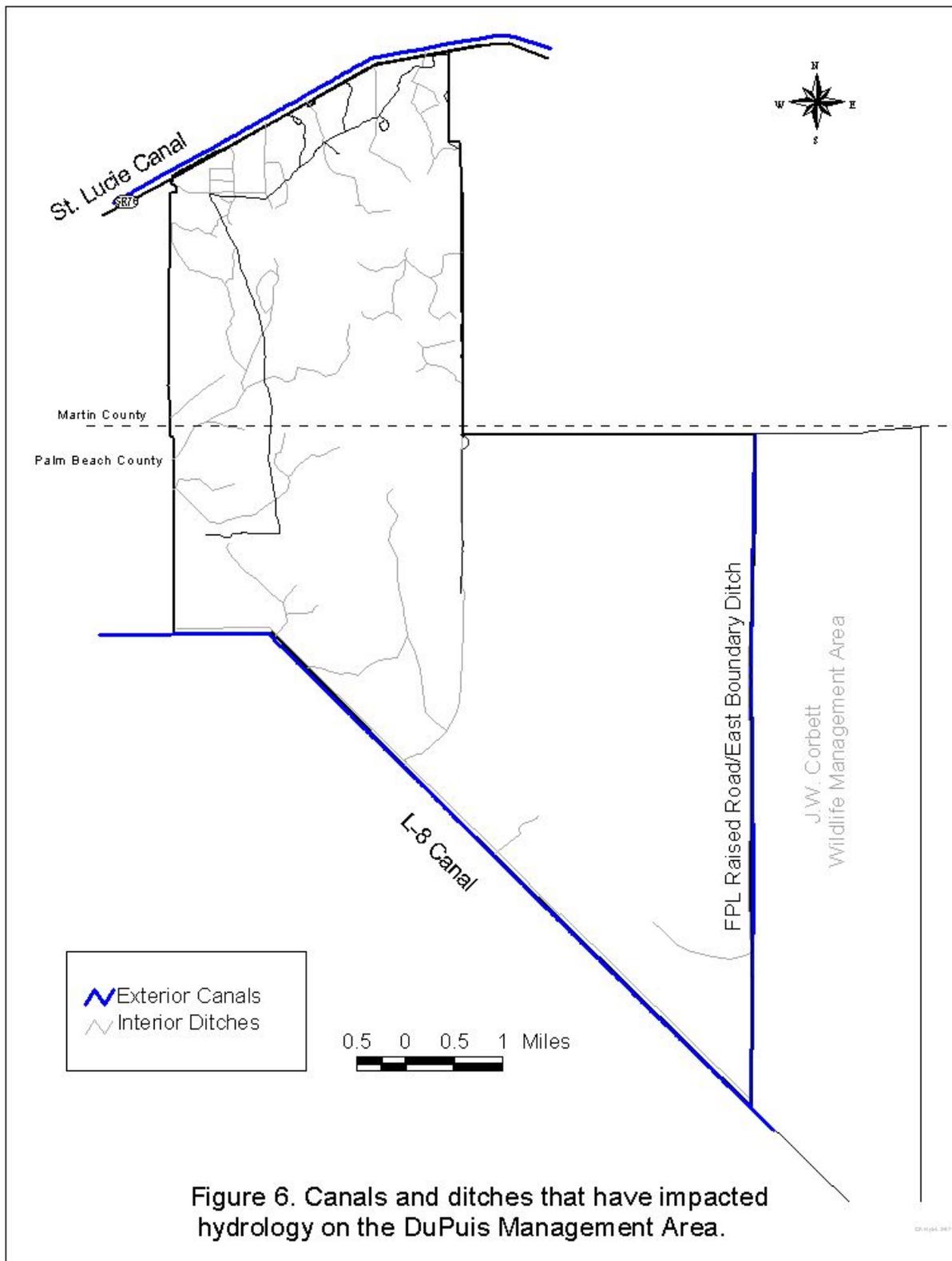
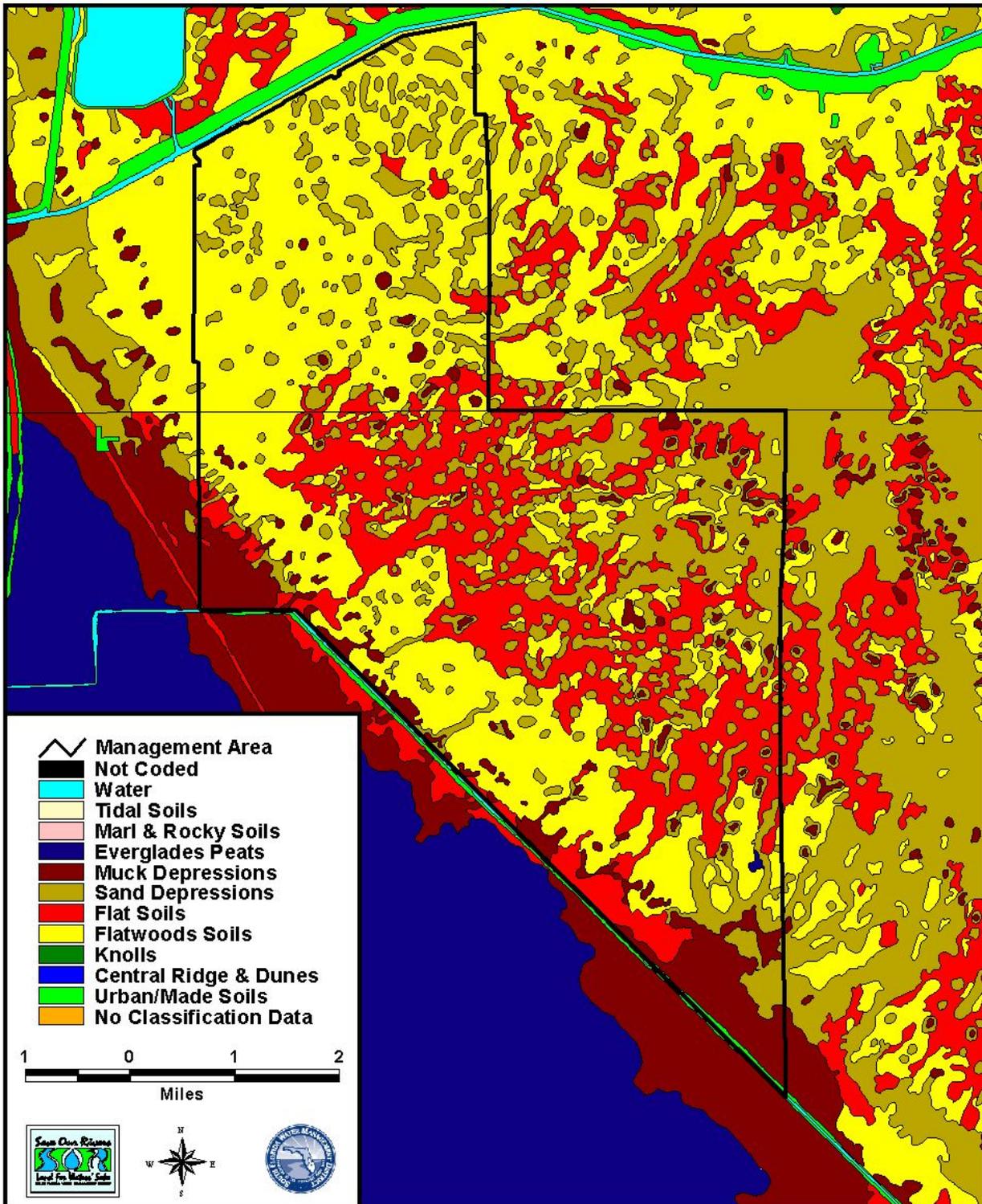


Figure 6. Canals and ditches that have impacted hydrology on the DuPuis Management Area.



**Figure 7. Soils of the DuPuis Management Area
(With SFWMD Natural Soil Landscape Positions Data)**

Flatwoods Soils

Flatwood soils are poorly drained non-hydric, upland soils with sandy marine sediments throughout the profile. Most of the soil series have a subsurface spodic horizon, some of which may have loamy sand substrates. The seasonal high water table can range from six to 18 inches below the soil surface for three to six months annually. Some areas may become inundated for short periods during the wet season or during large storm events. Examples of these soils include Immokalee, Malabar, and Wabasso. Natural communities typical of flatwood soils on the DMA are mesic flatwoods. The landscape position of these communities affects plant-water relationships and causes slight differences in plant composition from wet to dry areas. Typical natural vegetation of flatwood soils is scattered south Florida slash pine (*Pinus elliotti densa*) with an understory dominated by saw palmetto (*Serenoa repens*) and grasses.

Flat Soils

Flat (previously referred to as slough) soils are poorly drained hydric soils with sandy marine sediments throughout the profile, or more rarely with loamy sand or sandy loam. Some areas within this unit are frequently flooded alluvial areas that have a sandy surface for the majority of the area. Flats are located between the flatwoods and topographic depressions and are generally regarded as transition areas. In most years, the seasonal high water table begins in June and ends from September to March (typically by February) with inundation periods dependent upon seasonal rainfall and/or large storm events. Examples of these soils include Boca, Felda and Riviera.

One of the ecological communities most typical of the flats landscape is the slough. Slough soils are nearly level and very poorly drained with organic surfaces underlain by sand. Representative soils include Hontoon, Sanibel and Okeelanta. Most sloughs serve as drainage ways for water during periods of heavy and prolonged rainfall. Most sloughs are relatively long and narrow and slightly lower in elevation than the surrounding flatwoods and hammocks. Vegetation within the slough may be open expanses of grasses, sedges, and rushes with cypress or scattered pines.

Sand Depression Soils

Sand depression soils are very poorly drained hydric soils that typically have sandy marine sediments throughout the profile. A few areas may have mucky sand, or sandy loam surfaces with sandy or loamy subsurface. Often, these areas are depressions adjacent to flatwoods. The seasonal high water table can range from one foot below to two feet above the soil surface for seven to 10 months annually. In most years, the seasonal high water table begins in June and ends from October to March. Soils commonly associated with this community are nearly level and very poorly drained with organic surfaces underlain by sand. Representative soils include Hontoon, Sanibel and Okeelanta. Examples of Sand Depression soils include Basinger, Boca, Chobee, Felda and Riviera.

Wetland communities dominate this landscape position. Natural communities often found in this landscape are swale and depression marsh. Vegetation varies widely within marshes but typically includes pickerelweed (*Pontederia cordata*), maidencane (*Panicum hemotomon*) or sawgrass (*Cladium jamaicense*).

Muck Depression Soils

Muck depression soils are very poorly drained hydric soils that have an organic surface layer underlain by sandy marine sediments. This category includes the transitional area between the Everglades pure organic soils and the coastal sandy marine sediments. These areas are often depressions adjacent to Flatwood soil-types. The seasonal high water table can range from six inches below to two feet above the soil surface for seven to eleven months annually. In most years, the seasonal high water table begins in June and ends between December and April. Examples of these soils include Gator, Hontoon, and Sanibel. A few areas may have a thin organic surface layer less than a few inches thick.

Wetland communities dominate this soil type. Examples of this type on the DMA are found in the L-8 marsh and swamps characterized by bald cypress (*Taxodium distichum*), pond cypress (*Taxodium ascendens*), coastal plain willow (*Salix caroliniana*), or red maple (*Acer rubrum*).

Soil Contamination and Excavation Sites

A cattle dipping area that was located at the present Gate 3 equestrian area was removed by the District in the late 1980's. This chemical treatment area was one of the 3,200 cattle dipping vats constructed statewide between 1906 and 1961 for a tick fever eradication program that was mandated by state law. At these locations, soils became polluted with insecticides as cattle were either lead through in-ground dipping vats or sprayed in holding pens. Shortly after acquisition, the District began appropriate corrective actions on the DMA cattle dipping vat that led to a closure status.

Five other DMA soil contamination sites were identified. These sites were used for petroleum or chemical storage or equipment maintenance areas. The District had these contaminated sites chemically and physically analyzed as the first phase of a two-part remedial strategy that developed site-specific, risk-based action levels. The second phase of this process determined the appropriate degree of corrective actions. The Florida Department of Environmental Protection (DEP) Waste Cleanup Section staff assisted in decision-making with regard to the appropriate land use classification and required corrective actions. In the early 1990s, a remediation plan was designed and implemented at the DMA's five contaminated sites. In June 2001 a final site rehabilitation order was issued by DEP to complete the site's clean-up responsibilities.

Four small inactive borrow pits exist on the DMA that were used to supply fill for road building and repair. The largest pit is about 3 acres in size and located at the south end of the DuPuis Grade. This pit was re-contoured and re-planted with native vegetation in 2001. A fishing pier was also constructed on site. There are no current plans for mining additional shell rock from the other pits; however limited mining may be an option for future road improvements.

4.3 Natural Communities

Eight natural community types, as classified by the Florida Natural Areas Inventory (FNAI), are present on the DMA (Figure 3). In addition, the property includes 60 acres of citrus grove and five acres of disturbed areas containing administrative facilities. Habitat condition varies widely, depending on degree of past hydrologic alteration, current management activities, and exotic plant infestation.

Mesic Flatwoods (3,689 ha; 9,138 ac)

This is the dominant plant community on the DMA and is distinguished by the south Florida slash pine overstory and an open or dense understory, depending on degree of drainage and fire frequency. Where drainage and fire suppression has been most severe, the understory consists of dense saw palmetto and to a lesser extent live oak. Use of mechanical shrub control in conjunction with increased prescribed fire has been instrumental in enhancing native plant communities that include saw palmetto, gallberry (*Ilex glabra*), St. Johns-wort (*Hypericum myrtifolium*), shiny blueberry (*Vaccinium myrsinites*), beautyberry (*Callicarpa americana*), bog buttons (*Lachnocaulon anceps*), yellow-eyed grass (*Xyris* spp.), wire grass (*Aristida berychiana*), and numerous other native wildflowers.

This community occurs on similar soils as dry prairies and wet flatwoods, with minor changes in topography

determining plant species composition. Acidic sandy soil overlays hardpan that reduces water exchange between the soil surface and subsurface. Native plants of this community have adapted to long intervals of inundation and desiccation combined with periodic fire.

An important physical factor in mesic flatwoods is fire, which probably occurred every one to eight years in pre-Columbian times. Nearly all plants and animals inhabiting this community are adapted to periodic fires; several species depend on fire for their continued existence. Without relatively frequent fires, mesic flatwoods succeed into hardwood-dominated forests whose closed canopy can essentially eliminate the herbaceous ground cover.

Wet Flatwoods (1,552 ha; 3,844 ac)

Wet flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with variations of hydrophytic herbs and shrubs in the understory (FNAI, 1990). These flatwoods were influenced primarily by fire, which occurred naturally every 3 to 10 years (FNAI, 1990). Without frequent fires, wet flatwoods succeed to hardwood dominated forests. Flatwood community variation is probably associated with fire frequency and hydroperiod. These flatwoods develop on poorly drained acidic, low nutrient sands underlain by hardpan. During the rainy season, water frequently stands on the surface, inundating the flatwoods for 1 or more months per year. Past overdrainage resulted in the conversion of wet flatwoods to mesic flatwoods. Typical plants include south Florida slash pine, rushes, sedges, wax myrtle (*Myrica cerifera*), gallberry (*Ilex glabra*), saw palmetto, and native grasses and wildflowers.

Strand Swamp (1,106 ha; 2,740 ac)

Strand swamps are shallow, forested, usually elongated depressions or channels dominated by bald cypress. They are generally situated in troughs in a flat limestone plain. Other typical plants include red maple, laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), pond apple (*Annona glabra*), sweet bay (*Magnolia virginiana*), coastal plain willow, wax myrtle, myrsine (*Myrsine guianensis*), buttonbush (*Cephalanthus occidentalis*), poison ivy (*Toxicodendron radicans*), leather fern (*Acrostichum danaeifolium*), swamp fern (*Blechnum serrulatum*), sawgrass, swamp primrose (*Ludwigia palustris*), smartweed (*Polygonum* sp.). Strand swamp soils are peat and sand over limestone with normal hydroperiods of 200 to 300 days per year. Periodic water flow is an integral component of strand swamps. Natural fire is infrequent in strand swamps, occurring on a cycle of 30 to 200 years. Fire, however, is essential for reduction of hardwood encroachment and reduction of peat accumulation that would convert this community to a bottomland forest. Strand swamps are extremely vulnerable to local and regional hydrologic modifications.

Swale (945 ha; 2,341 ac)

Swales are marshes situated in broad shallow channels and characterized by emergent grasses, sedges and herbs up to 10 feet in height. The dominant species are sawgrass, pickerelweed, and maidencane.

Swale soils are peat or sands and are generally located over linear depressions in the underlying limestone. Swales typically have long hydroperiods and are valuable ecologically because they serve as water storage and recharge areas, water transportation corridors, nutrient filters, and saltwater intrusion barriers. Threats to this natural community are disruption of natural hydrologic flow and fire cycles, conversion to agriculture and invasion of exotics in disturbed areas.

Light ground fires occur every one to five years in swales, and may occur any time of the year, as sawgrass can carry fire over the water's surface. Fire during dry seasons may result in peat fire that lowers the ground surface, converting the swale into a slough. Lack of fire results in dominance of coastal plain willow and buttonbush thickets.

Wet Prairie (509 ha; 1,261 ac)

Wet prairie is characterized as a treeless plain with a sparse to dense ground cover of grasses, sedges, rushes, and herbs, including wiregrass, toothache grass (*Ctenium aromaticum*), maidencane, spikerush (*Eleocharis* sp.), and beakrush (*Rhynchospora* sp.). Other typical plants include hatpins (*Lachnocaulon* sp.), marsh pinks (*Rhexia* sp.), corkwood (*Stillingia aquatica*) wax myrtle, St. John's-wort (*Hypericum* sp.), and Panicums.

Wet prairies occur on low, flat, poorly drained terrain and are inundated from 50 to 100 days per year. Wet prairie species have adapted to long periods of drought conditions due to the rainfall seasonality. Soils typically are sands with a major organic component. Fire plays an integral role in wet prairie ecology burning every two to four years with sufficient fuel accumulation. Without fire, these grass-dominated flatlands succumb to shrub encroachment especially from wax myrtle.

Depression Marsh (498 ha; 1,234 ac)

Depression marsh, also known as a flatwoods pond, is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often occurring in concentric bands (FNAI 1990). Typical plants include St. John's-wort, spikerush, yellow-eyed grass, maidencane, wax myrtle, buttonbush, pickerelweed, arrowhead (*Sagittaria* sp.), and bladderwort (*Utricularia cornuta*).

Depression marshes are typically small in size and hydrologically isolated from other surface water bodies. Water is received by runoff, seepage or direct rainfall. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year (FNAI, 1990). Bottom soils are generally acidic peat, resulting from accumulation of decayed plant material. This community frequently grades into wet or mesic flatwoods.

Natural fire occurs in depression marshes every one to five years, depending on a combination of weather conditions and fuel accumulation. Fire preserves these plant communities by limiting invasion of woody vegetation, promoting herbaceous growth, and slowing succession by deepening the marsh with an occasional peat fire. The LSP coordinates fire schedules to insure depression marshes burn at natural frequencies and during periods of adequate ground moisture.

Dome Swamp (386 ha; 956 ac)

Dome swamps are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower soil at the perimeter, while larger trees grow in the deeper interior soil. This community usually forms around sinkholes or depressions in flatwoods caused by solution activity. Cypress trees grow in the sand that fills these depressions. From above, dome swamps may resemble a “doughnut”, with open ponds or depression marshes in the center of the dome. Other common plants include pond apple, chain fern (*Woodwardia* sp.), Spanish moss (*Tillandsia usneoides*), wild pine (*Tillandsia* sp.), royal fern, cinnamon fern (*Osmunda cinamomea*), coastal plain willow, wax myrtle, St. John's-wort, lizard's tail, buttonbush, sawgrass and maidencane.

Dome soils are composed of peat, which become thickest toward the center of the dome, and are generally underlain with acidic sands and then limestone. Some domes have a clay lens that helps retain water levels. Dome swamps often derive much of their water through runoff from surrounding uplands and may function as reservoirs that recharge the aquifer when adjacent water tables drop during drought. The normal hydroperiod is 200 to 300 days per year with water being deepest and remaining longest near the center of the dome.

Fire is essential for the maintenance of a cypress dome community to prevent hardwood invasion and peat accumulation. Fire frequency is greatest at the periphery of the dome and least in the interior where long hydroperiods and deep peat maintain high moisture levels for most of the year. The normal fire cycle might be as short as three to five years along the outer edge, and as long as 100 to 150 years towards the center. The dome's profile is largely attributable to this fire regime. Cypress is very tolerant of light surface fires, but muck fires that penetrate the peat layer can cause cypress mortality. Prescribed fire is applied to surrounding natural communities at the DMA when soils within the domes are saturated.

Alteration of natural hydroperiods can be detrimental to cypress domes by changing their vegetative character. Extended deep water levels will limit cypress growth and prevent reproduction. Shortened hydroperiods permit the invasion of mesophytic plant species. Dome swamps may also be degraded by pollution, and the invasion of *Melaleuca* and *Lygodium* contribute to devastating wildfires that kill cypress trees.

Prairie Hammock (145 ha; 359 ac)

Prairie hammock is characterized as a clump of tall cabbage palms and live oaks in the midst of prairie or marsh communities (FNAI, 1990). Prairie hammocks occur on slightly elevated soils and generally have a very open understory. Typical plants found in the hammocks at the DMA include wax myrtle, persimmon (*Diaspyros virginiana*), wild coffee (*Psychotria nervosa*), beautyberry, red bay (*Persia borbonia*), myrsine and various ferns. These hammocks flood only for a short duration during the highest water levels. Naturally occurring fires are rare in these hammocks, due mainly to a lack of under-story fuel.

LSP management strives to minimize soil disturbance and eradicate non-native invasive species within hammock areas. Years of livestock grazing may have eliminated or reduced many native hammock species (David, personal communication) and recent observations have noted the return of many native plant species typical of ungrazed hammocks like those on the adjacent Corbett Wildlife Management Area.

4.4 Wildlife

Initial wildlife inventories on the DMA were conducted from 1987-1989 (David, 1991). Regular surveys are ongoing by the FFWCC and species lists are updated accordingly. Wildlife species observed utilizing the property include 105 bird, 22 mammal, 16 reptile, and 8 amphibian species (Appendices BB, CC, and DD). At least 18 species considered rare, endangered, threatened, or of special concern have been noted.

4.5 Cultural Resources

Policy 05.00113.10 Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Department of Historical Resources (FDHR). Land management planning shall include an analysis of archaeological data accompanied by appropriate public education opportunities.

As a state agency responsible for management of publicly owned lands, the District is required by law to preserve historical and cultural resources located on District properties. The District's management goal is historic preservation by identification, evaluation, documentation, protection, and stabilization of known historic or prehistoric sites. Under Chapter 267 F.S., each state agency of the executive branch is under obligation to consider the effect of management actions on historical resources. This statute, along with Rule 1A-32 (research permitting process), Rule 1A-46 (archaeological report standards), and Chapter 872, F.S. (protection of gravesites) are the primary laws pertaining to historic sites and archaeological resources. The District complies with these regulations by inter-agency coordination with the FDHR through their project review process (Rule 1A-46, archaeological report standards). LSP maintains a database of all known archeological and historical sites on District properties that is periodically updated through the FDHR Site File. Due to its sensitive nature, site-specific data may not be made available to the general public.

Four archaeological sites of Native American earthworks are present on the DMA and are registered in the Florida Master Site File as sites of archaeological significance. The FDHR has visited the sites to conduct mapping and sampling. Research assistance has been provided by the Southeast Florida Archaeological Society and Florida Museum of Natural History. Information was summarized in "Cultural Resource Assessment of Four Archaeological Sites at Dupuis Reserve, Palm Beach County," (Wheeler, 2000) and subsequent reports (Wheeler, 2001; Rich, 2001). Studies concluded that the 4 Dupuis sites represented important examples of Lake Okeechobee Area site types and were mostly well preserved. Management recommendations included keeping the area in public ownership, prohibiting grazing or agricultural activities, prohibiting vehicle traffic at mound sites, and monitoring sites for feral hog rooting and vandalism (Wheeler, 2000). Management activities on the DMA will continue to promote research on these sites and continue to safeguard site integrity. Management activities planned for these areas are the treatment of invasive exotic vegetation and the periodic application of prescribed burns. No ground disturbing activities are permitted. Staff from FDHR may revisit these sites at times to conduct additional investigations.

In 2002, District staff contracted local historian, Steve Farnsworth, to research the history of the DuPuis property

(Farnsworth, 2003; Appendix HH). Mr. Farnsworth summarized his research:

“Most of the land in the DuPuis Reserve was purchased from the State of Florida by Southern States Lands and Timber Company in 1902. The Hungryland Trail, which traverses the reserve, appeared in the 1910s. The St. Lucie Canal was constructed on the northern border in 1915, and Kanner Highway was built south of the canal in the 1920s. Selective logging of the reserve occurred in the 1930s, and it was purchased by Robert Chastain in the mid 1940s. The Chastain Ranch created much of the basic infrastructure at the reserve, including the DuPuis and Jim Lake Grades, and some of the drainage ditch systems. White Belt Dairy Farm, which was controlled by the DuPuis family, purchased the western portion of the reserve in 1955 and the eastern portion in 1972. The L-8 Canal was constructed along the southern border of the reserve in 1954, and additional drainage systems leading to the canal were built in subsequent years.

The fruit tree groves around the reserve office were planted in the late 1950s, and many new firebreaks were established along section lines. In the late 1960s, many new buildings were built at the reserve, including Mound House, Governor’s House, the sheep shearers structures, and the maintenance compound. Many of the cattle watering holes were dug at this time and the landing strip was created. The DuPuis family bought the eastern portion of the reserve from U.S. Sugar in 1972. New ditches were dug at this time along the southern and eastern borders of the reserve, and new management roads that followed section lines were created. The buildings in the equestrian complex were built in the mid-1970s and the high voltage electrical lines on the eastern edge of the reserve were constructed in the late 1970s.

John G. DuPuis, Jr. died in 1984. His wife, Susan DuPuis sold the Reserve to the South Florida Water Management District in December 1986. The reserve was managed as the DuPuis State Forest from 1990 to 1996. It is now managed by the South Florida Water Management District in cooperation with the Florida Wildlife and Conservation Commission.

5. Natural Resource Management

Policy 05.0011. The LSP mission is to provide natural resource management and protection while allowing appropriate recreational use on designated public lands.

Natural resource management responsibilities of the District are defined by statute and District land stewardship policy. Many properties owned and managed by the District contain natural communities whose structure and function have been altered by previous land uses. The District manages and maintains these lands in an environmentally acceptable manner and, to the extent practicable, restores them to a more natural state and condition. Land managers attempt to accomplish this by using a variety of management techniques.

To manage natural communities at the DMA, LSP activities have included the implementation of a large scale project to restore a more natural hydrologic regime, the application of vegetation control activities to restore natural forest structure and composition, the continuation of an aggressive exotic plant control program, the application of a prescribed burn program to appropriate landscapes, and coordination with FWC to implement a wildlife management program.

5.1 Restoration Projects

Policy 05.00111. The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.

Policy 05.00111.3. Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.

An environmental assessment completed for the property shortly after acquisition included a wetland and hydroperiod restoration plan as a primary management goal (David 1991). The plan recognized that severe

overdrainage of the property had occurred through the construction of a major network of swales and canals built to facilitate the drainage of water north to the St. Lucie Canal and south to the L-8 canal (Figure 6). The plan outlined a three-phase restoration project targeting restoration of both the interior wetlands and 945 hectare (2,341 acres) of historic Everglades referred to as the L-8 marsh. In 1990 and 1991, 41 earthen ditchplugs were installed at strategic locations along Dupuis' network of interior ditches to re-hydrate isolated wetlands and reestablish sheetflow across the property interior (Figure 5). Approximately 1,615 hectare (4,000 acres) of wetlands was restored with varying degrees of success. Monitoring has demonstrated that re-flooding resulted in native wetland plant species replacing upland species. However, exotic wetland plants such as torpedo grass have also invaded some re-created wetlands (David, 1999).

The second phase of the restoration project entailed the construction of an eight-mile levee separating the DMA from the L-8 canal and the Everglades Agricultural Area. This project included installation of three water control structures that became operational in December 1996. The District costs of this project were completely reimbursed by mitigation funds. Restoration success is being evaluated (David and Black, 2000)

The final restoration phase consisted of re-establishing the hydrologic connection between the DMA L-8 marsh and similar habitat on the adjacent Corbett Area. In 1992, two sections in the roadway separating the DMA and Corbett Wildlife Management Area were degraded and stabilized with geo-web swales to reconnect historic water pathways. In 2001, installation of six culverts with adjustable control gates was completed to increase flow to the DMA and help relieve underdrainage on the adjacent Corbett Area.

In the mid 1990's, managers began additional work to restore DuPuis' upland areas (section 5.2). Prescribed burning had been initiated shortly after property acquisition to reintroduce the beneficial effects of fire to the area; however, fire alone could not effectively reduce the overgrown structure of some upland areas. This overgrown condition negatively affected the diversity of native vegetation and wildlife, and was a probable contributor to the extirpation of the indigenous red-cockaded woodpecker from the area (section 5.4.3). Managers began heavy-duty mowing of overgrown shrubby understory and selective thinning of pines and cabbage palms to restore open forest structure. Frequent prescribed burning and the control of invasive exotic vegetation would maintain this structure. To date, most upland restoration has been conducted on the more overgrown west portion of DuPuis (figures 8 and 10), however, future work will include additional areas.

The LSP initiated an effort to restore native plant communities representative of the DMA on a three-acre site immediately east of the main administration office that will become part of the DMA visitor's center (section 6.4). The previous landowner had planted the area with imported exotic trees and the area subsequently became infested with other invasive shrubs. A small cement pond on the site had also become choked with invasive aquatic plants. In 1999, the LSP cleared the exotic trees and shrubs from the site, cleaned out the cement pond, and re-shaped the contours around the pond to simulate a cypress dome. The LSP planted 35 nursery grown mature cypress trees, and over 100 slash pines and live oaks that were relocated from other sites on the property. In 2001, a new pump system was installed in the pond to control water levels. The pond was filled with a gravel base and topped with soil. LSP planted over 20 native aquatic plant species to re-create various wetland plant communities that occur on the property. Future efforts will focus on re-establishing native pine flatwood and hammock understory vegetation in preparation for opening the visitor's center.

Work will continue on restoration of a 3 acre borrow pit located at the end of DuPuis Grade that was enlarged in the early 1990's to provide shell material for construction of a portion of the area's public roads. After the pit was closed in 1995, the shoreline and adjacent disturbed areas became heavily infested with cattails and exotics. Work began in 2001 to remove undesirable plants, re-contour a portion of the pond, and plant a variety of native vegetation to create a more natural landscape. A large berm of overburden material along one side of the pond was lowered and contoured to create areas where cypress, native shoreline plants, and marsh vegetation was planted. The top of the re-contoured berm was planted with cabbage palms, oaks, and native ground vegetation to create a small hammock. Cabbage palms were also planted in spots around the pond perimeter. A hydrological connection to the surrounding marsh was established by lowering another berm to permit seasonal inundation and water exchange. Future plans include additional plantings of native vegetation and the addition of picnic sites for public use.

5.1.1 Mitigation

The District receives mitigation funds that are used for the acquisition, preservation, restoration, and management of several LSP lands in accordance with Section 373.414 (1)(b), F.S. LSP staff develops detailed plans for the use of these funds for specific activities and areas. The DMA was the recipient of mitigation funds from 1993 through 1997 from several offsite development projects and permittees. Mitigation money was used to offset the costs of restoration projects to rehydrate the L-8 marsh and to restore a portion of the historic hydrological connection with the adjacent Corbett area. This restoration was singularly important to the establishment of natural hydrological cycles and the restoration of native vegetation and wildlife on the DMA. In addition, these mitigation projects significantly decreased seasonal offsite water flows thereby lessening the burden on regional stormwater conveyance systems. Since 1997, there has been no new mitigation money for the DMA, but small annual management allotments continue from the accumulated interest on principal. These allotments will continue to be used for management projects to maintain and enhance the DMA L-8 marsh.

5.1.2 Monitoring

Policy 05.00113.6b. Monitoring shall be conducted to identify landscape changes resulting from management activities.

Tracking environmental response to restoration projects provides valuable information on progress toward restoration objectives. Information obtained by monitoring specific sites assists land managers in making sound ecological choices for each unique parcel in the LSP.

DMA monitoring has focused on documenting vegetative changes from restoration of the area's hydroperiod. In May 1988, the District established a monitoring program to determine the progress of hydrologic restoration in the L-8 marsh and in re-flooded interior marshes. Digital recorders were installed at four locations to record changes in water levels. Vegetation monitoring consisted of repeated counts along transects at varying elevations both before and after completion of the restoration project. In addition, photomonitoring was conducted at marked plots in the marsh. Results of the restoration/monitoring program were discussed by David (1999) and included in unpublished annual monitoring reports completed in 1997-2001. Reports indicated a positive vegetative shift occurred in the direction of more obligate wetland species as a result of increased inundation. Periodic monitoring will continue in the L-8 marsh to evaluate the influence of increased hydroperiod and also evaluate the effects of the additional water flows through the connection with the Corbett Area marsh constructed in 2001 (section 5.1).

Management Objective:

- *Maintain an appropriate hydroperiod through maintenance and modification of area water control structures as needed.*
- *Continue and enhance the monitoring and evaluation of restoration activities on area vegetation and wildlife.*

5.2 Vegetation Management

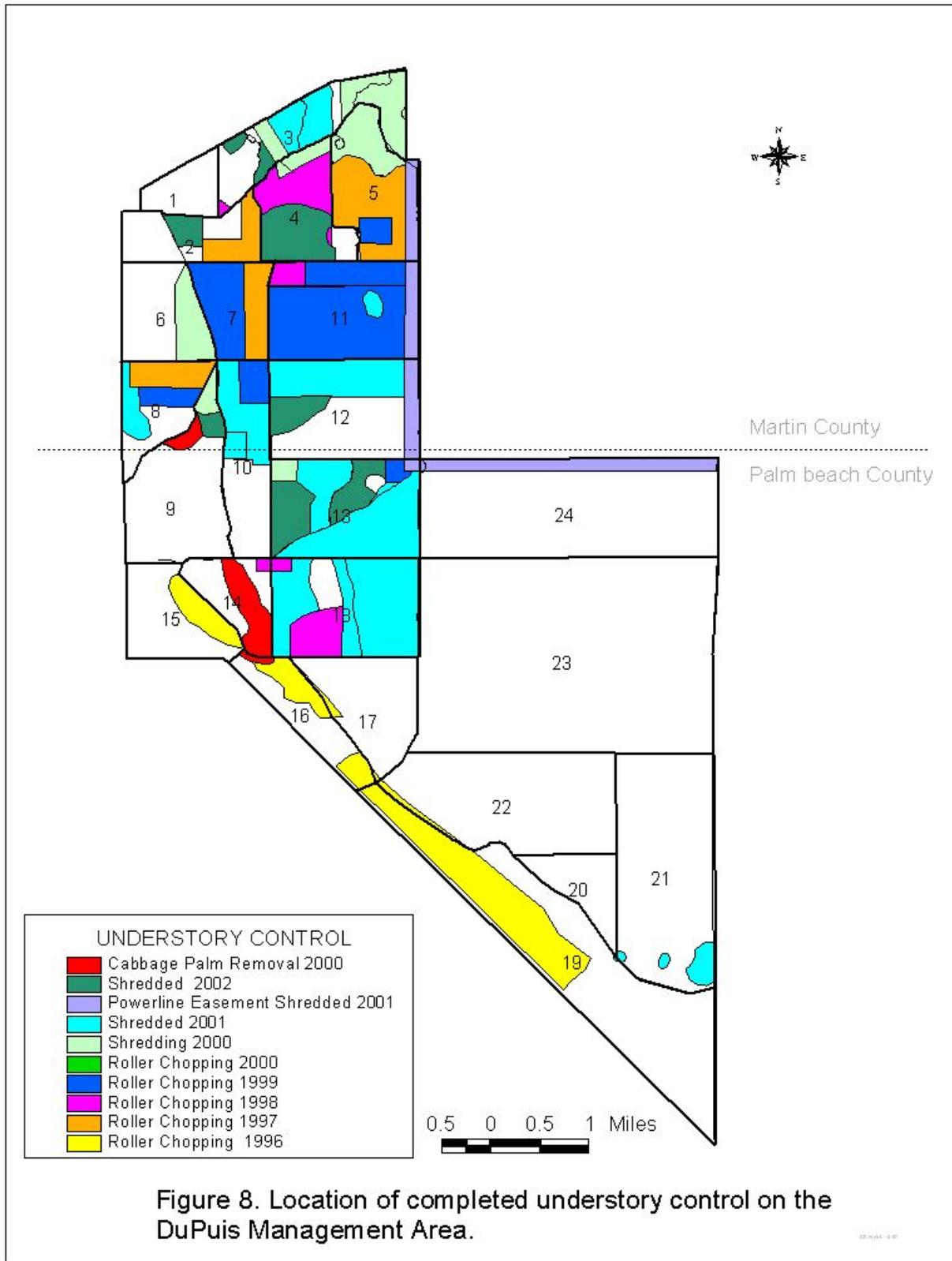
Policy 05.00112.4. Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where exotic/invasive vegetation or improved land uses have substantially altered the historic landscape.

Policy 05.00113.12. Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.

Historically, the DMA was comprised of flatwoods that were open landscapes of scattered south Florida slash pines with low shrub vegetation and herbaceous ground cover. These landscapes were maintained by frequent natural fires and seasonal flooding. Subsequent land uses that overdrained the area and suppressed fires allowed an unchecked

growth of vegetation creating denser tree canopies and an understory layer of overgrown shrubs. These changes permitted less light to reach the forest floor, limiting ground cover diversity. One of the LSP's initial priorities was to introduce prescribed fire to help reduce understory vegetation and open forest structure. However, the accumulation of heavy fuels made prescribed burning difficult and drought years brought devastating wildfires. In addition, burning alone did not reduce the physical dimension of the overgrown shrub understory that was necessary to restore the forest's natural structure and function. Consequently, in 1995 the LSP began mechanical control of vegetation with the use of tractor pulled drum choppers. These choppers mechanically crushed overgrown saw palmetto and other shrubs leaving a reduced and open understory. However, drum choppers were difficult to navigate in dense stands of trees, they could damage tree surface roots, and could be very disruptive to the soil surface. In 1999, the program purchased a hydraulically operated Alamo shredding implement that attached to a bi-directional tractor. This equipment proved to be more maneuverable than the drum choppers and was extremely effective in reducing vegetative fuel and restoring habitat structure, without impacting surface soils. To date, several thousand acres of DMA understory have been restored using roller choppers or by shredding (Figure 8). Understory restoration will continue in overgrown areas of the DMA that would benefit from this work.

Past fire suppression has also allowed the growth of unnaturally dense stands of slash pine. This unnatural density reduced stand health and increased the stand's susceptibility to attacks from bark beetles and disease (Dixon, 1984). Where appropriate, dense areas of slash pine are thinned through selective harvest to more natural stocking rates (section 5.2.4). These projects are planned and conducted with sensitivity to surrounding environmental conditions and in coordination with public use schedules. These stands may also have locally heavy concentrations of cabbage palms in the midstory. Cabbage palms are thinned or eliminated through cutting or extraction in select areas such as those being managed for red-cockaded woodpeckers. Through upland management, the DMA's extensive pine flatwoods can be restored to a more open natural condition that can be maintained through restored seasonal flooding and recurring prescribed fire.



Management Objective:

- *Continue understory restoration by using heavy-duty shredding and mowing equipment to open up areas of overgrown saw palmetto and wax myrtle. District staff and contractors will treat 500 acres each year.*

- *Continue appropriate forest management activities to enhance natural communities. Contract the thinning of 1000 acres of over-dense pine in FY 2004 using established forest management guidelines. Evaluate the need for additional forest thinning (including cabbage palms) and develop appropriate plans for FY's 2005-2006.*

5.2.1 Vegetation Control and Maintenance

Vegetation control and maintenance is executed by the LSP field technicians or through contracts. Roller choppers, a tractor-mounted Alamo shredder, and heavy-duty mowers are stationed at the DMA.

5.2.2 Exotic/Invasive Plants

Policy 05.001122.3. Management practices will strive to identify existing infestations of exotic/invasive plants and implement appropriate control or eradication measures.

Policy 05.00113.2. Exotic plant control in all management areas shall attain a level of success where periodic maintenance eliminates the infestation or reduces the spread of exotic plants.

South Florida's subtropical climate provides an excellent growth environment for the rapid spread of exotic plants that can cause extensive alterations to an area's natural ecosystems. Environmental changes caused by extensive hydroperiod alterations have been an important factor in exotic plant invasion. Exotic plant invasion can result in partial or total displacement of native plants, loss of wildlife habitat, and the degradation of public use areas.

The LSP targets category I and II non-native plant species as identified on the Exotic Pest Plant Council's annually updated list of *Florida's Most Invasive Species*. Category I species include non-native plants that invade and disrupt Florida native plant communities. Category II plants have the potential to invade and disrupt natural successional processes. Both Category I and II exotics are considered invasive and a threat to the function and ecological stability of Florida's natural communities.

The LSP's invasive exotic plant control measures include a combination of herbicide application, prescribed fire, roller chopping, mowing, and physical removal. Selection of control measures is dependent upon species type, environmental factors and natural communities impacted. Private contractors, the lead management agency, or LSP staff conduct exotic plant control activities in cooperation with the District's Vegetation Management Division.

Melaleuca (*Melaleuca quinquenervia*) and Brazilian pepper (*Schinus terebinthifolius*) have received the most control efforts on the DMA since property acquisition. Most areas of Melaleuca have been eliminated, though scattered young infestations continue to be found and treated. Brazilian pepper, however, remains more prevalent and continues to require more control effort. In the last few years, Old World climbing fern (*Lygodium microphyllum*) has spread at an alarming rate and requires increasing attention (Figure 9). Lygodium is now present in most DMA units and has been found in all habitat types, though heavy infestations are small. This species poses the most significant threat to native plant communities and an aggressive herbicide program using contractors has been implemented.

Other terrestrial species such as cogon grass (*Imperata cylindrica*) and napier grass (*Pennisetum purpureum*) are controlled by regular herbicide applications. Waterhyacinth (*Eichhornia crassipes*) and waterlettuce (*Pistia stratiotes*) are present in canals located near the DuPuis marsh and require regular treatment. Smaller localized infestations of West Indian marsh grass (*Hymenachne amplexicaulis*), shoebuttan ardisia (*Ardisia elliptica*), Indian laurel fig (*Ficus microcarpa*), bladder pod (*Sesbania sp.*), and primrose willow (*Ludwigia peruviana*) require spot treatments and increased monitoring.

Exotic plant control at the DMA is conducted primarily by a contracted crew of applicators, hired and audited through the Vegetation Management Division. District field technicians also provide supplemental support especially on small or sporadically distributed infestations. Generally, treatments on the DMA are scheduled so that

each unit is covered bi-annually (Table 1), however schedules are adjusted based on current conditions. Areas of treatment are scheduled based on groundwater conditions, time since last treatment, virulence of infestation, public use, and in accordance with other management operations. All treatments follow herbicide BMP's and use the best available science. Treatment dates, locations, and herbicide are noted and recorded in a GIS database. Additional procedures are being developed to provide more specific plant locations and herbicide use data so that treatment efficacy may be better estimated.

Management Objective:

- *Continue an aggressive, integrated exotic plant management program. At least 10,000 acres will be surveyed per year and exotics treated as necessary. Treatments will be documented and coordinated with other management activities.*

5.2.3 Rare, Threatened and Endangered Species

Policy 05.00112.2. Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

Listed species are those plants and animals considered rare within a specific geographic area by the U.S. Fish and Wildlife Service, the FWC, the FNAI, and the Florida Department of Agriculture and consumer Services (DACs). A list of these species is annually updated and published by the FWC. The plant list of the DMA (Appendix AA) contains several listed species (Table 2).

The LSP establishes appropriate fire and hydrologic regimes, and controls invasive exotics in natural communities with the intent of perpetuating listed plant species. District Public Use Rules aid in the protection of native habitat and specifically prohibit destroying, defacing, or removing

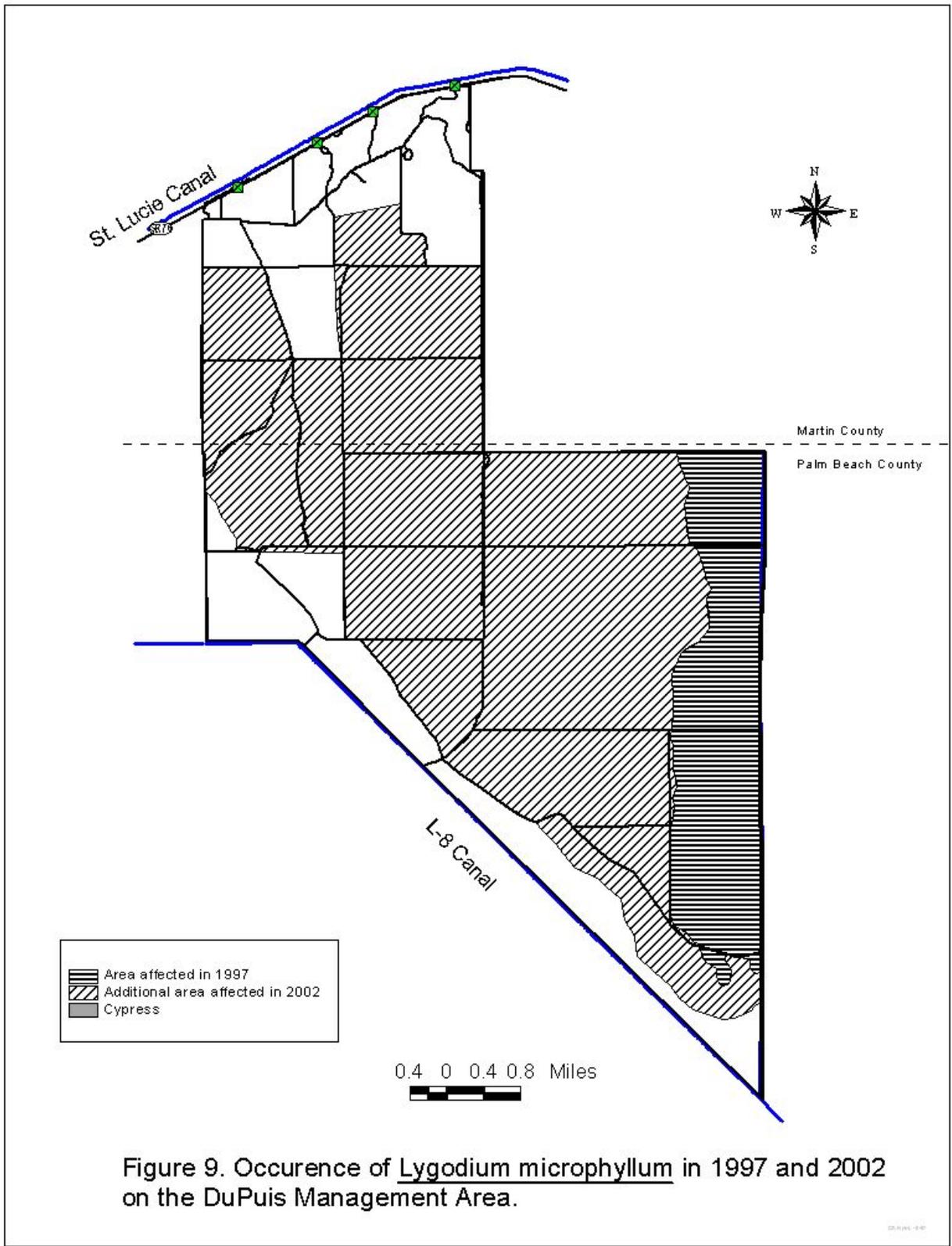


Table 1. Five-year invasive plant treatment schedule for the DuPuis Management Area. FY 2003 - 2007.

Unit	Fiscal Year				
	2003	2004	2005	2006	2007

1	X	X	X	X	X
2	X		X		
3	X	X	X	X	X
4	X		X	X	X
5		X		X	X
6		X		X	X
7		X		X	
8		X		X	X
9		X		X	
10	X		X		
11		X		X	X
12			X	X	X
13		X		X	
14	X				
15	X		X		
16	X		X		
17	X		X		
18		X		X	X
19	X	X	X	X	
20	X		X		
21	X		X		X
22	X		X		
23	X	X	X	X	X
24	X		X		

X = denotes that all or part of the unit will be covered. Actual coverages are detailed in year-end GIS maps. Treatment schedule will be adjusted based on prevailing conditions.

any natural feature or native plant on District lands (40E-7.537 General Prohibitions.) In this manner, listed plants are given lawful protection and environmental conditions suitable for their growth and reproduction.

In 1999, a population of state-designated endangered celestial lily, *Nemastylis floridana*, was found in Unit 23 in numbers not previously reported in Florida (Black, 1999). This population was observed following a prescribed burn in this unit the previous summer. Management efforts to protect this species will include prescribed burning every 2-4 years, control of exotic vegetation within

Table 2. Plants Occurring on the DuPuis Management Area That Are Listed by the Florida Department of Agriculture and Consumer Services as Threatened (T), Endangered (E), or Commercially Exploited (C), as of October, 2002

Common Name	Scientific Name	Designation
Giant Leather Fern	<i>Acrostichum danaeifolium</i>	C
Pinepink	<i>Bletia purpurea</i>	T
Bearded Grasspink	<i>Calopogon barbatus</i>	T
Manyflowered Grasspink	<i>Calopogon multiflorus</i>	E
Strap Fern	<i>Campyloneurum phyllitidis</i>	E
Satinleaf	<i>Chrysophyllum oliviforme</i>	E

Florida Butterfly Orchid	<i>Encyclia tampensis</i>	C	
Wild Coco	<i>Eulophia alta</i>	T	
Threadroot Orchid	<i>Harrisella filiformis</i>	T	
Drysand Pinweed	<i>Lechea divaricata</i>	E	
Catesby's Lily	<i>Lilium catesbaei</i>	T	
Nodding Club-Moss	<i>Lycopodiella cernua</i>	C	
Celestial-lily	<i>Nemastylus floridana</i>	E	
Giant Sword Fern	<i>Nephrolepis biserrata</i>	T	
Cinnamom Fern	<i>Osmunda cinnamomea</i>	C	
Royal Fern	<i>Osmunda regalis</i>	C	
Blue Butterwort	<i>Pinguicula caerulea</i>	T	
Yellow Butterwort	<i>Pinguicula lutea</i>	T	
Snowy Orchid	<i>Platanthera nivea</i>	T	
Rose Pogonia	<i>Pogonia ophioglossoides</i>	T	
Giant Orchid	<i>Pteroglossaspis ecristata</i>	T	
Longlip Lady's-tresses	<i>Spiranthes longilabris</i>	T	
Southern Lady's-tresses	<i>Spiranthes torta</i>		E
Reflexed Wild-pine	<i>Tillandsia balbisiana</i>	T	
Cardinal Wild-pine	<i>Tillandsia fasciculata</i>	E	
Twisted Wild-pine	<i>Tillandsia flexuosa</i>	E	
Giant Wild-pine	<i>Tillandsia utriculata</i>	E	
Simpson's Rainlily	<i>Zephyranthes simpsonii</i>		

T

the area, and continued limited public access (foot travel only). Periodic surveys will be conducted to evaluate the species status and determine the effects of management efforts.

Several listed bromeliad species occurring on the DMA may be threatened by the exotic Mexican weevil, *Metamasius callizona* that has caused destruction of native bromeliads in other south Florida locations. Two species of once abundant bromeliads, *Tillandsia utriculata* and *Tillandsia fasciculata*, have been placed on the state's list of endangered plant species as a direct result of this weevil. The DMA will assist the Florida Council of Bromeliad Society's efforts to control this weevil by setting up monitoring of weevil presence in DMA bromeliads and, if needed, assist in the collection of seeds for off-site germination.

5.2.4 Forest Resources

Policy 05.00113.8. Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria that meet LSP goals. Timber contractors will be required to meet silvicultural best management practices (BMP) developed for Florida forests.

Policy 05.00113.6c. Timber sales will be conducted to improve forest health or support specific forest management goals.

LSP properties are designated multiple-use, thus renewable resource utilization, including timber harvesting, is considered a viable land management option. However, resource utilization must be compatible with other LSP goals and objectives. In 1997, the LSP contracted the expertise of Natural Resource Planning Services, Inc. to provide site evaluations and management/harvest recommendations for existing stands. An SOR Forest Management Plan (FMP), completed in 1998, identified sites managed by the LSP that could be improved by thinning to a more natural tree density and could generate short-term revenues to supplement land management costs. Sites were also identified that could be planted for future revenue generation and ultimately restore slash pine forests. Sites that qualified for forest management had to be consistent with LSP policy by meeting strict environmental criteria:

- The area planned for silvicultural rotation is currently in an improved or disturbed state (i.e. bahia pasture,

existing pine plantation).

- The site to be planted is not scheduled for future hydrologic restoration, or the site to be harvested is scheduled for hydrologic restoration and existing timber will be lost as a result of flooding.
- The area does not contain any valuable resources (e.g. endangered species) that may be harmed by changes in land use.
- Forest operations would not require major road construction or improvement for accessing and processing timber, particularly within or across wetlands or other sensitive plant communities.
- The area to be managed currently requires maintenance (i.e., burning, mowing).
- District costs would be reduced as a result of inclusion in the forest management plan.
- The area contains timber that requires salvage following fire and/or insect or disease damage, and could be subject to a sanitation harvest with minimal environmental impact.
- The area provides special needs for endangered species (i.e., red-cockaded woodpecker) management that requires timber stand improvement.
- Harvest or planting will not create an aesthetically unpleasant scene or an impediment to public use.
- Timber harvests will return forests to a more natural structure and improve forest health.

Several sites on the DMA met the FMP criteria and in 1999, approximately 485 hectares (1200 acres) of timber were harvested to salvage bark beetle-killed trees and thin overly-dense stands (Figure 10). Thinning also helped to promote and protect potential red-cockaded woodpecker nesting areas. In FY02, 180 acres of beetle-impacted former forest and areas of open pasture were planted with slash pine seedlings germinated from DuPuis seed stock. Future plans may include planting portions of the 60-acre citrus grove that have been cleared (section 5.2.5).

Additional areas remain on the DMA that meet forest management criteria and their restoration to a more appropriate tree density would be beneficial (Figure 10). The thinning of dense stands adjacent to past beetle infestations would improve stand health and lessen the chances of additional beetle expansion. Any forest management activities will be consistent with good forest management practices and red-cockaded woodpecker recovery plans. There are also scattered areas that contain overly dense stands of young (10-25 years old) even-age pines that have established because of past overdrainage and fire exclusion. These thick areas of “fence-post” size trees could be thinned to improve remaining tree health and to maintain a more appropriate forest structure.

Cabbage palms are also included in forest management planning. There are several areas on the DMA that contain an over abundance of cabbage palms due to past fire exclusion and over-drainage. These palms provide an unnaturally dense mid-story layer that shades out native vegetation and allows fires to reach pine canopies, often with catastrophic results. In 2000, a revenue contract was awarded to a local nursery to selectively remove cabbage palms from a 200 acre area in units 14 and 16 (Figure 10). Palms were individually spaded and the resulting holes were back-filled to required specifications. The area was burned and, at a later date, will be evaluated to determine the level of environmental impact and the appropriateness of future removal projects.

Management Objective:

- *Continue appropriate forest management activities to enhance natural communities. Contract the thinning of over-dense pine in FY 2004 using established forest management guidelines. Evaluate the need for additional forest thinning (including cabbage palms) and develop appropriate plans for FY's 2005-2006.*

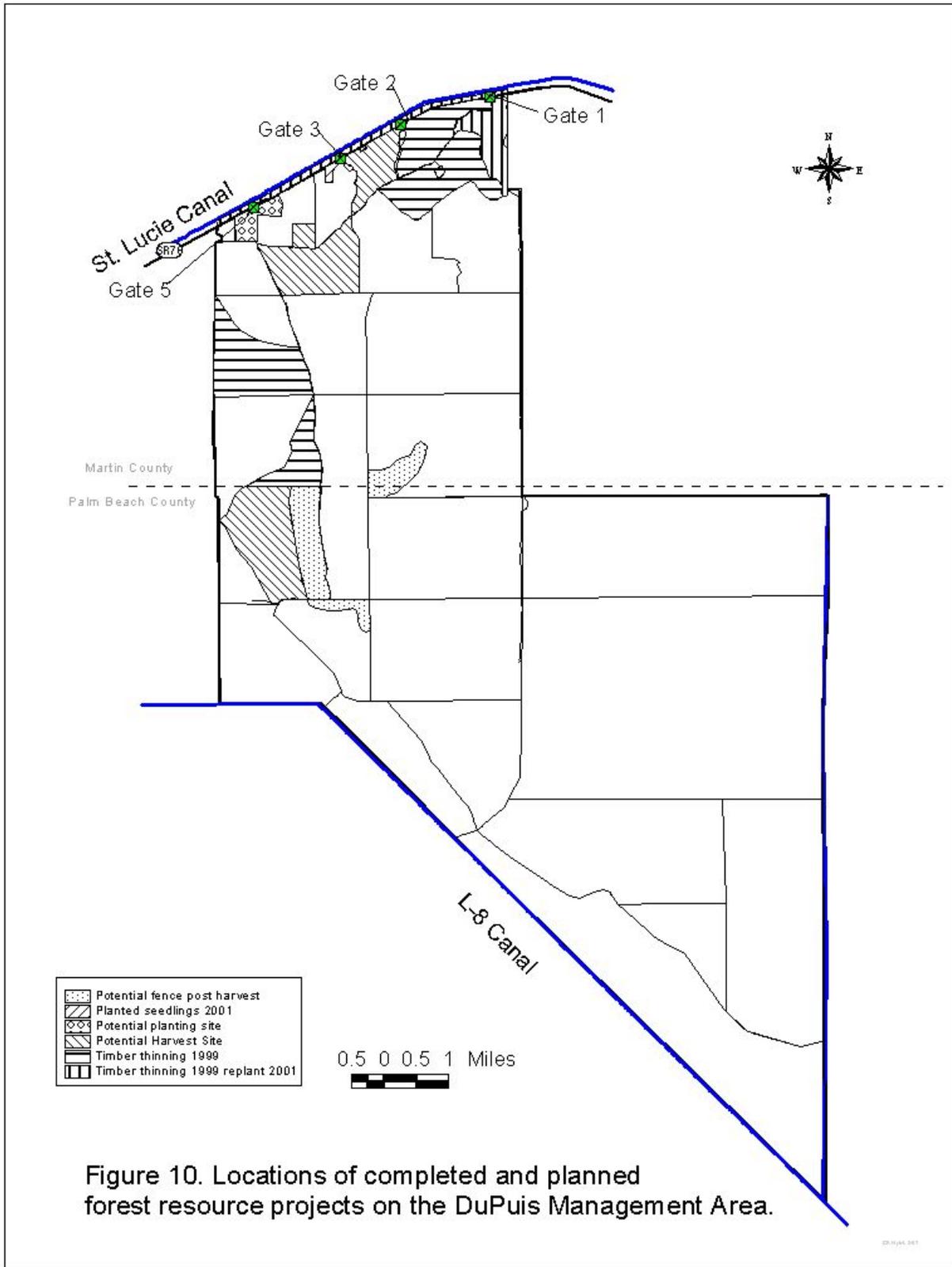
5.2.5 Agricultural and Range Resources

Policy 05.00113.9. Range management and grazing will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.

Prior to District acquisition, the DMA was managed as the White Belt Ranch where livestock grazing was the primary land use. Approximately 2500 head of cattle and 2000 sheep and goats were removed shortly after District acquisition and have not been reintroduced. There are no plans to reintroduce livestock to the DMA at this time.

The LSP has acquired property with active agricultural activity. When this occurs, each property is assessed to determine whether agricultural production should continue. In cases where temporary farming is continued, criteria for land use, defined in the *Guidelines and Criteria for Interim Use of District Owned Land*, (Dames and Moore 1998) are followed. The goal of these guidelines is to reduce contamination to ground and surface waters from agricultural activities by complying with best management practices. Citrus production is considered a more permanent agricultural activity and follows a defined set of guidelines regarding pesticide and fertilizer applications, and irrigation systems.

When the District purchased the DMA it contained a 60-acre citrus grove maintained by the previous owner for personal use. The District contracted the maintenance and operation of the grove from 1990 to 1998, with local operator Owens Groves. After Owens was unable to continue the contract, the District began discussions with several private and government groups for grove management. In 1999, a five-year renewable management contract was entered with St. Lucie County Cooperative



Extension Service to maintain and enhance the grove by utilizing sustainable agricultural practices. The intent was to use the grove to demonstrate best management practices in the operation of sustainable citrus production. Plans included renovation and improvement of irrigation, tree-stocking modifications, and grove soil structure

enhancement using recycled organic materials.

Approximately half of the grove trees were removed to eliminate diseased and dying stock, and prepare for new tree planting. Subsequently, however, Extension Service managers came under administrative constraints that precluded their involvement at DuPuis and they withdrew from grove management. In July 2002, at District request, citrus scientists from the University of Florida toured the DMA grove to evaluate its condition. Noting the low number and poor condition of remaining trees, they recommended that grove renovation was not practical without major site improvement and tree replacement. Because of this situation, District and DMA managers are now considering other uses of the grove area (section 5.2.4).

Management Objective:

- *Continue to reforest deteriorated areas of the old citrus grove and cleared sections north of SR76 with slash pine.*

5.2.6 Monitoring

Controlling the spread of invasive exotic vegetation is an important focus of DMA management. The exotic vine, *Lygodium microphyllum*, has become increasingly prevalent (Figure 4) and has received more treatment effort in the last 3-4 years. In 1997, the District's Vegetation Management Division began field trials to evaluate the efficacy of different herbicides in ground applications. The University of Florida and Department of Environmental Protection were partners in this research. Additional plots were later established in heavily infested areas of cypress and emergent marsh to monitor the effects of aerial treatments begun in 1999 and repeated in 2000 and 2001. Results from these research trials showed that a combination of aerial and ground applications using glyphosate herbicide effectively controlled *Lygodium* with minimal non-target damage (Stocker, et al, 2002).

As *Lygodium* has dramatically increased over the DMA (Figure 9), infestations have spread into pine flatwood communities. These infestations were being treated with herbicide by ground crews. Information was needed to evaluate the timing of herbicide application relative to the application of other land management techniques to these areas. In 1999, plots were established in *Lygodium*-infested flatwoods where mechanical chopping and prescribed burning was conducted to evaluate the effectiveness of herbicide treatment relative to these management activities. This research is in progress and additional studies will be started in 2003 to evaluate whether techniques to reduce palmetto density and stature can help control *Lygodium* and restore other native vegetation.

Management Objective:

- *Continue and enhance the monitoring and evaluation of restoration activities on area vegetation and wildlife.*

5.3 Fire

Policy 05.00113.3. Prescribed fire will be a primary management tool on District lands and will be applied within fire maintained communities at appropriate intervals.

The majority of natural communities on District lands rely on frequent fire to maintain their vegetative characteristics and biodiversity. Wildfires no longer occur with historic frequency or extent and this has altered natural community structure and function. Prescribed fire attempts to mimic the benefits of natural wildfires that historically reduced fuel loads, recycled soil nutrients, and maintained natural communities by inhibiting hardwood encroachment and stimulating fire-adapted plant growth. The LSP recognizes the benefits of fire and has integrated prescribed fire planning and application into its land management strategy.

5.3.1 Fire History

Only limited fire history is available for the DMA prior to District acquisition in 1986.

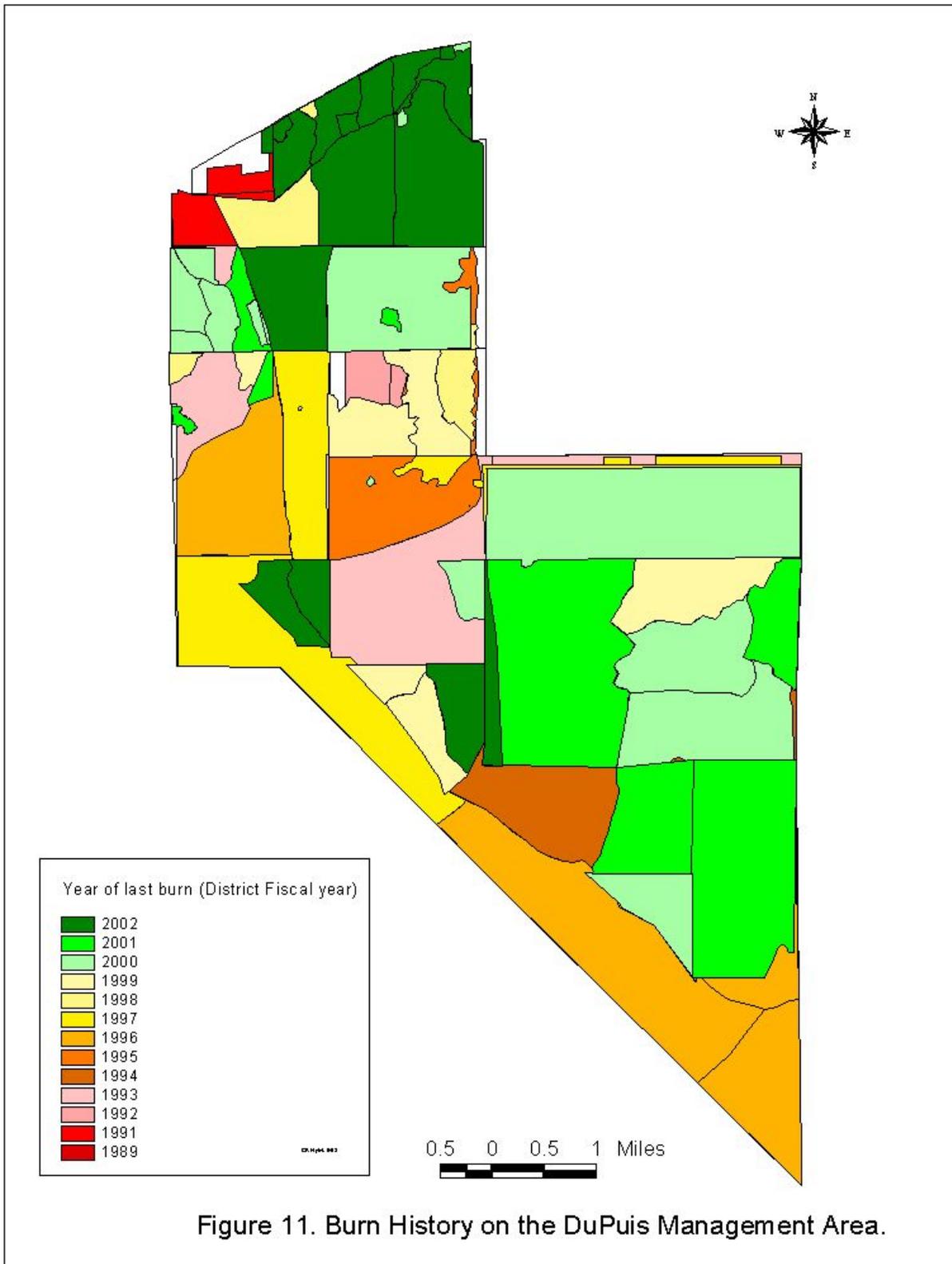
From 1980 until 1986, most of the east portion of the DMA (east of Cooter Creek Grade) was burned annually each winter after hunting season. After securing the appropriate side of a grazing unit with a blackline, ranch hands

would ride the interior jeep trails setting spot fires or dragging a burning torch. Fires were low intensity, slow moving, mainly grass fires (personal communication with former ranch manager). Burning was not allowed on the improved western portion of Dupuis or on the improved pasture in what is now the L-8 marsh area. From 1955 (date of acquisition by previous owner) until 1980, burning was conducted similarly except that those western portions of the DMA were also regularly burned prior to being improved. Pasture improvement began on the west portion in the late 1950's and was completed by about 1970 (personal communication). History before the mid 1950s is unknown; however, grazing practices for this region indicate native range areas were probably burned regularly to improve forage.

The LSP's prescribed fire program was initiated at the DMA in 1989. Fire data (prescribed and wild) is maintained in GIS to produce historic burn maps of the property (Figure 11).

5.3.2 Prescribed Fire Planning

A fire management plan is developed for each LSP management area. Each plan includes a description of location and natural community types, fire history, fire management objectives for each plant community,



fire constraints, and a burn prescription. The LSP bases all fire management plans on ecological research and professional experience. Fire frequency schedules for each natural community consider recommendations provided in *The Natural Communities of Florida* (FNAI, 1990). To mimic historic fire conditions, LSP emphasizes growing or lightning season burns (summer) where practical. Natural firebreaks are utilized where possible to promote

historic fire patterns, avoid soil disturbance, and reduce hydrologic flow disruption created by fire lines. Listed species life requirements and welfare are elements of prescribed fire planning. Application of fire, with appropriately timed herbicide treatments, is utilized as a tool for control of invasive plants and is judiciously applied where fire-adapted exotics are present. Prescribed fire planning is critical when dealing with species such as Melaleuca and Old World climbing fern.

Burns are executed using proven safety measures as defined by the Prescribed Burning Act of 1990, 590.026 F.S. This legislation and associated administrative rules outlines accepted forestry burn practices and is administered through the Florida Division of Forestry (DOF). The LSP has a five man prescribed fire crew (Land Stewardship Field Crew) and may utilize other District staff (especially Okeechobee Service Center) or cooperating agency staff, such as DOF and FWC to conduct burns at the DMA. All LSP staff have completed the state certified burn course to insure fire safety and burning efficiency.

Prescribed fire is applied on the DMA at appropriate fire intervals for each natural community. The majority of DMA habitat is south Florida pine flatwoods with a natural burn frequency of approximately three years. This interval requires that about 7,000 acres be burned annually. During District ownership, burn efforts have concentrated on applying fire to each area of the property, reducing large accumulated fire fuel loads, and providing a safer basis for future burns of increased frequency and lower intensity. At the present time, all areas of the DMA have been burned since District acquisition, the majority has been burned more than once, and most have been burned in the last 5 years. During the next 5 years, planning will emphasize increasing yearly burn acreage to attain at least a 3-year rotation. Larger, aerial burns will be used to reduce the amount of burn preparation (and number of disked firelines), needed manpower, and cost associated with more numerous smaller burns. Larger growing season burns will also better simulate historic fire scenarios. A general prescribed burn schedule for the DMA for the 5-year period of this plan is provided in Table 3.

Management Objective:

- *Continue the regular application of fire through a well-planned and documented prescribed burning program. Prescribe burn 7,000 acres per year with at least 50% burned during the months of May through August.*

5.3.3 Wildfire Suppression

Policy 05.00113.4. The DOF will be notified of all wildfires on District lands. LSP will provide initial suppression when commensurate personnel and equipment are available.

Wildfires ignited by lightning are a common occurrence throughout Florida and the DMA receives numerous lightning strikes as indicated by the many past wildfires. It is District policy, and state law, that DOF be notified when a wildfire occurs on LSP-managed properties. The Land Stewardship Field Crew will respond to and, if appropriate, begin suppression of area wildfires when detected during working hours. If possible, a fire assessment will be made before calling DOF.

Table 3. Prescribed burn schedule for the DuPuis Management Area*
FY 2003 -2007

Unit	Fiscal Year Acreage				
	2003	2004	2005	2006	2007
1		100 (S.E. 1/4)		200 (E. 1/2)	100 (N.E. 1/4)
2		495 (E. of grade)			200 (W. of grade)
3 (e)			750		750
4			538		538 (1)
5			652		652

6	547 (l)				547 (l)					
7				410 (l)				410		
8 (e)		275 (S.1/2)		474 (l)				200 (N. 1/2) (l)		
9 (e)		550 (S. 2/3)				815		265 (N. 1/3) (l)		
10	270 (S.1/2) (l)			540				270 (N. 1/2) (l)		
11		964								
12(e)	700 (l)			965 (l)				250 (N.W. 1/4) (l)		
13		973 (l)						973 (l)		
14		450 (l)						450		
15				500 (l)				500 (l)		
16				500 (l)				500 (l)		
17	704									
18 (e)				966				966 (l)		
19	2136 (l)					2136 (l)				
20	316 (l)					316				
21		1413 (l)								
22 (e)	850					1163 (l)		200 (l)		
23		2000 (E.1/2) (l)		1300 (W. 1/2) (l)						
24	1769					1769				
Yearly Total	7292	3969 (l)	7220	4836 (l)	7595	4149 (l)	6946	3846 (l)	7224	4662 (l)

* this is a planning outline and actual burn chronology will depend on weather and other limiting factors. This schedule should be followed in concert with the information on individual burn units in the DuPuis Management Area Fire Management Plan.

(l) denotes lightning season burn (May - September)

(e) denotes an eagle nest in this unit

If LSP manpower is available and other conditions are favorable, a permit will be requested from DOF to incorporate the wildfire into a controlled burn. Although infrequent, allowing these wildfires to burn will help achieve needed burn totals and will prevent counterproductive and unnecessary suppression efforts. It is recognized that the best wildfire mitigation for the DMA is to maintain the area with frequent prescribed fires promoting a healthy open forest of light fire fuel loads.

5.4 Wildlife Management

A primary objective in the management of DMA is to maintain healthy fish and wildlife populations. The LSP accomplishes this in several ways:

- performing land management activities that maintain and/or improve native wildlife habitat
- conducting specific management beneficial to protected species
- monitoring wildlife management activities through review of quarterly reports provided by the FWC
- conducting wildlife inventories where management operations may negatively impact listed species
- following management guidelines for listed species protection as determined by the *Multi-species Recovery Plan for the Threatened and Endangered Species of South Florida, Volume 1*, (U.S. Fish and Wildlife Service. 1998)

- reducing non-native pest species populations where appropriate
- maintaining a master file of confirmed and potential wildlife species
- cooperating with the FWC on wildlife management issues

Following DMA acquisition, the District contracted with the FWC to manage fish and wildlife resources, conduct wildlife surveys, implement measures to protect threatened and endangered wildlife species, regulate public hunts, and enforce all wildlife resource related rules and regulations. DMA wildlife management is directed toward production of natural species diversity consistent with the biological community types present. Success of this program requires close communication and cooperation between the LSP and FWC.

Agency efforts have concentrated on the management of the DMA's wildlife resources because the area contains only limited, artificial deep water habitat to support fisheries management. However, some fishing opportunity does exist. Canals located along the property's east perimeter, adjacent to the Corbett Wildlife Management Area, and the borrow canal inside the south perimeter's L-8 levee contain sufficient water throughout the year to maintain fish populations (Figure 2). An old borrow pit at the end of the DuPuis Grade has been recontoured and planted (Section 5.1), and a 200 foot pier constructed to improve public access and fishing opportunity. This area should show increasing public use.

Management Objective:

- *Work with the FWC to manage and enhance area wildlife. Continue to work toward the reintroduction of the federally endangered red-cockaded woodpecker. In FY 2003, request birds for translocation from the Fish and Wildlife Service.*

5.4.1 Game Management

Policy 05.00114.2d. Hunting, in areas opened for such use, is governed by the FWC regulations.

The diversity of natural communities on the DMA provides an array of game species. The area's three most popular big game species are white-tailed deer, feral hog, and wild turkey. Small game includes quail, dove, rabbit, snipe, and gray squirrel. Waterfowl are hunted in the L-8 marsh.

The DMA's public hunting program began in 1989 under the direction of the FWC. Currently, there are twelve, 3-day quota hunts from September to early December for deer and feral hog. These hunts are divided into archery, muzzleloading gun, general gun, and special hog hunts. Three, 3-day quota hunts in March are for wild turkey. All quota hunts consist of a pre-determined number of hunters randomly selected from a pool of applicants. During quota hunts, the DMA is closed to other uses and hunters are checked in and out of the property. A non-quota small game season occurs in December and January. During small game season the property remains open to all users. All harvested game is recorded and hunts are monitored by FWC biologists and law enforcement patrols. Regulations governing hunting activities on the DMA are listed in the *Florida Wildlife Code Title 39*, distributed to the public in the FFWCC publication *Dupuis Wildlife and Environmental Area Regulation Summary and Map*, and listed on the FWC web site at www.floridaconservation.org.

The number of hunters and harvest level allowed each season is commensurate with the status of game populations and will be compatible with other management objectives. Quotas and regulations for each year's hunts are reviewed by both managing agencies and are established through a designated public review process.

5.4.2 Exotic/Invasive Species

Wildlife pest species are considered to be those non-native species that are harmful to native wildlife, that negatively impact native vegetation, or that seriously interfere with management objectives. The LSP's goal for wildlife pest

management is to reduce populations to attain an acceptable level of impact to natural plant and animal communities. The DMA land manager uses personal knowledge of the problem and consultation with the FWC to define the acceptable level of impact. When population control measures are warranted, land managers consult with the FWC to determine an appropriate control technique that is cognizant of public safety and humane to the species. The effects of pest population control efforts are monitored by periodic site evaluations.

The feral hog is the predominant pest species on the DMA. Disturbance caused by these animals negatively impacts natural communities and interferes with land management operations. Their high fecundity, habitat adaptability, and incessant rooting behavior combine to make them a potent destructive force and significant environmental concern. Their disruption of soil and vegetation alter natural communities and can be especially damaging in sensitive habitats slow to recover. Hog disturbance has occurred over most of the DMA including wetland communities and hammocks. Land management objectives are affected when rooting disturbance disrupts prescribed burns by preventing the spread of fire. Areas of disturbed soil can also be more susceptible to exotic plant invasion. Rooting disruption can make perilous conditions on hiking and equestrian trails, and hog foraging can have a detrimental impact on reptile populations.

Feral hogs are considered a game species on the DMA and their harvest is regulated under FWC rules. Public quota hunts conducted in the fall by the FWC are the only method of hog population control at this time. The number of permitted hog hunters has been increased over the years to further control hog numbers and provide additional public recreation. Public hog hunting will continue to be an important use of the area and will be looked upon as the preferred hog population control method. Presently, rooting disturbance is common on the DMA but is considered to be at an acceptable level. However, this situation will be continually evaluated. Any additional control methods will be determined in cooperation with the FWC.

Other exotic fish and wildlife have been identified on the DMA including the armadillo, brown anole, two-spotted cichlid, and cuban tree frog. Although these species appear to be common, no control programs have been implemented.

5.4.3 Rare, Threatened and Endangered Species

Policy 05.00112.2. Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

Several listed wildlife species are present or have been observed historically on the DMA (Appendices BB, CC, and DD). Impacts to these species from planned land management and recreational activities are of special concern. Activities that might jeopardize the well being of these species may be altered or cancelled. District land management activities including prescribed burning, hydrologic restoration, exotic vegetation eradication, understory control, and selective forest thinning improve natural environmental characteristics that benefit listed species as well as a variety of other indigenous wildlife. Special management attention is given to the area's bald eagle population and to reintroduction of the once resident red-cockaded woodpecker.

Bald eagle nesting success has been documented on the area since 1989 and the current DMA eagle population status is monitored by the FWC. All nest trees are located and updated maps are maintained. During the breeding season no disruptive land management activities are planned within a 1500' radius of nest sites (USFWS, 1987) and nearby prescribed burns are planned to keep smoke away from nest trees. When non-breeding season burns are conducted, nest trees are protected by cutting vegetation around the tree base to limit fire intensity.

Several old red-cockaded woodpecker (rcw) tree cavities scattered throughout the DMA indicate there was probably a sizeable resident population at one time. The last active rcw cavity was destroyed by wildfire in 1989 and birds have not been seen on the area since. A program is currently underway to reintroduce this species (see *Endangered Species Recovery Plan for the Reintroduction of the Red-cockaded Woodpecker to the Dupuis Management Area, June 2002 revision*). In preparation, several land management activities are conducted to restore suitable rcw habitat and protect remaining old growth slash pine trees. Heavy-duty mowing of overgrown understory, and selective

thinning of pines and cabbage palms restore the open forest structure preferred by these birds. Frequent prescribed burning and the control of invasive exotic vegetation maintain the open forest. Reintroduction sites have been identified and artificial cavities have been inserted into specific trees in predetermined number and arrangement. After translocation onto the area, birds will be monitored to document movements, survival, and nesting success. At the time of publication, all attempts to obtain juvenile birds for translocation onto DuPuis had been unsuccessful. However, other sources will be explored and the search will continue.

5.4.4 Monitoring

The FWC has been a DMA management partner since shortly after District purchase and has assigned a full time biologist to the area since 1992. The FWC biologist regularly monitors several wildlife species and ongoing results are detailed in quarterly and annual reports.

White-tailed deer

Deer have been monitored since 1988 through annual surveys, initially by spotlight counts and later from aerial flights. Annual counts provide a trend index to assess relative population levels and also provide data on sex ratios and annual productivity. Harvest totals from annual hunts provide additional information used to assess the population. Annual deer surveys will be continued to provide general population trend information and provide data for harvest management.

Bald eagle

Eagle nesting surveys have been conducted since 1989. During the breeding season (October to May), aerial surveys are flown to determine nesting activity and success. During the nesting season, bi-monthly flights are conducted from January-May to determine nest location, use, and productivity. Ground surveillance may also be used. Several eagle pairs return annually to nest on the DMA and monitoring has documented 100 fledglings since 1989.

Wading birds

Monthly ground surveys of wading bird use have been conducted since 1996 on a 30-mile route that covers interior ponds and the L-8 marsh. Monitoring provides information on seasonal use and data are used in the evaluation of the hydrological restoration efforts in the L-8 marsh. Bird numbers have usually increased each wet season and then declined as water levels dropped over the dry season. Surveys will be continued to evaluate the effects of continuing land management projects.

Bobwhite quail

Bobwhite quail have been surveyed each April and May since 1996 at stations along 3 transects. Surveys provide population trend information that can be compared with hunter harvest totals and also provide data on the effects of upland restoration projects on this upland species. However, data have fluctuated from year to year and, at this point, a population trend is not clear. Surveys will continue to assess future hunts and habitat restoration efforts.

Breeding bird surveys

Breeding bird surveys were conducted between 1988-1992 and every June since 1994. The current survey method records all birds seen or heard at fifty stations along a 25-mile route through the DMA. Approximately 60 species have been recorded since the surveys started.

Feral hogs

Annual spotlight counts of feral hogs were conducted simultaneous with deer surveys until the mid 1990's. Counts were then conducted from aerial surveys during deer monitoring flights. Counts varied greatly and were considered unreliable as a population index. However, data was used with hunter harvests, user reports, and rooting observations to give a general indication of relative hog abundance. Recently, a hog rooting survey was tried but

provided only a paucity of data and was discontinued. The level of the DMA's hog population will continue to be an important management concern and improved monitoring techniques will be explored.

6. Public Use

Policy 05.00110. The LSP mission is to provide natural resource protection and management while allowing appropriate recreational use on designated public lands.

Section 373.1391 (1)(a) Florida statute states that wherever practical, lands acquired by the LSP shall be open to the general public for recreational uses. Public use of management areas for appropriate resource-based activities is encouraged where such use does not interfere with protection and management of environmental resources. Potential compatible uses are outlined in Section 373.1391(1)(b) F.S.

The determination of compatible public use will be based on the following criteria:

- consistency with the reason the lands were acquired
- restrictions and/or prohibitions imposed by easements, leases, reservations, adjacent land ownership, and other conditions of the purchase agreement
- infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts
- opportunities for persons with disabilities
- limitations resulting from endangered species, other sensitive natural resources, archaeological resources, or land management practices
- public health, safety and welfare
- environmental education program opportunities

Several recreational activities are appropriate and encouraged on the DMA (Figure 12). Popular activities include hiking, horseback riding, camping, hunting, fishing, birding, and general nature appreciation. Approximately 20 miles of interior roadway, 22 miles of hiking trails, and over 40 miles of equestrian trails provide access for public use. Campsites available include two general use sites, one special use site, and three backcountry sites. A public visitor's center at the DuPuis office and a fishing pier site off DuPuis Grade are handicapped accessible. User information concerning recreational activities is located at the DMA and West Palm Beach offices, and at each DMA entrance. Information will also be available on the DuPuis website, when completed.

A short trail with boardwalk planned off the DuPuis Grade will provide access through a nearby cypress dome community and will enhance public use of this area. A self-guided auto tour along Jim Lake and DuPuis Grades will highlight points of interest and management activities.

Management Objective:

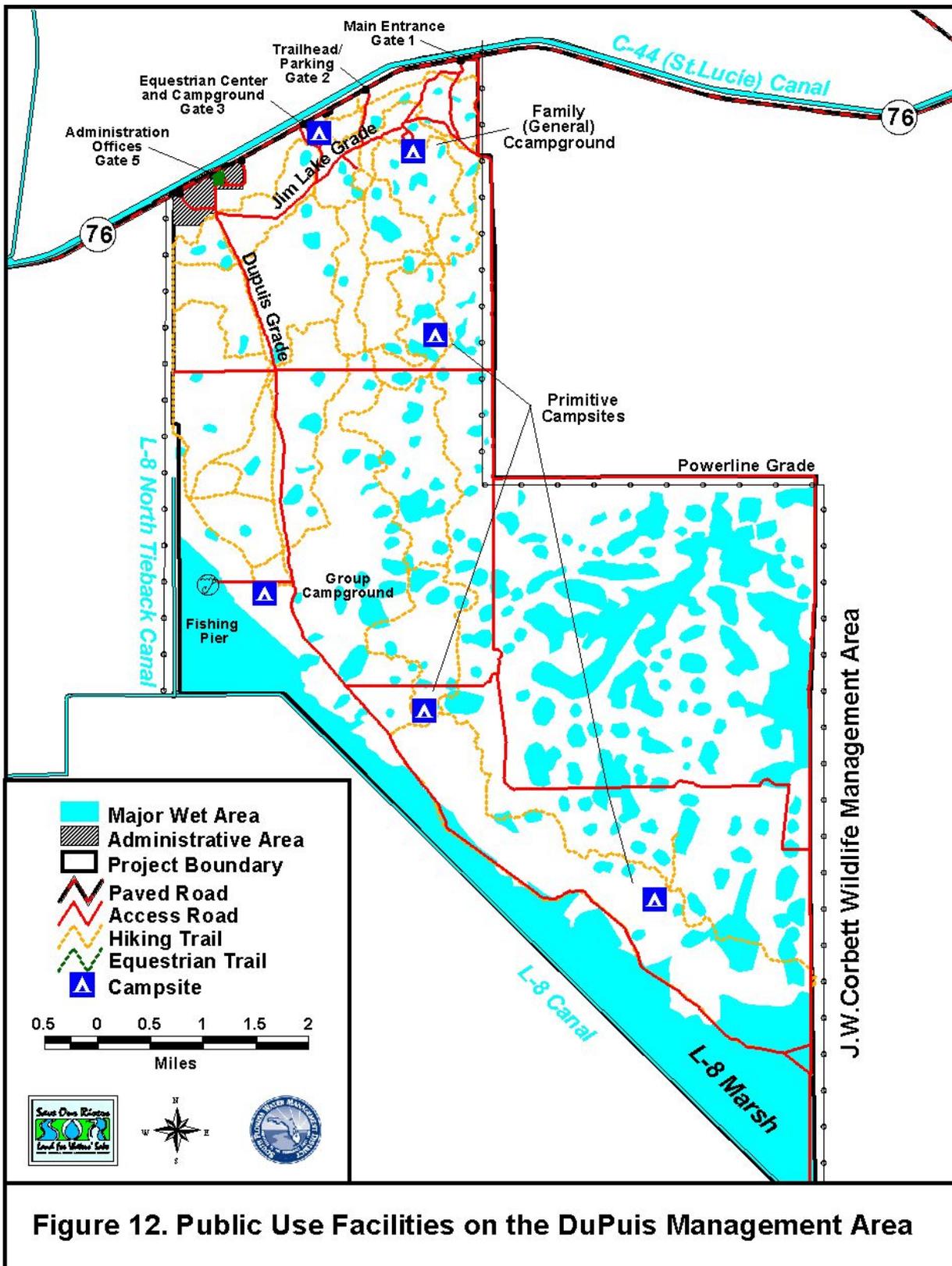
- *Develop a short trail with boardwalk off DuPuis Grade in FY 2005.*
- *Complete a self guided auto tour on the main grade in FY 2003.*

6.1 Regulation

Policy 05.00114.2a. Public use rules are set forth in 40E-7.511 F.A.C. to implement Florida statutes, sections 259.101, 373.016(2)(h), and 373.1391(1)(b). Accordingly, the District publishes and makes available a Public Use Guide for designated land management areas. The Public Use Guide is considered by the Governing Board at a public meeting advertised in accordance with Chapter 120, F.S.

Regulations in the District's *Public Use Guide* that govern activities on the DMA are supplemental to those public use regulations established by the FWC. Complete FWC regulations are listed in the *Florida Wildlife Code, Title 39* and those specific to the DMA are published in the *Dupuis Wildlife and Environmental Area Regulations Summary and Area Map*. FWC regulations are updated annually through a review cycle that provides scheduled opportunities for public input and comment. The District's *Public Use Guide* and the FWC's *Dupuis Regulations Summary and Area Map* are available at the DuPuis office and at both agency headquarters in West Palm Beach.

Through the cooperative management agreement with the District, the FWC is responsible for enforcement of all laws, rules, and regulations applicable to the operation of the DMA including those relating to hunting, wildlife resources, and fresh water aquatic life (Contract C91-2111). In addition, Florida Statutes (Chapter 375) states that the FWC shall manage vehicle use on lands owned or leased by the state and used by the general public for recreational purposes.



6.2 Resource Protection

Policy 05.00111.4. Public use shall not result in detrimental impacts to water resources. When a public use activity

produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.

Policy 05.00113.7. Security and resource protection shall be provided by professional law enforcement services through contractual and non-contractual agreements, to safeguard the public and protect natural and cultural resources on District-managed natural areas.

Management of public activities on District lands requires a strong commitment to resource protection while simultaneously promoting all appropriate public uses. The LSP emphasizes the enforcement of pertinent rules and regulations to protect natural resources and also provide a safe recreational opportunity. The resource protection program integrates contractual law enforcement and on-site caretakers to protect the natural resources and District assets. As part of the DMA's cooperative management agreement, FWC law enforcement officers conduct regular patrols throughout the year, increasing their presence during hunting seasons and at other times when public use is high. Law enforcement surveillance protects natural and cultural resources, deters illegal activity, and safeguards the public. Patrols are conducted with 4-wheeled drive vehicles and often include swamp buggies, ATV's, and aircraft.

Supplemental "enhanced" patrols are provided at the DMA through a separate contract with the FWC for District-wide wildlife law enforcement. The District's resource protection coordinator and the DMA manager review biweekly reports and meet with officers to structure patrols based on resource needs.

In addition to the FWC, Martin and Palm Beach County Sheriff's deputies occasionally patrol the area. In September 2001, a Martin County Sheriff's deputy moved into on-site District housing located near Gate 5. This arrangement will provide an immediate law enforcement presence and additional security for area.

During the 2002-2003 camping "season," a volunteer campground host lived at the equestrian campground to supervise campground activities and provide users an on-site contact. This arrangement proved very helpful to campground operation, provided another level of security, and was well received by users. Another host will be sought for the upcoming 2003-2004 season. Management will evaluate this program each season.

Resource protection is also greatly enhanced by the presence and maintenance of continuous, posted boundary fencing that unambiguously delineates SOR property perimeters. The DMA perimeter is entirely fenced and posted, and its maintenance and repair will be an ongoing management concern. Future fencing will be associated with delineating internal public use areas (dove fields, campgrounds, administrative areas, etc.) and new construction projects.

Management Objective:

- *Provide resource protection through partnership with the FWC. Review enhanced patrol activities biweekly and review program annually.*

6.3 Revenue Generation

Policy 05.00115.33b. Entrance and user fees, permits, licenses and/or advance reservations may be required for use of District lands where considered necessary by the managing agency.

Entrance and user fees are collected at the DMA to supplement operating expenses and public facilities maintenance. Fees vary depending on the activity type and are collected at self-pay stations located at each public entrance. Fee structure signs are also posted at each entrance. Fees are collected weekly, collection amounts are recorded, and all fees are deposited into an account dedicated to DMA land management activities. Records of monthly deposits are available from the DMA administrative office. Future changes to the fee structure will be made through consultation with the DuPuis Advisory Council.

Policy 05.00115.3a. Private concessions and/or agreements with non-profit organizations will be considered to

implement needed services through concession contracts.

Where appropriate, consideration will be given to the provision of needed facilities and services through concession contracts and/or agreements with private organizations. Currently there are no DMA concessions and none are planned. However, proposals will be evaluated individually and through consultation with the DuPuis Advisory Council.

6.4 Environmental Education and Community Extension

Educational programs are developed and implemented on select management areas by cooperators interested in promoting increased visitor awareness and appreciation of area natural and cultural resources. A central theme to these programs is the vital role of water management in maintaining resource viability and productivity. The LSP encourages educational partnerships through memorandums of understanding, lease, and contract agreements.

A section of the DMA office building and part of the surrounding grounds are being developed into a visitor's center and environmental education area (section 5.1). Additional parking areas are being constructed to accommodate school buses for larger visitor groups. The District is working through a contractual agreement with Florida Atlantic University's Center for Environmental Studies to develop physical site improvements and provide educational programs. An indoor exhibit room and lobby will contain interpretive information as well as diorama-like displays of native communities and animals. Outdoor areas will contain interpretive signage along a short trail through planted natural communities representative of those found on the DMA. The visitor's center will be open daily to area users and will be able to accommodate specialized programs for larger school groups. Interpretive staff will be hired to provide weekend support.

The DuPuis Advisory Council is a group composed of representatives from area recreation and conservation organizations, and agency managers that was organized to provide regular communication between staff and user groups. The council meets quarterly to discuss DMA operational activities and plans, and also member's activities and concerns as they relate to DMA operations. The District will solicit the council's advice and support of area plans that affect DMA user groups.

Management Objective:

- *Maintain public use program focus and direction through continued coordination with the FWC and through quarterly meetings with the DuPuis Public Use Advisory Council.*
- *Complete the DuPuis Visitor Center in FY 2003 and coordinate educational program development with the Center for Environmental Studies.*

7. Administration

Administration of LSP lands is directed through the Land Stewardship Division. Policy decisions, planning and budgeting, procurement of personnel and equipment, contract administration, and issues of program development are administrative tasks coordinated through the Division. Input is provided from regional land managers located at District service centers over the 16-county area. Regional land managers handle regular administrative duties from their field locations to assure quick response to local concerns and management issues. DMA administrative activities are handled through a LSP field office located at Gate 5. The primary contact for information is the DMA land manager (Appendix GG).

7.1 Planning and Budgeting

Planning is a major function of the LSP mission and is critical to maintain proper program focus, direction, and

coordination with other agencies. LSP planning is accomplished by division planning staff and in coordination with individual land managers. Division level planning develops land acquisition strategy and project evaluation, produces the SOR Land Acquisition and Management Plan, and coordinates acquisition planning with other District and outside agency personnel.

Policy 05.00117.2. General management plans provide a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every five years.

General Management Plans (GMP) are developed that detail strategies to guide management activities on individual project areas. The GMP defines goals and objectives, identifies major management issues, and describes management activities. Each plan is subject to a draft revision period where public comment and professional review is requested prior to plan approval. Each plan is revised on a five-year cycle by planning team staff.

Policy 05.00117.4. Annual work plans summarize activities corresponding with annual budget development and are prepared by the Operations Section of the LSP.

Annual work plans are developed each fiscal year for budget preparation and to address activities and projects targeted for completion within the up-coming fiscal year on individual properties. The annual work plan includes performance objectives for exotic plant control, vegetation management, prescribed burning, fencing, infrastructure maintenance, forest management, resource protection, public use development, environmental monitoring, and contract administration.

Annual DMA work plans and budgets are developed in concert with program-wide operational priorities and budgetary cycle. Current year DMA annual plans are available at West Palm Beach headquarters and the DMA office.

Policy 05.00115.5. Summaries of management activities for each management area will be reported quarterly within the District and annually as part of the Florida Forever Work Plan.

Each quarter, land managers submit regional management reports to document progress toward achieving annual work plan objectives. The DMA quarterly reports are kept on file at District headquarters and the DMA office. LSP quarterly meetings address management problems and plan for future management operations.

Policy 05.00115. The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead manager and identify whether District funding is required.

The principle source of funding for the Land Stewardship Program is the Water Management Lands Trust Fund, administered by the Florida Department of Environmental Protection. Money for this dedicated fund is generated from the sale of state documentary tax stamps and is used for property acquisition and management. Additional funding and support may be obtained from the harvest of renewable resources, land use leases, in-kind management services from cooperating management partners, no-cost services from user groups and volunteers, and funding through mitigation banking. The DMA is the only LSP project area where user fees are collected to support property management. DMA users deposit fees at entrance collection stations according to their activity and length of stay. Fee schedules are established through coordination with the DuPuis Advisory Council and are posted at each public entrance.

Budget planning begins in March during the work planning process for the following fiscal year (October-September). Overall budget availability generally determines management activities. Budget distribution among the District's five land management regions is based on a programmatic prioritization of management activities. Operational funds are distributed to most effectively accomplish the management objectives of each management area.

7.2 Infrastructure

Policy 05.00113.11. Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure includes access points, roads, trails, utilities, and minimal public facilities.

The development of adequate infrastructure for DMA public use and management activities has received extensive LSP support combined with efforts of the DOF, the FWC, and volunteer organizations. Current DMA infrastructure includes an office building and visitor's center, two employee residences, a leased residence (trailer), several outbuildings, an equipment compound, five entrances, three campgrounds, perimeter fencing, firelines, hiking and equestrian trails, a fishing pond with pier, and 20 miles of public road.

The DMA hiking and equestrian trails, campgrounds, and public roads require regular maintenance (Figure 12). The District has entered into agreements with the Florida Trail Association and the DuPuis Horsemen's Association (DHA) for hiking and equestrian trail maintenance, respectively. The DHA is also responsible for maintenance of the equestrian campground. The District maintains the family and group campgrounds and also the 20-mile DMA public road system. A one-mile section of the Powerline Grade was widened and capped in 2002 and additional improvements are planned for this Grade in coming years. The DMA fishing pier and pond requires periodic maintenance and future improvements are planned (section 5.1).

Management Objective:

- *Complete assessment and planning, and begin equestrian campground improvements in FY 2004.*

The DMA field office is located at Gate 5 in the old ranch house that has been converted into an administrative center. Office space and equipment, and a computer link with District headquarters in West Palm Beach is maintained. At this time, construction work is almost complete to improve office parking and restroom facilities as part of the Dupuis visitor's center improvement project (section 6.4).

A maintenance shop and equipment storage compound are located in the northwest section of the property and are accessed through Gate 6. Recent improvements have upgraded this area's security and have included the installation of a hurricane protection area for equipment, security fencing around the compound yard, and motion sensors in storage buildings. Construction plans are underway for a needed shop and storage building that will replace the existing old facility. Future plans for the compound area will involve the gradual replacement of other ageing storage buildings.

A District-owned mobile home is located across from Gate 5 and is leased to a Martin County Sheriff's deputy who provides additional on-site security. The District supplies utilities, water system maintenance, and is responsible for larger repairs.

There are three unimproved buildings located on the DMA that need infrequent low level maintenance. These buildings are local landmarks and will be maintained in their current condition (Governor's House, Mound House and Sheep Shearer's Shack).

Management Objective:

- *Maintain present public-use improvements (roads, signs, entrances, campgrounds, structures) using a combination of District maintenance, construction contracts, and user group involvement.*

7.3 Personnel and Equipment

The LSP is separated into five geographic regions each staffed with professional land managers directed by the

supervising land manager. Highly trained land management technicians are based at the DMA, the West Coast Field Office, and at the Orlando Service Center. The Land Stewardship Division director and additional planning staff are headquartered at the main West Palm Beach office.

Management of the DMA is the responsibility of the east-coast region land manager. Besides the regional land manager, the DMA is headquarters for equipment and personnel critical for proper stewardship in all five regions, including a 4-person crew of land management technicians and their supervisor that form the primary prescribed burn team. Current DMA staff also includes the supervising land manager, a program botanist, an administrative assistant, and a member of the Vegetation Management Division. A FWC biologist is assigned to the DMA and has an office on site. Additional management input and support comes from District planning and field station personnel.

The DuPuis area contains storage facilities for the majority of LSP's specialized heavy equipment used for earthmoving, fire suppression, all-terrain access, mowing, disking, and other stewardship activities. Equipment is stored in a fenced and secured compound area containing storage barns, a small shop, and fuel pumps. A complete equipment inventory is kept on file and is available at the DMA office.

7.4 Volunteers and Alternative Work Force

Policy 05.00115.4a. Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.

Section 373.1391(3) F.S. encourages the District to use volunteers for land management and other services. The District recognizes the merits of volunteerism and welcomes participation in activities appropriate for public involvement. Selection of appropriate management activities is at the discretion of the land manager and may fall under the general guidance of the supervising land manager. Volunteers have contributed many hours to DMA maintenance and improvement. Recreational clubs have conducted workdays to construct needed improvements to campgrounds, and provide campground and trail maintenance. Student volunteers from Roosevelt and Indiantown Middle Schools, Pahokee High School, and other student groups have planted and maintained much of the office and visitor center landscaping. In conjunction with area campouts, scout troops have painted gates and cleaned campgrounds and trails. All volunteer activities help accomplish management objectives, promote citizen involvement, and allow area staff to focus on other needs.

Student interns are also hired on a project-specific, time-limited basis to conduct fieldwork. Interns have been acquired through contracts with the Student Conservation Association (SCA) and the Center for Environmental Studies (CES) to conduct field sampling and develop visitor's center displays.

Land management objectives are also met by seeking alternative work forces. Alternative work forces can be used for projects that demand abundant manual labor and have low technical skill requirements. The DMA coordinates with other land management staff for the use of Florida Department of Correction inmates for brush clearing, trash pick up, and other maintenance activities.

7.5 Contractual Management

Policy 05.00115.1. The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.

Effective operation and management of LSP properties requires the services and cooperation of private organizations, other governmental agencies, and volunteers. Contractual management is legalized through a management agreement signed by both the District and contracting entity with the document defining responsibilities of each party.

The District has established and maintains several contractual management agreements to assist with DMA management:

Florida Fish and Wildlife Conservation Commission MOA

In June 1991, a Memorandum of Agreement (MOA, Contract-C91-2111), was formalized between the FWC and District to establish a cooperative program for the management and protection of DMA fish and wildlife, and the regulation of compatible public use. The most recent contract amendment (C91-2111-A06) extended the contractual period through September 2004.

More specifically, the agreement states that the FWC shall:

- oversee management of fish and wildlife resources in consultation with SFWMD
- undertake population surveys and research related to game and non-game species
- design, implement and regulate public hunts
- cooperate with SFWMD to increase visitor awareness and appreciation of DMA wildlife resources, native plant communities, and cultural resources through interpretive programs
- enforce all laws, rules, and regulations relating to wildlife resources and freshwater aquatic life

The agreement states that the SFWMD shall:

- appoint a lead coordinator and planning team to develop a GMP
- restore and maintain natural communities by establishing appropriate hydroperiods, control exotic plants, and conduct prescribed burns in consultation with the FWC
- review annual work plan and budget submitted annually by the FWC
- consider annual funding to the FWC
- construct and maintain all structures needed for District management activities
- provide timely notification to the FWC on actions that could impact management activities
- provide agreed upon office and equipment storage space

MOU, Florida Trail Association

The District entered into an agreement with the Florida Trail Association in 1989 for the planning, development, and maintenance of a hiking trail system on the area. The District and the FTA agreed to coordinate all activities and programs related to the trail system and the District agreed to furnish tools and specialized equipment consistent with work schedules and budgetary constraints. The trail system was installed (appendix G) and work now concentrates on maintenance and repair.

DuPuis Horsemen's Association

In 1998, The District renewed an agreement with the DuPuis Horsemen's Association (DHA) to develop and maintain the equestrian trail system and campground facilities. The agreement stated that the District would furnish tools and specialized equipment, and assist the DHA in carrying out certain trail responsibilities beyond the DHA's capability. The agreement term was for five years with three, five-year renewal periods.

FWC Resource Protection Contract

The District contracted with the FWC for additional resource protection services, (Contract C-10162). These services cover areas throughout the District and include supplemental patrols on the DMA during times of higher public use. The District's resource protection coordinator schedules patrols with input from the DMA land manager and FWC.

Florida Atlantic University, Center for Environmental Studies

The District entered into a cooperative agreement (C-12559) in April, 2000 with FAU's Center for Environmental Studies to develop a public use and education program at the DMA visitor center. The agreement included

interpretive trail and sign development, supervision of volunteers, conducting service learning projects, site maintenance, and providing a qualified weekend attendant. Future contract extensions will depend on needs and budget allotments.

Florida Natural Areas Inventory MOU

The District finalized an MOU with the FNAI to facilitate exchange of listed species data on SOR lands. New data on DMA listed species are provided to FNAI.

7.6 Management Review

Policy 05.00113c. Legislative-mandated management review (H.B. 1119) will provide input from professional peers.

Each District project area has a land management review team comprised of state, county, and private entities that periodically reviews management activities to assure they are consistent with acquisition intent and SOR objectives. Management assessments are conducted in light of the goals and objectives defined in the area's general management plan. If the review team determines that management is not in accordance with the management plan, the lead management agency provides a written explanation to the review team.

The DMA has had two management reviews. In 1998, after reviewing the current management plan and touring on-site activities, an 8-person review team concluded that DMA management was consistent with acquisition intent. However, the team recommended that prescribed burning be increased, that more acreage be burned in the growing season, that the exotic plant control program be intensified, that a timber management plan be developed, that efforts to control feral hogs be increased, and that the management plan be updated. DuPuis managers incorporated these recommendations in subsequent management objectives and activities. Goals for prescribed burning were increased and included a higher percentage of growing season burns, exotic plant control was intensified, a timber management plan was developed and implemented, and hunting quotas for feral hogs were increased.

In 2003, a team reviewed an updated management plan and toured on-site management activities. DMA management was again deemed consistent with acquisition intent and was judged mainly to meet or exceed team expectations. Only the frequency of exotic plant control did not meet expectations. The team considered a 2-year return frequency inadequate to effectively control DuPuis' exotic vegetation problem. Though DuPuis managers currently change treatment frequency in response to a number of factors (section 5.2.2), management will review the general 2-year treatment strategy.

Results of management reviews as well as District responses to management team recommendations are available at the DMA and West Palm Beach offices.

Appendix AA: Plants

(This list of Dupuis plants was compiled by D. Black (SFWMD) from lists by P. David, R. Woodbury, and The Institute for Regional Conservation.)

Trees, Shrubs, and Vines

Earleaf Acacia	<i>Acacia auriculiformis</i>
Red Maple	<i>Acer rubrum</i>
Woman's Tongue	<i>Albizia lebbbeck</i>
Golden Trumpet	<i>Allamanda cathartica</i>
Pepper Vine	<i>Ampelopsis arborea</i>
Bastard Indigobush	<i>Amorpha fruticosa</i>
Pond Apple	<i>Annona glabra</i>
Coralvine	<i>Antigonon leptopus</i>

Groundnut
Northfolk Island Pine
Shoebuttton Ardisia
Sprenger's Asparagus
Common Asparagus-fern
Pawpaw
Saltbush
Silverling
Bamboo
Orchid Tree
Tarflower
Gumbo-limbo
Beauty Berry
Hedge False Bindweed
Love Vine
Gray Sheoak
Sugarberry
Buttonbush
Cocoplum
Satinleaf
Orange
Lemon
Citron
Tangerine
Sweet Orange
Grapefruit
Cockspur Hawthorn
Colombian Waxweed
Indian Rosewood
Common Persimmon
Air-potato
Eucalyptus
Surinam Cherry
Florida Strangler Fig
Indian Laurel
Pop Ash

Trees, Shrubs, and Vines (cont.)

Dwarf Huckleberry
Firebush
Lindenleaf Rosemallow
Swamp Rosemallow
Sandweed
St. Johnswort
St. Andrew's-cross
Dwarf St. John's-wort
Four petal St. John's-wort
Atlantic St. John'- wort
Dahoon
Gallberry
Hairy Indigo
Moonflower
Morning-glory
Arrowleaf morning-glory

Apios americana
Araucaria excelsa
Ardisia elliptica
Asparagus aethiopicus
Asparagus setaceus
Asimina reticulata
Baccharis halmifolia
Baccharis glomeruliflora
Bambusa vulgaris
Bauhinia variegata
Befaria racemosa
Bursera simaruba
Callicarpa americana
Calystegia sepium limnophila
Cassytha filiformis
Casuarina glauca
Celtis laevigata
Cephalanthus occidentalis
Chrysobalanus icaco
Chrysophyllum oliviforme
Citrus aurantium
Citrus limon
Citrus medica
Citrus reticulata
Citrus sinensis
Citrus Xparadisi
Crataegus crus-galli
Cuphea carthagenensis
Dalbergia sissoo
Diaspyros virginiana
Dioscorea bulbifera
Eucalyptus sp.
Eugenia uniflora
Ficus aurea
Ficus microcarpa
Fraxinus caroliniana

Gaylussacia dumosa
Hamelia patens
Hibiscus furcellatus
Hibiscus grandiflorus
Hypericum fasciculatum
Hypericum cistifolium
Hypericum hypericoides
Hypericum mutilum
Hypericum tetrapetalum
Hypericum reductum
Ilex cassine
Ilex glabra
Indigofera hirsuta
Ipomoea alba
Ipomoea indica var.acuminata
Ipomoea sagittata

Virginia Willow
Southern Red Cedar
Lantana
White Leadtree
Gopher Apple
Rusty Lyonia
Fetterbush
Winged Loosestrife
Florida Loosestrife
Sweetbay
Mango
Cajeput Tree
Chinaberry Tree
Creeping Cucumber
Florida Keys Hempvine
Climbing Hempweed
Balsam-pear
Red Mulberry
Wax Myrtle
Mexican Palo Verde
Corkystem Passionflower
Virginia Creeper
Avocado
Red Bay
Swamp Bay
Date Palm
Slash Pine
Strawberry Guava
Common Guava
Wild Coffee
Flamevine

Trees, Shrubs, and Vines (cont.)

Laurel Oak
Dwarf Live Oak
Myrtle Oak
Live Oak
Myrsine
White Indigoberry
Rose Myrtle
Winged Sumac
Southern Dewberry
Cabbage Palm
Coastal Plain Willow
Southern Elderberry
White-Vine
Brazilian Pepper
Graytwig
Privet Wild Sensitive Plant
Coffeeweed
Septicweed
Saw Palmetto
Common Wireweed
Lima

Itea virginica
Juniperus silicicola
Lantana camara
Leucaena leucocephala
Licania michauxii
Lyonia fruticosa
Lyonia lucida
Lythrum alatum
Lythrum flagellare
Magnolia virginiana
Mangifera indica
Melaleuca quinquenervia
Melia azedarach
Melothria pendula
Mikania cordifolia
Mikania scandens
Momordica charantia
Morus rubra
Myrica cerifera
Parkinsonia aculeata
Passiflora suberosa
Parthenocissus quinquefolia
Persea americana
Persea borbonia
Persea palustris
Phoenix reclinata
Pinus elliotti
Psidium cattleianum
Psidium guajava
Psychotria sulzneri
Pyrostegia venusta

Quercus laurifolia
Quercus minima
Quercus myrtifolia
Quercus virginiana
Rapanea punctata
Randia aculeata
Rhodomyrtus tomentosa
Rhus copallinum
Rubus trivialis
Sabal palmetto
Salix caroliniana
Sambucus canadensis
Sarcostemma clausum
Schinus terebinthifolius
Schoepfia chrysophylloides
Senna ligustrina
Senna obtusifolia
Senna occidentalis
Serenoa repens
Sida acuta
Sida cordifolia

Cuban Jute
Florida Bully
Earleaf Greenbrier
Saw Greenbrier
Catbrier
Shrubby False Buttonweed
Blue Porterweed
Corkwood
Queen's Delight
Java-Plum
Rose-Apple
Pond Cypress
Bald Cypress
Yellow Elder
West Indian Almond
Blackeyed Susan Vine
Poison Oak
Nettletree
Virginia Marsh St. John's-wort
Forked Bluecurls
Sacramento Burrbark
Shiney Blueberry
Black Haw
Fourleaf Vetch
Hairypod Cowpea
Simpleleaf Chaste Tree
Trees, Shrubs, and Vines (cont.)

Sida rhombifolia
Sideroxylon reclinatum
Smilax auriculata
Smilax bona-nox
Smilax laurifolia
Spermacoce verticillata
Stachytarpheta jamaicensis
Stillingia aquatica
Stillingia sylvatica
Syzygium cumini
Syzygium jambos
Taxodium ascendens
Taxodium distichum
Tecoma stans
Terminalia catappa
Thunbergia alata
Toxicodendron radicans
Trema micranthum
Triadenum virginicum
Trichostema dichotomum
Triumfetta semitriloba
Vaccinium myrsinites
Viburnum obovatum
Vicia acutifolia
Vigna luteola
Vitex trifolia

Summer Grape
Muscadine
Calloose Grape
Creeping Oxeye
Arrowleaf Elephantear
Tallow Wood
Hercules' Club

Vitis aestivalis
Vitis rotundifolia
Vitis shuttleworthii
Wedelia trilobata
Xanthosoma sagittifolium
Ximenia americana
Zanthoxylum clava-herculis

Herbaceous

Slender Threeseed Mercury
Shyleaf
Flaxleaf False Foxglove
Saltmarsh False Foxglove
Purple False Foxglove
Sisal Hemp
Hammock Snakeroot
Tropical Whiteweed
Colic root
Alligatorweed
Sessile Joyweed
White Moneywort
Ragweed
Pink Redstem
Nodding Nixie
Mexican poppy
Jack-in-the-pulpit

Acalypha gracilens
Aeschynomene americana
Agalinis linifolia
Agalinis maritima
Agalinis purpurea
Agave sisalana
Ageratina jucunda
Ageratum conyzoides
Aletris lutea
Alternanthera philoxeroides
Altenanthera sessilis
Alysicarpus vaginalis
Ambrosia artemisiifolia
Ammannia latifolia
Apteria aphylla
Argemone mexicana
Arisaema triphyllum

Ovateleaf Indian Plantain
Scarlet Milkweed
Swamp Milkweed
Lanceolate Milkweed
Longleaf Milkweed
Savannah Milkweed
Whorled Milkweed
Green Antelopehorn
Butterfly-weed
Scale-leaf Aster
Climbing Aster
Rice Button Aster
Annual Marsh Aster
Lemon Bacopa
Tropical Waterhyssop
Bacopa
Honeycomb Head
White Screwstem
Beggarticks
Smooth Beggarticks
Smallfruit Beggarticks
Herbaceous (cont.)

Arnoglossum ovatum
Asclepias curassavica
Asclepias incarnata
Asclepias lanceolata
Asclepias longifolia
Asclepias pedicellata
Asclepias verticillata
Asclepias viridis
Asclepias tuberosa
Aster adnatus
Aster carolinianus
Aster dumosus
Aster subulatus
Bacopa caroliniana
Bacopa innominata
Bacopa monnieri
Balduina angustifolia
Bartonia verna
Bidens alba var. radiata
Bidens laevis
Bidens mitis

Pineland Rayless Goldenrod
Browne's Blechum
Pinepink
False Nettle
Wineflower
Leaf Mustard
American Bluehearts
Bluethread
Southern Bluethread
Bearded Grasspink
Manyflowered Grasspink
Tuberous Grasspink
Bandana-of-the-Everglades
Pineland Chaffhead
Florida Paintbrush
Vanillaleaf
Hairy Chaffhead
Periwinkle
Coinwort
Butterfly Pea
Coontail
Partridge Pea
Sensitive Pea
Pillpod Sandmat
Graceful Sandmat
Spotted Sandmat
Prostrate Sandmat
Pineland Daisy
Pigweed
Jack-in-the-bush

Bigelowia nudata subsp. australis
Blechum pyramidatum
Bletia purpurea
Boehmeria cylindrica
Boerhavia diffusa
Brassica juncea
Buchnera americana
Burmannia biflora
Burmannia capitata
Calopogon barbatus
Calopogon multiflorus
Calopogon tuberosus
Canna flaccida
Carphephorus carnosus
Carphephorus corymbosus
Carphephorus odoratissimus
Carphephorus paniculatus
Catharanthus roseus
Centella asiatica
Centrosema virginianum
Ceratophyllum demersum
Chamaecrista fasciculata
Chamaecrista nictitans var. aspera
Chamaesyce hirta
Chamaesyce hypericifolia
Chamaesyce maculata
Chamaesyce prostrata
Chaptalia tomentosa
Chenopodium ambrosioides
Chromolaena odorata

Coastalplain Goldenaster
Spotted Water Hemlock
Thistle
Nuttall's Thistle
Seasonvine
Pine Hyacinth
Finger-Rot
Wild Taro
Common Dayflower
Whitemouth Dayflower
Blue Mistflower
Canadian Horseweed
Florid Tickseed
Tickseed
Leavenworth's Tickseed
Swamp Lily
Shakeshake
Herbaceous (cont.)

Lanceleaf Rattlebox
Low Rattlebox
Rattleweed
Rabbitbells
Showy Rattlebox
Vente Conmigo
Pineland Croton
Florida Scrub Roseling
Ticktrefoil
Threeflower Ticktrefoil
Carolina Ponysfoot
Poor Joe
Virginia Buttonweed
Dwarf Sundew
Pink Sundew
Drymary
Pineland Twinflower
Water Hyacinth
Tall Elephants Foot
Florida Tasselflower
Lilac Tasselflower
Florida Butterfly Orchid
Fireweed
Oakleaf Fleabane
Early Whitetop Fleabane
Flattened Pipewort
Hatpins
Rarenel's Pipewort
Michaux's Cupgrass
Dogtongue Wild Buckwheat
Button Snakeroot
Baldwin's Eryngo
Button Rattlesnakemaster
Wild Coco

Chrysopsis scabrella
Cicuta maculata
Cirsium horridulum
Cirsium nuttallii
Cissus verticillata
Clematis baldwinii
Cnidioscolus stimulosus
Colocasia esculenta
Commelina diffusa
Commelina erecta
Conoclinium coelestinum
Conyza canadensis
Coreopsis floridana
Coreopsis gladiata
Coreopsis leavenworthii
Crinum americanum
Crotalaria incana

Crotalaria lanceolata
Crotalaria pumila
Crotalaria retusa
Crotalaria rotundifolia
Crotalaria spectabilis
Croton glandulosus
Croton linearis
Cuthbertia ornata
Desmodium incanum
Desmodium triflorum
Dichondra carolinensis
Diodia teres
Diodia virginiana
Drosera brevifolia
Drosera capillaris
Drymaria cordata
Dyschoriste angusta
Eichhornia crassipes
Elephantopus elatus
Emilia fosbergii
Emilia sonchifolia
Encyclia tampensis
Erechtites hieracifolia
Erigeron quercifolius
Erigeron vernus
Eriocaulon compressum
Eriocaulon decangulare
Eriocaulon ravenelii
Eriochloa michauxii
Eriogonum tomentosum
Eryngium aquaticum
Eryngium baldwinii
Eryngium yuccifolium
Eulophia alta

Dog-fennel
False Fennel
Semaphore Thoroughwort
Mohr's Thoroughwort
Lesser Florida Spurge
Flat-topped Goldenrod
Narrowleaf Yellowtops
Cottonweed
Elliott's Milkpea
Eastern Milkpea
Downy Milkpea
Bluntleaf Bedstraw
Bedstraw

Herbaceous (cont.)

Stiff Marsh Bedstraw
Oneflower Bedstraw
Southern Beeblossom
Narrowleaf Purple Everlasting
Rabbit Tobacco
Pennsylvania Everlasting
Spoonleaf Purple Everlasting
Arrasa Con Todo
Rough Hedgehyssop
Hedge Hyssop
Branched Hedgehyssop
Longhorn False Reinorchid
Waterspider False Reinorchid
Threadroot Orchid
Flatop Mille Graines
Clustered Mille Graines
Southeastern Sneezeweed
Pinebarren Frostweed
Florida Scrub Frostweed
Scorpion's Tail
Pineland Heliotrope
Camphorweed
Queen-devil
Coastalplain Hawkweed
Waterthyme
Manyflower Marshpennywort
Whorled Pennywort
Skyflower
Alligator Lily
Fringed Yellow Stargrass
Bristleseed Yellow Stargrass
Musky Mint
John Charles
Juba's Bush
Southern Blue Flag
Piedmont Marshelder
Water Willow
Cathedral Bells

Eupatorium capillifolium
Eupatorium leptophyllum
Eupatorium mikanioides
Eupatorium mohrii
Euphorbia polyphylla
Euthamia grominifolia
Flaveria linearis
Froelichia floridana
Galactia elliotii
Galactia regularis
Galactia volubilis
Galium hispidulum
Galium obtusum

Galium tinctorium
Galium uniflorum
Gaura angustifolia
Gnaphalium falcatum
Gnaphalium obtusifolium
Gnaphalium pensylvanicum
Gnaphalium purpureum
Gomphrena serrata
Gratiola hispida
Gratiola pilosa
Gratiola ramosa
Habenaria quinqueseta
Habenaria repens
Harrisella filiformis
Hedyotis corymbosa
Hedyotis uniflora
Helenium pinnatifidum
Helianthemum corymbosum
Helianthemum nashii
Heliotropium angiospermum
Heliotropium polyphyllum
Heterotheca subaxillaris
Hieracium gronovii
Hieracium megacephalon
Hydrilla verticillata
Hydrocotyle umbellata
Hydrocotyle verticillata
Hydrolea corymbosa
Hymenocallis palmeri
Hypoxis juncea
Hypoxis wrightii
Hyptis alata
Hyptis verticillata
Iresine diffusa
Iris hexagona var. savannarum
Iva microcephala
Justica crassifolia
Kalanchoe pinnata

Marsh Mallow
Red Root
Engler's Bogbutton
Small's Bogbutton
Grassleaf Lettuce
Drysand Pinweed
Piedmont Pinweed
Valdivia Duckweed
Virginia Pepperweed
Herbaceous (cont.)

Kosteletzkya virginica
Lachnanthes caroliniana
Lachnocaulon engleri
Lachnocaulon minus
Lactuca graminifolia
Lechea divaricata
Lechea torreyi
Lemna valdiviana
Lepidium virginicum

Chapman's Gayfeather
Garber's Gayfeather
Slender Gayfeather
Dense Gayfeather
Shortleaf Gayfeather
Catesby's Lily
Frog's Bit
Asian Marshweed
Canada Toad Flax
Apalachicola Toad Flax
Yellowseed False Pimpernel
Malaysian False Pimpernel
Savannah False Pimpernel
Stiff Yellow Flax
Bay Lobelia
Glade Lobelia
White Lobelia
Seedbox
Piedmont Primrosewillow
Curtiss' Primrosewillow
Yerba De Jicotea
Lanceleaf Primrosewillow
Anglestem Primrosewillow
Southeastern Primrosewillow
Seaside Primrosewillow
Mexican Primrosewillow
Marsh Seedbox
Peruvian Primrosewillow
Hairy Primrosewillow
Creeping Primrosewillow
Shrubby Primrosewillow
Savannah Primrosewillow
Sky Blue Lupine
Garden Tomato
Taperleaf Waterhorehound
Rose-Rush
Wild Bushbean
Grassleaf Barbara's Buttons
Axilflower
Snow Squarestem
White Sweetclover
Indian Sweetclover

Liatris chapmanii
Liatris garberi
Liatris gracilis
Liatris spicata
Liatris tenuifolia
Lilium catesbaei
Limnobiium spongia
Limnophila sessiliflora
Linaria canadensis
Linaria floridana
Lindernia anagallidea
Lindernia crustacea
Lindernia grandiflora
Linum medium var. texanum
Lobelia feayana
Lobelia glandulosa
Lobelia paludosa
Ludwigia alternifolia
Ludwigia arcuata
Ludwigia curtissii
Ludwigia erecta
Ludwigia lanceolata
Ludwigia leptocarpa
Ludwigia linifolia
Ludwigia maritima
Ludwigia octovalvis
Ludwigia palustris
Ludwigia peruviana
Ludwigia pilosa
Ludwigia repens
Ludwigia suffruticosa
Ludwigia virgata
Lupinus diffusus
Lycopersicon esculentum
Lycopus rubellus
Lygodesmia aphylla
Macroptilium lathyroides
Marshallia tenuifolia
Mecardonia acuminata
Melanthera nivea
Melilotus albus
Melilotus indicus

Manatee Mudflower	<i>Micranthemum glomeratum</i>
Lax Hornpod	<i>Mitreola petiolata</i>
Swamp Hornpod	<i>Mitreola sessilifolia</i>
Indian Chickweed	<i>Mollugo verticillata</i>
Nakedstem Dewflower	<i>Murdannia nudiflora</i>
Herbaceous (cont.)	
Celestial-lily	<i>Nemastylus floridana</i>
American White Waterlily	<i>Nymphaea odorata</i>
Big Floatingheart	<i>Nymphoides aquatica</i>
Cut-leaf Evening-primrose	<i>Oenothera laciniata</i>
Exotic Prickly-pear	<i>Opuntia ficus-indica</i>
Prickly-pear	<i>Opuntia humifusa</i>
Lady's sorrel	<i>Oxalis corniculata</i>
Violet Wood-sorrel	<i>Oxalis debilis</i> var. <i>corymbosa</i>
Water Dropwort	<i>Oxypolis filiformis</i>
Florida Pellitory	<i>Parietaria floridana</i>
Santa Maria	<i>Parthenium hysterophorus</i>
Spreading Cinchweed	<i>Pectis prostrata</i>
Greed Arum	<i>Peltandra virginica</i>
Frog-fruit	<i>Phyla nodiflora</i>
Drummond's Leaf-flower	<i>Phyllanthus abnormis</i>
Carry-me-seed	<i>Phyllanthus amarus</i>
Mascarene Island Leaf-flower	<i>Phyllanthus tenellus</i>
Cutleaf Groundcherry	<i>Physalis angulata</i>
Cypresshead Groundcherry	<i>Physalis arenicola</i>
Husk Tomato	<i>Physalis pubescens</i>
Pokeberry	<i>Phytolacca americana</i>
Pennyroyal	<i>Piloblephis rigida</i>
Artillery Plant	<i>Pilea microphylla</i>
Blue Butterwort	<i>Pinguicula caerulea</i>
Yellow Butterwort	<i>Pinguicula lutea</i>
Small Butterwort	<i>Pinguicula pumila</i>
Pitted Stripeseed	<i>Piriqueta caroliniana</i>
Water-lettuce	<i>Pistia stratiotes</i>
Narrowleaf Silkgrass	<i>Pityopsis graminifolia</i>
Lance-leaf Plantain	<i>Plantago lanceolata</i>
Large Plantain	<i>Plantago major</i>
Virginia Plantain	<i>Plantago virginica</i>
Snowy Orchid	<i>Platanthera nivea</i>
Stinking Camphorweed	<i>Pluchea foetida</i>
Sweetscent	<i>Pluchea odorata</i>
Rosy Camphorweed	<i>Pluchea rosea</i>
Paintedleaf	<i>Poinsettia cyathophora</i>
Fiddler's Spurge	<i>Poinsettia heterophylla</i>
Rose Pogonia	<i>Pogonia ophioglossoides</i>
Slenderleaf Chlammyweed	<i>Polanisia tenuifolia</i>
White Bachelor Button	<i>Polygala baldwinii</i>
Drumheads	<i>Polygala cruciata</i>
Tall Pinebarren Milkwort	<i>Polygala cymosa</i>
Candyweed	<i>Polygala grandiflora</i>
Procession Flower	<i>Polygala incarnata</i>
Yellow Milkwort	<i>Polygala lutea</i>
Candyroot	<i>Polygala nana</i>

Herbaceous (cont.)

Milkwort
Bachelor Button
Coastalplain Milkwort
Denseflower Knotweed
Mild Waterpepper
Dotted Smartweed
Rustweed
Pickerelweed
Purslane
Pink Purslane
Marsh Mermaidweed
Combleaf Mermaidweed
Blackroot
Giant Orchid
Mock Bishop Weed
West Indian Meadowbeauty
Pale Meadowbeauty
Meadowbeauty
Nuttall's Meadowbeauty
Least Snoutbean
Tropical Mexican-clover
Large Flower Mexican-clover
Rough Mexican-clover
Castor Bean
Rougeplant
Toothcup
Black-eyed Susan
Ruellia
Swamp Dock
Marsh-pink
Slender Marsh-pink
Large-flower Rose-gentian
Rose-of-Plymouth
Lizard's tail
Arrowhead
River Sage
Water Spangles
Limewater Brookweed
Pineland Pimpernel
Florida Feathershank
Sunnybells
Black Bogrush
Sweetbroom
Rough Skullcap
Golden Ragwort
Danglepod
Bladderpod

Herbaceous (cont.)

Blue-eyed-grass
Common Nightshade
Twoleaf Nightshade

Polygala ramosa
Polygala rugellii
Polygala setacea
Polygonum densiflorum
Polygonum hydropiperoides
Polygonum punctatum
Polyprenum procumbens
Pontederia cordata
Portulaca oleracea
Portulaca pilosa
Proserpinaca palustris
Proserpinaca pectinata
Pterocaulon pycnostachyum
Pteroglossaspis ecristata
Ptilimnium capillaceum
Rhexia cubensis
Rhexia mariana
Rhexia nashii
Rhexia nuttallii
Rhynchosia minima
Richardia brasiliensis
Richardia grandiflora
Richardia scabra
Ricinus communis
Rivina humilis
Rotala ramosior
Rudbeckia hirta
Ruellia caroliniensis
Rumex verticillatus
Sabatia bartramii
Sabatia calycina
Sabatia grandiflora
Sabatia stellaris
Saururus cernuus
Sagittaria lancifolia
Salvia riparia
Salvinia minima
Samolus ebracteatus
Samolus valerandi subsp. parviflorus
Schoenocaulon dubium
Schoenolirion albiflorum
Schoenus nigricans
Scoparia dulcis
Scutellaria integrifolia
Senecio glabellus
Sesbania herbacea
Sesbania vesicaria

Sisyrinchium atlanticum
Solanum americanum
Solanum diphyllum

Potato-tree	<i>Solanum erianthum</i>
Climbing Nightshade	<i>Solanum seaforthianum</i>
Turkeyberry	<i>Solanum torvum</i>
Tropical Soda Apple	<i>Solanum viarum</i>
Pinebarren Goldenrod	<i>Solidago fistulosa</i>
Chapman's Goldenrod	<i>Solidago odora</i> var. <i>chapmanii</i>
Narrow-leaved Goldenrod	<i>Solidago stricta</i>
Spiney Sowthistle	<i>Sonchus asper</i>
Common Sowthistle	<i>Sonchus oleraceus</i>
Woodland False Buttonweed	<i>Spermacoce assurgens</i>
Longlip Lady's-tresses	<i>Spiranthes longilabris</i>
Fragrant Lady's-tresses	<i>Spiranthes odorata</i>
Greenvein Lady's-tresses	<i>Spiranthes praecox</i>
Southern Lady's-tresses	<i>Spiranthes torta</i>
Spring Lady's-tresses	<i>Spiranthes vernalis</i>
Florida Hedgenettle	<i>Stachys floridana</i>
Pineland Scaleepink	<i>Stipulicida setacea</i>
Yellow Hatpins	<i>Syngonanthus flavidulus</i>
Wood Sage	<i>Teucrium canadense</i>
Fire Flag	<i>Thalia geniculata</i>
Reflexed Wild-pine	<i>Tillandsia balbisiana</i>
Potbellied Wild-pine	<i>Tillandsia paucifolia</i>
Cardinal Wild-pine	<i>Tillandsia fasciculata</i>
Ball-moss	<i>Tillandsia recurvata</i>
Thin-leaved Wild-pine	<i>Tillandsia setacea</i>
Spanish Moss	<i>Tillandsia usneoides</i>
Giant Wild-pine	<i>Tillandsia utriculata</i>
Oysterplant	<i>Tradescantia spathacea</i>
Inchplant	<i>Tradescantia zebrina</i>
Brittleweed	<i>Tridax procumbens</i>
White Clover	<i>Trifolium repens</i>
Southern Cattail	<i>Typha domingensis</i>
Common Cattail	<i>Typha latifolia</i>
Caesar-weed	<i>Urena lobata</i>
Horned Bladderwort	<i>Utricularia cornuta</i>
Leafy Bladderwort	<i>Utricularia foliosa</i>
Humped Bladderwort	<i>Utricularia inflata</i>
Southern Bladderwort	<i>Utricularia juncea</i>
Eastern Purple Bladderwort	<i>Utricularia purpurea</i>
Small Purple Bladderwort	<i>Utricularia resupinata</i>
Fringed Bladderwort	<i>Utricularia simulans</i>
Zig-zag Bladderwort	<i>Utricularia subulata</i>
Harsh Verbena	<i>Verbena scabra</i>
Frostweed	<i>Verbesina virginica</i>
Herbaceous (cont.)	
Florida Ironweed	<i>Vernonia blodgettii</i>
Little Ironweed	<i>Vernonia cinerea</i>
Long-leaf Violet	<i>Viola lanceolata</i>
Sleepy Morning	<i>Waltheria indica</i>
Rocketweed	<i>Youngia japonica</i>
Simpson's Rainlily	<i>Zephyranthes simpsonii</i>

Ferns

Lawn Orchid
Carolina Mosquito Fern
Giant Leather Fern
Swamp Fern
Strap Fern
Watersprite
Southern Club-Moss
Nodding Club-Moss
Japanese Climbing Fern
Tuberous Sword Fern
Boston Fern
Asian Sword Fern
Cinnamom Fern
Royal Fern
Royal Fern
Golden Polybody
Resurrection Fern
Whisk-fern
Bracken Fern
Giant Brake
Chinese Ladder Brake
Downy Maiden Fern
Hottentot Fern
Widespread Maiden Fern
Marsh Fern
Shoestring Fern
Netted Chain Fern
Virginia Chain Fern

Zeuxine strateumatica
Azolla caroliniana
Acrostichum danaeifolium
Blechnum serrulatum
Campyloneurum phyllitidis
Ceratopteris thalictroides
Lycopodiella appressa
Lycopodiella cernua
Lygodium microphyllum
Nephrolepis cordifolia
Nephrolepis exaltata
Nephrolepis multiflora
Osmunda cinnamomea
Osmunda regalis
Osmunda regalis var. spectabilis
Phlebodium aureum
Polypodium polypodioides var. michauxiam
Psilotum nudum
Pteridium aquilinum var. caudatum
Pteris tripartita
Pteris vittata
Thelypteris dentata
Thelypteris interrupta
Thelypteris kunthii
Thelypteris palustris var. pubescens
Vittaria lineata
Woodwardia areolata
Woodwardia virginica

Graminoids

Flatspike Sedge
Blue Maidencane
Bushybeard Bluestem
Purple Bluestem
Elliott's Bluestem
Hairy Bluestem
Splitbeard Bluestem
Broomsedge Bluestem
Chalky Bluestem

Graminoids (cont.)

Wiregrass
Longleaf Threeawn
Tall Threeawn
Florida Threeawn
Bottlebrush Threeawn
Common Carpetgrass
Big Carpetgrass
Tropical Carpetgrass
Bearded Hairsedge
Capillary Hairsedge
Sandy Field Hairsedge
Clustered Sedge
Long's Sedge

Abildgaardia ovata
Amphicarpum muhlenbergianum
Andropogon glomeratus
Andropogon glomeratus var. glaucopsis
Andropogon gyrans
Andropogon longiberbis
Andropogon ternarius
Andropogon virginicus
Andropogon virginicus var. glaucus
Aristida stricta var. beyrichiana
Aristida palustris
Aristida patula
Aristida rhizomophora
Aristida spiciformis
Axonopus fissifolius
Axonopus furcatus
Axonopus compressus
Bulbostylis barbata
Bulbostylis ciliatifolia
Bulbostylis stenophylla
Carex glaucescens
Carex longii

Hop Sedge
Florida Hammock Sedge
Papaya
Coastal Sandbur
Souther Sandbur
Sawgrass
Wrinkled Jointtailgrass
Toothache Grass
Bermuda Grass
Jointed Flatsedge
Poorland Flatsedge
Baldwin's Flatsedge
Variable Flatsedge
Swamp Flatsedge
Chufa Flatsedge
Yellow Flatsedge
Haspan Flatsedge
Epiphytic Flatsedge
Leconte's Flatsedge
Swamp Flatsedge
Fragrant Flatsedge
Many-spiked Flatsedge
Low Flatsedge
Pinebarren Flatsedge
Tropical Flatsedge
Durban Crowfootgrass
Summer Farewell
Needleleaf Witchgrass
Variable Witchgrass
Cypress Witchgrass
Dwarf Cypress Witchgrass
Erectleaf Witchgrass
Openflower Witchgrass
Wooly Witchgrass
Graminoids (cont.)
Roughhair Witchgrass
Southern Crabgrass
Pangola Grass
Florida Crabgrass
Jamaican Crabgrass
Indian Crabgrass
Slender Crabgrass
Jungle Rice
Barnyard Grass
Coast Cockspur
Purple Spikerush
Baldwin's Spikerush
Canada Spikerush
Knotted Spikerush
Black Spikerush
Spikerush
Goose Grass
Thalia Lovegrass

Carex lupulina
Carex vexans
Carica papaya
Cenchrus incertus
Cenchrus echinatus
Cladium jamaicense
Coelorachis rugosa
Ctenium aromaticum
Cynodon dactylon
Cyperus articulatus
Cyperus compressus
Cyperus croceus
Cyperus difformis
Cyperus distinctus
Cyperus esculentus
Cyperus flavescens
Cyperus haspan
Cyperus lanceolatus
Cyperus lecontei
Cyperus ligularis
Cyperus odoratus
Cyperus polystachyos
Cyperus pumilus
Cyperus retrorsus
Cyperus surinamensis
Dactyloctenium aegyptium
Dalea pinnata
Dichanthelium aciculare
Dichanthelium commutatum
Dichanthelium dichotomum
Dichanthelium ensifolium
Dichanthelium erectifolium
Dichanthelium laxiflorum
Dichantheliumscabriusculum

Dichanthelium strigosum var. *glabrescens*
Digitaria ciliaris
Digitaria pentzii
Digitaria floridana
Digitaria horizontalis
Digitaria longiflora
Digitaria villosa
Echinochloa colona
Echinochloa crusgalli
Echinochloa walteri
Eleocharis atropurpurea
Eleocharis baldwinii
Eleocharis geniculata
Eleocharis interstincta
Eleocharis nigrescens
Eleocharis vivipara
Eleusine indica
Eragrostis atrovirens

Gophertail Lovegrass	<i>Eragrostis ciliaris</i>
Elliott's Lovegrass	<i>Eragrostis elliotti</i>
Teal Lovegrass	<i>Eragrostis hypnoides</i>
Tufted Lovegrass	<i>Eragrostis pectinacea</i>
Purple Lovegrass	<i>Eragrostis spectabilis</i>
Coastal Lovegrass	<i>Eragrostis virginica</i>
Centipede Grass	<i>Eremochloa ophiuroides</i>
Saltmarsh Fingergrass	<i>Eustachys glauca</i>
Pinewoods Fingergrass	<i>Eustachys petraea</i>
Slender Fimbry	<i>Fimbristylis autumnalis</i>
Forked Fimbry	<i>Fimbristylis dichotoma</i>
Hairy Fimbry	<i>Fimbristylis puberula</i>
Ditch Fimbry	<i>Fimbristylis schoenoides</i>
Saltmarsh Umbrellasedge	<i>Fuirena breviseta</i>
Dwarf Umbrellasedge	<i>Fuirena pumila</i>
Southern Umbrellasedge	<i>Fuirena scirpoidea</i>
Hairy Umbrellasedge	<i>Fuirena squarrosa</i>
Cogan Grass	<i>Imperata brasiliensis</i>
Soft Rush	<i>Juncus effusus subsp. sodutus</i>
Shore Rush	<i>Juncus marginatus</i>
Bighead Rush	<i>Juncus megacephalus</i>
Many-headed Rush	<i>Juncus polycephalus</i>
Lesser Creeping Rush	<i>Juncus repens</i>
Needlepod Rush	<i>Juncus scirpoides</i>
Shortleaf Spikesedge	<i>Kyllinga brevifolia</i>
Southern Cutgrass	<i>Leersia hexandra</i>
Molasses Grass	<i>Melinis minutiflora</i>
Hair-awn Muhly	<i>Muhlenbergia capillaris</i>
Woods Grass	<i>Oplismenus hirtellus</i>

Graminoids (cont.)

Beaked Panicum	<i>Panicum anceps</i>
Fall Panicgrass	<i>Panicum dichotomiflorum</i>
Hairy Fall Panicgrass	<i>Panicum dichotomiflorum var. bartowense</i>
Maidencane	<i>Panicum hemitomom</i>
Gaping Panicum	<i>Panicum hians</i>
Long-leaf Panicum	<i>Panicum longifolium</i>
Guinea Grass	<i>Panicum maximum</i>
Torpedo grass	<i>Panicum repens</i>
Red-top Panicum	<i>Panicum rigidulum</i>
Bluejoint Panicum	<i>Panicum tenerum</i>
Warty Panicum	<i>Panicum verrucosum</i>
Switch Grass	<i>Panicum virgatum</i>
Egyptian Paspalidium	<i>Paspalidium geminatum</i>
Coral Paspalum	<i>Paspalum blodgettii</i>
Bull Crowngrass	<i>Paspalum boscianum</i>
Blue Crowngrass	<i>Paspalum caespitosum</i>
Sour Paspalum	<i>Paspalum conjugatum</i>
Dallis Grass	<i>Paspalum dilatatum</i>
Mudbank Paspalum	<i>Paspalum dissectum</i>
Florida Paspalum	<i>Paspalum floridanum</i>
Field Paspalum	<i>Paspalum laeve</i>
Gulfdume Paspalum	<i>Paspalum monostachyum</i>
Bahia Grass	<i>Paspalum notatum</i>

Brownseed Paspalum	<i>Paspalum plicatulum</i>
Early Paspalum	<i>Paspalum praecox</i>
Water Paspalum	<i>Paspalum repens</i>
Thin Paspalum	<i>Paspalum setaceum</i>
Vasey Grass	<i>Paspalum urvellei</i>
Seashore Paspalum	<i>Paspalum vaginatum</i>
Napier Grass	<i>Pennisetum purpureum</i>
Common Reed	<i>Phragmites australis</i>
Short-beaked Baldrush	<i>Psilocarya nitens</i>
Natal Grass	<i>Rhynchelytrum repens</i>
Shortbristle Beaksedge	<i>Rhynchospora breviseta</i>
Anglestem Beaksedge	<i>Rhynchospora caduca</i>
Bunched Beaksedge	<i>Rhynchospora cephalantha</i>
Chapman's Beaksedge	<i>Rhynchospora chapmanii</i>
Fringed Beaksedge	<i>Rhynchospora ciliaris</i>
White-tops	<i>Rhynchospora colorata</i>
Short-bristle Horned Beaksedge	<i>Rhynchospora corniculata</i>
Spreading Beaksedge	<i>Rhynchospora divergens</i>
Fascicled Beaksedge	<i>Rhynchospora fascicularis</i>
Threadleaf Beaksedge	<i>Rhynchospora filifolia</i>
Grass-like beaked-rush	<i>Rhynchospora globularis</i>
Pinebarren Beaksedge	<i>Rhynchospora intermedia</i>
Beaked-rush	<i>Rhynchospora inundata</i>
Giant White-tops	<i>Rhynchospora latifolia</i>
Graminoids (cont.)	
Millet Beaksedge	<i>Rhynchospora miliacea</i>
Littleseed Beaked-rush	<i>Rhynchospora microcarpa</i>
Fragrant Beaksedge	<i>Rhynchospora odorata</i>
Plumed Beaksedge	<i>Rhynchospora plumosa</i>
Fewflower Beaksedge	<i>Rhynchospora rariflora</i>
Narrow-leaf Beaksedge	<i>Rhynchospora stenophylla</i>
Tracy's Beaked-rush	<i>Rhynchospora tracyi</i>
Sugarcane Plumegrass	<i>Saccharum giganteum</i>
Indian Cupscale	<i>Sacciolepis indica</i>
American Cupscale	<i>Sacciolepis striata</i>
South Florida Bluestem	<i>Schizachyrium rhizomatum</i>
Creeping Bluestem (UR4)	<i>Schizachyrium stoloniferum</i>
Three-square Bulrush	<i>Scirpus pungens</i>
Balwin's Nutrush	<i>Scleria baldwinii</i>
Slenderfruit Nutrush	<i>Scleria georgiana</i>
Netted Nutrush	<i>Scleria reticularis</i>
Whip Nutrush	<i>Scleria triglomerata</i>
Low Nutrush	<i>Scleria verticillata</i>
Knot root Bristlegrass	<i>Setaria geniculata</i>
Lopsided Indiangrass	<i>Sorghastrum secundum</i>
Sand Cordgrass	<i>Spartina bakeri</i>
Coral Dropseed	<i>Sporobolus domingensis</i>
Smutgrass	<i>Sporobolus indicus</i>
Pineywoods Dropseed	<i>Sporobolus junceus</i>
St. Augustine's Grass	<i>Stenotaphrum secundatum</i>
Eastern Gamagrass	<i>Tripsacum dactyloides</i>
Paragrass	<i>Urochloa mutica</i>
Signalgrass	<i>Urochloa subquadriflora</i>

Appendix BB: Birds

Pied-billed grebe	<i>Podilymbus podiceps</i>
American anhinga	<i>Anhinga anhinga</i>
Mottled duck	<i>Anas fulvigula</i>
American pigeon	<i>Anas americana</i>
Green-winged teal	<i>Anas crecca</i>
Wood duck	<i>Aix sponsa</i>
American coot	<i>Fulica americana</i>
Great blue heron	<i>Ardea herodias</i>
Great white heron	<i>Ardea herodias</i>
Little blue heron	<i>Egretta caerulea</i> (SSCs)
Tricolor heron	<i>Egretta tricolor</i> (SSCs)
Snowy egret	<i>Egretta thula</i> (SSCs)
Great egret	<i>Casmerodius albus</i>
Cattle egret	<i>Bubulcus ibis</i>
Black-crowned night heron	<i>Nycticorax nycticorax</i>
Yellow-crowned night heron	<i>Nyctanassa violacea</i>
Green-backed heron	<i>Butorides straitus</i>
Least bittern	<i>Ixobrychus exilis</i>
Woodstork	<i>Mycteria americana</i> (Es;Ef)
Sandhill crane	<i>Grus canadensis pratensis</i> (Ts)
Limpkin	<i>Aramus guarauna</i> (SSCs)
Glossy ibis	<i>Plegadis falcinellus</i>
White ibis	<i>Eudocimus albus</i> (SSCs)
Common moorhen	<i>Gallinula chloropus</i>
Black-necked stilt	<i>Hemantopus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Common snipe	<i>Gallinago gallinago</i>
Short-billed dowitcher	<i>Limnodromus griseus</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Lesser yellowlegs	<i>Tringa flavipes</i>
Solitary sandpiper	<i>Tringa solitaria</i>
Pectoral sandpiper	<i>Calidris melanotos</i>
Western sandpiper	<i>Calidris mauri</i>
Least sandpiper	<i>Calidris minutilla</i>
Wild turkey	<i>Meleagris gallopavo</i>
Northern bobwhite	<i>Colinus virginianus</i>
Everglades snail kite	<i>Rostrahamus sociabilis</i> (Es;Ef)
Cooper's hawk	<i>Accipiter cooperii</i>
Northern harrier	<i>Circus cyaneus</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Osprey	<i>Pandion haliaetus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i> (Ts;Tf)
Black vulture	<i>Coragyps atratus</i>
Turkey vulture	<i>Cathartes aura</i>
American kestrel	<i>Falco sparverius</i>
Birds (cont.)	
Merlin	<i>Falco columbarius</i>
Screech owl	<i>Otus asio</i>
Barred owl	<i>Strix varia</i>

Barn owl	<i>Tyto alba</i>	
Great horned owl	<i>Bubo virginianus</i>	
White-winged dove	<i>Zenaida asiatica</i>	
Mourning dove	<i>Zenaida macroura</i>	
Ground dove	<i>Columbina passerina</i>	
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	
Smooth-billed ani	<i>Crotophaga ani</i>	
Common nighthawk	<i>Chordeiles minor</i>	
Chuck-wills-widow	<i>Caprimulgus carolinensis</i>	
Belted kingfisher	<i>Ceryle alcyon</i>	
Northern flicker	<i>Colaptes auratus</i>	
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	
Red-cockaded woodpecker+	<i>Picoides borealis</i>	(Ts;Ef)
Downy woodpecker	<i>Picoides pubescens</i>	
Pileated woodpecker	<i>Dryocopus pileatus</i>	
Eastern kingbird	<i>Tyrannus tyrannus</i>	
Great crested flycatcher	<i>Myiarchus crinitus</i>	
Eastern phoebe	<i>Sayornis phoebe</i>	
Chimney swift	<i>Chaetura pelagica</i>	
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	
Barn swallow	<i>Hirundo rustica</i>	
Tree swallow	<i>Tachycineta bicolor</i>	
Fish crow	<i>Corvus ossifragus</i>	
Blue jay	<i>Cyanocitta cristata</i>	
Blue-gray gnatcatcher	<i>Polioptila melanura</i>	
Carolina wren	<i>Thryothorus ludovicianus</i>	
Brown thrasher	<i>Toxostoma rufum</i>	
Gray catbird	<i>Dumetella carolinesis</i>	
Northern Mockingbird	<i>Mimus polyglottos</i>	
Eastern bluebird	<i>Sialia sialis</i>	
Robin	<i>Turdus migratorius</i>	
Wood thrush	<i>Hylocichla mustelina</i>	
Loggerhead shrike	<i>Lanius ludovicianus</i>	
White-eyed vireo	<i>Vireo griseus</i>	
Prothonotary warbler	<i>Protonotaria citrea</i>	
Cape may warbler	<i>Dendroica tigrina</i>	
Pine warbler	<i>Dendroica pinus</i>	
Palm warbler	<i>Dendroica palmarum</i>	
Prairie warbler	<i>Dendroica discolor</i>	
Yellow-rumped warbler	<i>Dendroica conoata</i>	
Black-throated blue warbler	<i>Dendroica caerulescens</i>	
American redstart	<i>Setophaga ruticilla</i>	
Black and white warbler	<i>Mniotilta varia</i>	
Connecticut warbler	<i>Oporornis ogilis</i>	
Birds (cont.)		
Common yellowthroat	<i>Geothlypis trichas</i>	
Louisiana waterthrush	<i>Seiurus motacilla</i>	
Red-winged blackbird	<i>Agelaius phoeniceus</i>	
Boat-tailed grackle	<i>Quiscalus major</i>	
Common grackle	<i>Quiscalus quisqualis</i>	
Eastern meadowlark	<i>Sturnella magna</i>	
Northern cardinal	<i>Cardinalis cardinalis</i>	
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>	

Chipping sparrow	<i>Spizella passerina</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Bachman's sparrow	<i>Aimophila aestivalis</i>
Indigo bunting	<i>Passerina cyanea</i>
Florida scrub jay	<i>Aphelocoma coerulescens</i> (Ts,Tf)

- + = The last red-cockaded woodpecker cavity tree was destroyed in a 1989 wildfire. Plans are currently underway to reintroduce this species to Dupuis.
- E = Endangered
- T = Threatened
- SSC = Species of Special Concern
- f = federally designated
- s = state designated

Appendix CC: Mammals

Florida panther*	<i>Felis concolor</i>	(Ef,Es)
Bobcat	<i>Lynx rufus</i>	
White-tailed deer	<i>Odocoileus virginiana</i>	
Feral pig	<i>Sus scrofa</i>	
Gray fox	<i>Urocyon cinereoargenteus</i>	
Coyote	<i>Canis latrans</i>	
Raccoon	<i>Procyon lotor</i>	
Opossum	<i>Didelphis virginiana</i>	
River otter	<i>Lutra canadensis</i>	
Striped skunk	<i>Mephitis mephitis</i>	
Nine-banded armadillo	<i>Dasypus novemcinctus</i>	
Eastern cottontail	<i>Sylvilagus floridanus</i>	
Marsh rabbit	<i>Sylvilagus palustris</i>	

Southern flying squirrel	<i>Glaucomys volans</i>
Eastern gray squirrel	<i>Sciurus carolinensis</i>
Sherman's fox squirrel	<i>Sciurus niger</i> (SSCs)
Oldfield mouse	<i>Peromyscus polionotus</i>
Hispid cotton rat	<i>Sigmondon hispidus</i>
Rice rat	<i>Oryzomys palustris</i>
Round-tailed muskrat	<i>Neofiber alleni</i>
Black rat	<i>Rattus rattus</i>
Least shrew	<i>Cryptotis parva</i>
Short-tailed shrew	<i>Blarina brevicauda</i>
Evening bat	<i>Nycticeius humerdis</i>
Yellow bat	<i>Lasiurus intermedius</i>

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- * = Last documented sighting on Dupuis was in the 1980's.
E = Endangered
SSC = Species of Special Concern
f = federally designated
s = state designated

Appendix DD: Reptiles and Amphibians

Reptiles

American alligator	<i>Alligator mississippiensis</i> (SSCs; Tf)
Florida red-bellied turtle	<i>Pseudemys nelsoni</i>
Peninsula cooter	<i>Pseudemys floridana</i>
Florida softshell	<i>Trionyx ferox</i>
Green anole	<i>Anolis carolinensis</i>
Brown anole	<i>Anolis sagrei</i>
Ground skink	<i>Scincella laterale</i>
Southeastern five-lined skink	<i>Eumeces inexpectatus</i>
Island glass lizard	<i>Ophisaurus compressus</i>
Southern black racer	<i>Coluber constrictor</i>
Southern ringneck snake	<i>Diadophis punctatus</i>
Florida kingsnake	<i>Lampropeltis getulus</i>
Eastern garter snake	<i>Thamnophis sirtalis</i>
Peninsula ribbon snake	<i>Thamnophis sauritus</i>

Florida brown snake
Rough green snake
Eastern indigo snake
Eastern diamondback rattlesnake

Storeria dekayi
Opheodrys aestivus
Drymarchon corais(Ts; Tf)
Crotalus adamanteus

Amphibians

Greater siren
Oak toad
Southern toad
Green treefrog
Squirrel treefrog
Greenhouse frog
Pig frog
Southern leopard frog
Cuban treefrog
Southern cricket frog

Siren lacertina
Bufo quercicus
Bufo terrestris
Hyla cinerea
Hyla squirella
Eleutherodactylus planirostris
Rana grylio
Rana utricularia
Osteopilus septentrionalis
Acris gryllus

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SSC = Species of Special Concern
T = Threatened
f = federally designated
s = state designated
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Appendix EE: Fish

Everglades pygmy sunfish
Bluespotted sunfish
Redear sunfish
Warmouth
Bluegill
Brown bullhead
Channel catfish
Brook silverside
Bluefin killifish
Mosquitofish
Flagfish
Golden topminnow
Two-spotted cichlid
Florida gar
Sailfin molly
Largemouth bass

Elassoma evergladei
Enneacanthus gloriosus
Lepomis microlophus
Lepomis gulosus
Lepomis machrochirus
Ictalurus nebulosus
Ictalurus punctatus
Labidesthes sicculus
Lucania goodei
Gambusia affinis
Jordanella floridae
Fundulus chrysotus
Cichlasoma bimaculatum
Lepisosteus platyrhincus
Poecilia latipinna
Micropterus salmoides

Appendix FF: DuPuis Management Area Contact List

Martin County Sheriff's Office

800 Monterey St.
Stuart, FL 34994
(561) 597-2101

Palm Beach County Sheriff's Office

3228 Gun Club Rd.
West Palm Beach, FL 33416
(561) 688-3400

Florida Department of State, Division of Historical Resources

Heather Percy, Florida Master Site File
R.A. Gray Building, 500 South Borough
Tallahassee, FL 32399-0250

Florida Division of Forestry

Okeechobee District
James Rath, District Manager
5200 Hwy. 441 N.,
Okeechobee, FL 34972-8697
Telephone: 863-462-5160
Fax: 863-462-5162

Florida Division of Forestry

Everglades District
Dave Utley, District Manager
3315 S.W. College Ave.
Davie, FL 33314
Telephone: 954-475-4120
Fax: 954-475-4126

Florida Fish and Wildlife Conservation Commission

Regional Wildlife Biologist
Steve Coughlin
8535 Northlake Boulevard
West Palm Beach, FL 33412

Florida Fish and Wildlife

DuPuis Wildlife Biologist
Valerie Sparling
23500 SW Kanner Highway
Canal Point, FL 33438
Telephone: 561-924-1939
Fax: 561-924-5114

Conservation Commission

**South Florida Water
Management District**

West Palm Beach Headquarters
Land Stewardship Division
3301 Gun Club Road
West Palm Beach, FL 33406
Telephone: 800-686-8800
Fax: 561-681-6233
Fred Davis, Division Director
Pete David, Sr. Supv. Environmental Analyst

**South Florida Water
Management District**

DuPuis Management Area
23500 SW Kanner Highway
Canal Point, FL 33438
Telephone: 561-924-5310
Fax: 561-924-5114
Bert Trammell, Land Manager
David Black, Monitoring Coordinator
Casey Brown, Staff Administrative Resource Associate

DuPuis Advisory Council

Chairman
23500 SW Kanner Highway
Canal Point, FL 33438
Telephone: 561-924-5310
Fax: 561-924-5114

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Appendix HH: History of the DuPuis Property

History of the DuPuis property. Steve Farnsworth. Unpublished report to the SFWMD. 2003.

The DuPuis Reserve has a long history of human usage. The southern border of the reserve is part of a physiographical feature known as the Loxahatchee Scarp. Within a half mile distance, the sandy soils of the pine flatwoods at 20 to 25 feet in elevation drop down to the mucky soils of the Everglades sawgrass marshes at elevations below 15 feet (USGS 1971). Shallow wet prairies occupy the transitional areas. Upland areas in close proximity to large water bodies were attractive sites for early Americans, who would establish seasonal camps and permanent settlements in hammocks accessible by water. There are four known archeological sites, all located along the southern edge of the site (Wheeler 2000). Most of the sites are located in close proximity to sloughs that flow into the Everglades. These sites are associated with the Belle Glade culture and have the pottery, circular and linear earthworks, and the reliance on freshwater resources that characterize this culture. The presence of shark teeth, shell tools, sea turtle remains, and chert artifacts indicate that the inhabitants of these sites had trade networks with coastal areas and central Florida.

Site 1 contains a circular ditch feature nearly 900 feet in diameter. It is believed to have been constructed between 1000 B.C. and A.D. 200. Human habitation in the hammocks associated with the ditch appears to have continued until A.D. 1100. Site 2 was a small crescent-shaped earthwork with a pair of linear earthworks extending southwards from the crescent. The earthworks have been obliterated by grazing sheep and cattle. Human habitation in the nearby hammock at this site was believed to be short-lived. Site 3 is in a large hammock and is believed to be a village or hamlet midden with a long period of occupation. There are no earthworks associated with this site and human habitation is believed to have ceased around A.D. 1100. Site 4 is a conical sand mound with outlying crescent-shaped earthworks. It is believed to be a burial mound and was in use into the Spanish contact period (Wheeler 2000).

The only historical account of the native Americans that lived near the reserve comes from Hernando d'Escalante Fonteneda, a Spanish shipwreck survivor taken captive as a young boy by the Calusa tribe in 1545 and rescued by Jean Ribault seventeen years later. He later wrote an account of his captivity, which was translated by True (1944). Fonteneda mentions a tribe called the Mayaimi which occupied the area north and east of the Lake of Mayaimi (present-day Lake Okeechobee). The Mayaimi had a major town called Guacata, which was located somewhere near present-day Pahokee, and numerous small settlements around the lake. The Mayaimi were probably the last users of the DuPuis Reserve burial mound.

The population of the Mayaimi declined rapidly in the early 1700s, as they were decimated by European diseases, slave raids, and warfare with other tribes. In the 1740s, a Spanish mission was established near present-day Miami. Documents related to this mission indicate that the “Maymies, Santaluzos (St. Lucie), and Mayacas “ had united and were living four days journey from the mission in the interior (Hann 1991). The Mayacas were originally from the upper St. John’s River area in Volusia County