

Rivers Road Preserve Land Management Plan



Managed by:
Collier County
Conservation Collier Program

January 2014 – January 2024 (10 yr plan)

Prepared by: Collier County Conservation Collier Staff

2019 5-year update

Rivers Road Preserve

Land Management Plan Executive Summary

Lead Agency: Conservation Collier Program, Collier County Parks & Recreation Division, Collier County Public Services Department

Properties included in this Plan: Rivers Road Preserve

Preserve lands consist of four contiguous parcels located within Township 48, Range 27 and Section 30, in Collier County, Florida (00214760000, 00216000001, 00215440002, and 00217080004). Full legal descriptions are provided in Appendix 1.

Total Acreage: 76.74 acres

Management Responsibilities: Collier County Conservation Collier Program staff

Designated Land Use: Preservation

Unique Features: The preserve is adjacent to and contributes to an important wildlife corridor connecting two private conservation easements through a wildlife crossing under Immokalee Road to the over 60,000 acre Corkscrew Regional Ecosystem Watershed (CREW) owned by the South Florida Water Management District and Audubon Florida.

Management Goals:

Goal 1: Maintain High Quality Habitat with Limited Disturbance for the Benefit of Native Flora and Fauna

Goal 2: Remove and Manage Invasive, Exotic Plants

Goal 3: Manage Wildlife

Goal 4: Create and Implement a Prescribed Fire Program

Goal 5: Restore Native Vegetation

Goal 6: Maintain Public Access Trails and Amenities

Goal 7: Facilitate Uses of the Site for Educational Purposes

Goal 8: Provide a Plan for Disaster Preparedness

Goal 9: Coordinate with Stakeholders, Partners, and Regional Agencies

Goal 10: Monitor Public Use

Public Involvement: A public meeting was held on June 25, 2013 to review this Final Management Plan. The meeting was open to the general public and neighboring property owners received a written invitation. The public meeting gave the general public the opportunity to learn about the Conservation Collier Program, future land management plans and the plan for public use at the Rivers Road Preserve. This forum also allowed the public to voice any concerns or objections they may have with any of these issues as presented here in the Final Land Management Plan. Staff will also reach out to neighboring churches and Boy and Girl Scout groups to continue to seek partnership opportunities. Staff will work with the Collier County Sheriff's Department to discuss public use, security, and access issues.

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1.0 Introduction

The Rivers Road Preserve is a 76.74 acre preserve located approximately 2.5 miles east of Collier Boulevard (CR 951) within the Rural Fringe Mixed Use District (Receiving Area) in Collier County, Florida. Current access to the preserve is from Rivers Road on the west or from Moulder Drive to the east. The preserve is comprised of a mix of vegetative communities, including pine flatwoods, mixed wetland hardwoods, cypress and wetland forested mixed, with small areas of freshwater marsh and inland ponds and will serve the public as a wildlife viewing area.

The Preserve was purchased by Collier County in two phases. The first 62.98 acres were purchased in December 2008, followed by an additional 13.76 acres in 2010. The County holds fee simple title. The preserve was officially named on December 22, 2008 and was opened for public access in May 2016. A nature trail, benches, picnic area, educational kiosk, and interpretive signs are available for public use

The Conservation Collier Program manages this parcel under authority granted by the Conservation Collier Ordinance 2002-63, as amended (available from www.municode.com). Conservation, restoration and passive public recreation are the designated uses of the property. Management activities allowed are those necessary to preserve and maintain this environmentally sensitive land for the benefit of present and future generations. Public use of this site must be consistent with these goals.

| Table 1: Acquisition History and Status of Rivers Road Preserve | |
|--|---|
| Year | Benchmark |
| 2007 | Property nominated to the Conservation Collier Program |
| 2007 | Initial site assessment by Conservation Collier staff |
| 2007 | Approval of Initial Criteria Screening Report for first 9 properties by the Conservation Collier Land Acquisition Advisory Committee |
| 2008 | Approval of Initial Criteria Screening Report for two additional properties by the Conservation Collier Land Acquisition Advisory Committee |
| 2008 | 62.98 acres approved for purchase by the Board of County Commissioners (BCC) Closed on properties in December 2008 |
| 2008 | Officially named Rivers Road Preserve |
| 2010 | 13.76 acres approved for purchase by the Board of County Commissioners (BCC) Closed on remaining properties in January 2010 |
| 2011 | Developed Interim Management Plan- BCC approved |
| 2014 | Completed Final Management Plan BCC approved May 2014 |
| 2016 | Official opening ceremony for the public was held May 2016 |
| 2019 | Five-year update to the Final Management Plan BCC approved |

An Interim Management Plan for Rivers Road Preserve was approved by the Collier County Board of County Commissioners (BCC) in 2011. This is the Final Management Plan for the Rivers Road Preserve. This management plan was approved by the BCC on January 28, 2020. Updates to the plan will be completed every 5 years.

1.1 Conservation Collier: Land Acquisition Program and Management Authority

The Conservation Collier Program was originally approved by voters in November 2002 and subsequently confirmed in the November 2006 ballot referendum. Both voter-approved referendums enable the program to acquire environmentally sensitive lands within Collier County, Florida (Ordinance 2002-63, as amended). Properties must support at least two of the following qualities to qualify for consideration: rare habitat, aquifer recharge, flood control, water quality protection, and listed species habitat. The BCC appointed a Conservation Collier Land Acquisition Advisory Committee (CCLAAC) to consider any selected or nominated properties that an owner has indicated a willingness to sell. The committee recommends property purchases for final approval by the BCC.

Lands acquired with Conservation Collier funds are titled to “COLLIER COUNTY, a political subdivision of the State of Florida, by and through its Conservation Collier program.” The Board of County Commissioners of Collier County established the Conservation Collier Program to implement the program and to manage acquired lands. As such, Conservation Collier holds management authority for the Rivers Road Preserve.

1.2 Purpose and Scope of Plan

The purpose of the plan is to provide management direction for the Rivers Road Preserve by identifying the goals and objectives necessary to eliminate or minimize any threats to the resources and integrity of the preserve. This text is a working document that establishes the foundation of a ten-year plan by identifying the appropriate management techniques necessary to preserve and/or restore the resource.

This plan will balance resource restoration and protection with natural resource-based recreational and educational use while looking at listed species protection and maintenance of the site free of invasive, exotic plant and animal species. This plan is divided into sections that include an introduction, descriptions of the natural and cultural resources, projected uses of the property, and management issues, goals and objectives.

1.3 Location

The Rivers Road Preserve property is located approximately 2.5 miles east of Collier Boulevard (CR 951) within the Rural Fringe Mixed Use District (Receiving Area) in Collier County, Florida (Figures 1 & 2). Single family homes exist to the north, east and west of the property, with one private residence within the boundaries of the preserve. A private Conservation Easement exists to the south. A church encompassing several parcels exists to the north and northeast of the property along with a parcel that contains remnants of a small tree nursery. It is located in Township 48, Range 27 and Section 30, in Collier County, Florida. The legal descriptions are attached as Appendix 1.

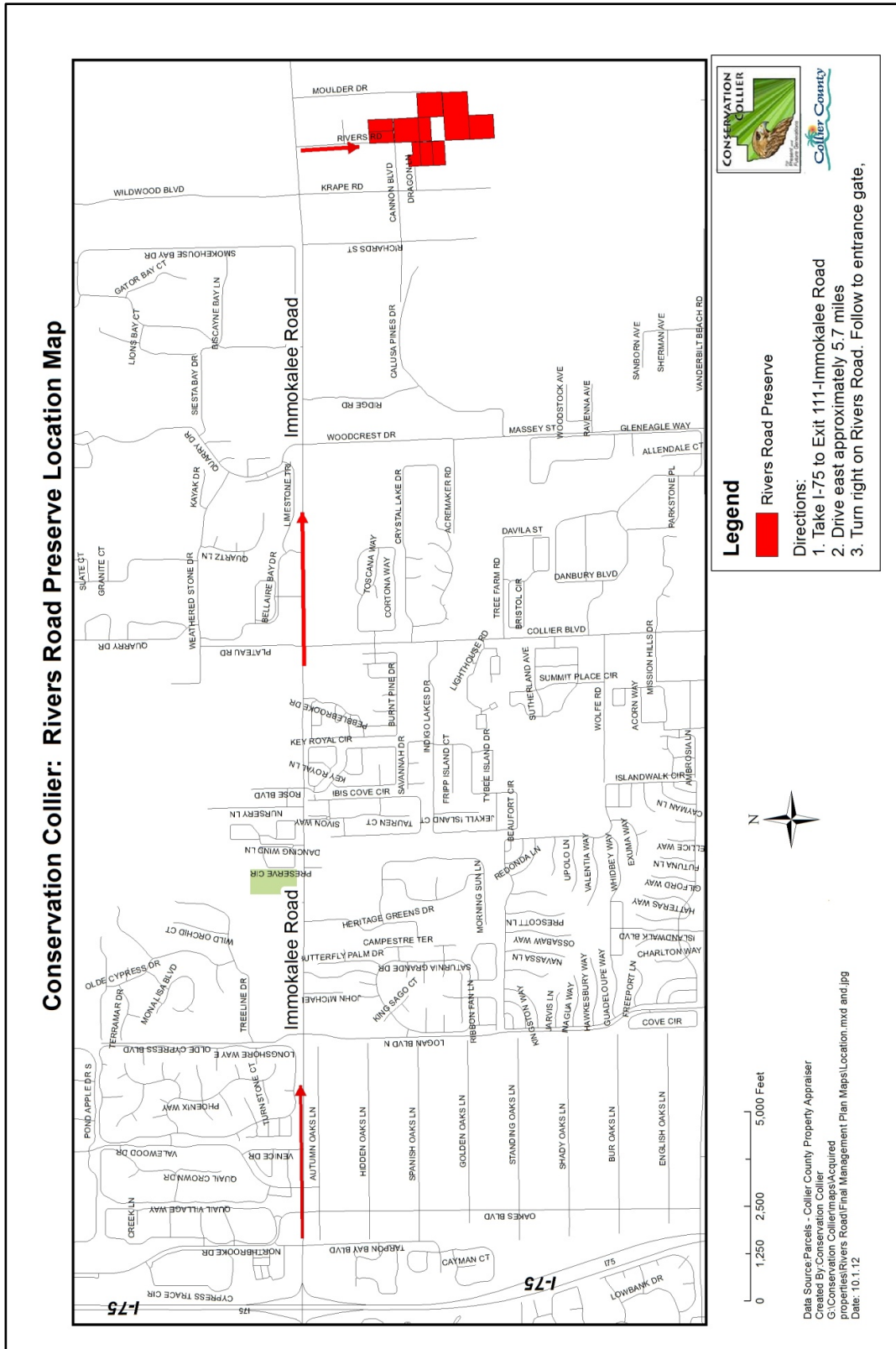


Figure 1: Rivers Road Preserve Location Map

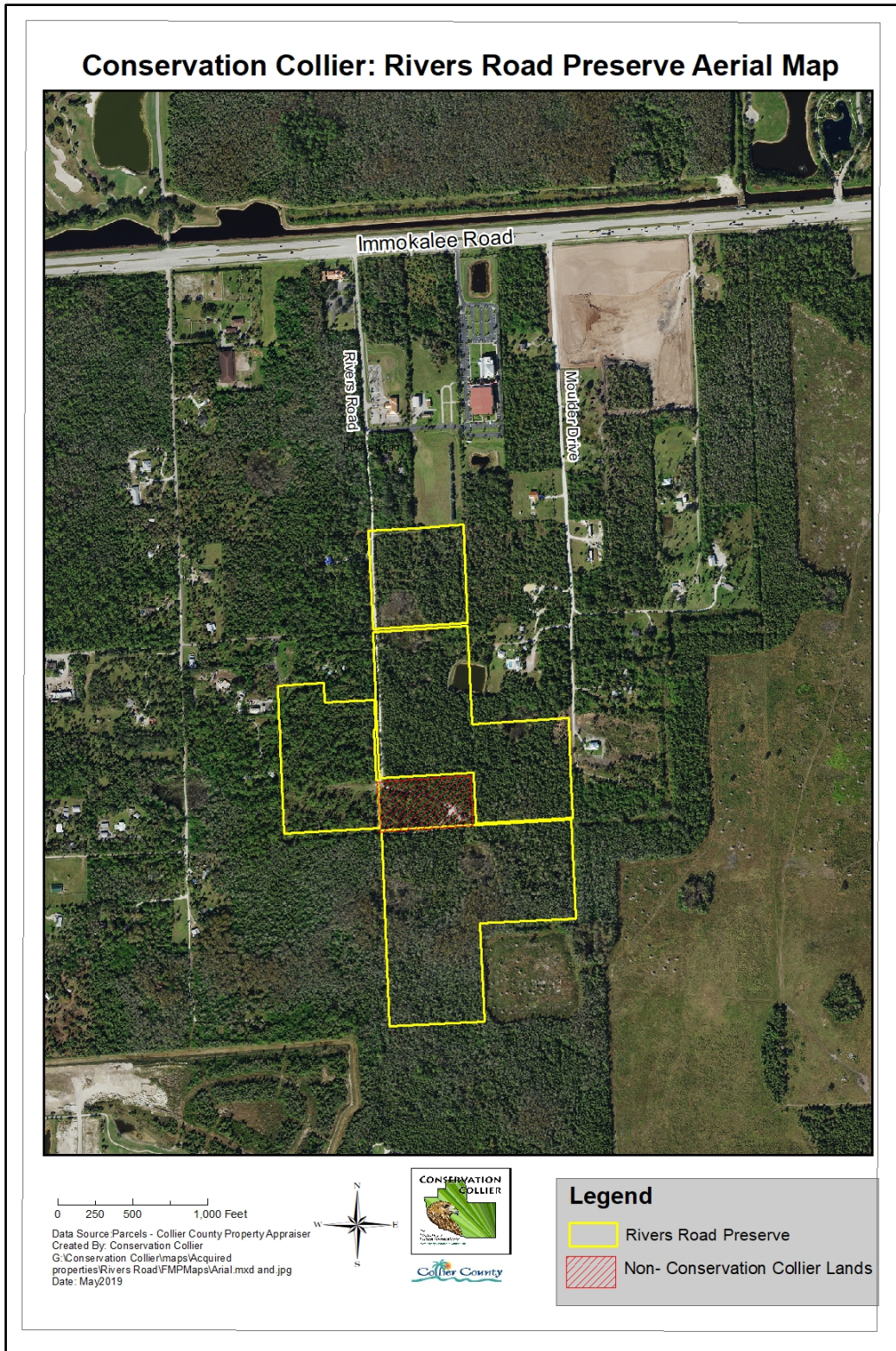


Figure 2: Rivers Road Preserve 2019 Aerial View

1.4 Regional Significance

Despite having 881,070 acres, or 68%, of County lands protected in conservation status (FNAI, Feb 2019), Collier County has lost, and is losing, many of its rare and unique habitats. The Conservation Collier Ordinance (2002-63, as amended) identifies these specific habitats and gives preference to them in acquisition evaluations. These habitats include, in order of preference: tropical hardwood hammocks, xeric oak scrub, coastal strand, native beach, riverine oak, high marsh (saline) and tidal freshwater marsh. Although the Rivers Road Preserve does not contain any of these preferred habitats; it does contain eight observed native plant communities and outstanding examples of pop ash swamp, other wetland dependent plant species and several listed plant species. The habitat observed and the location supports the presence of approximately nine listed species and many non-listed wildlife species. This preserve provides habitat for the listed Florida panther (*Puma concolor coryi*) with several telemetry points and other observations of non-collared panthers on the preserve and in close proximity. The protection and management of these listed species and their habitat is critical to their long term existence in Collier County and throughout their ranges. The preserve is adjacent to and contributes to an important wildlife corridor connecting two private conservation easements through a wildlife crossing under Immokalee Road to the over 60,000 acre Corkscrew Regional Ecosystem Watershed (CREW) owned by the South Florida Water Management District and Audubon of Florida’s Corkscrew Swamp Sanctuary (See Figure 3).

1.5 Nearby Public Lands and Designated Water Resources (Conservation Lands, in order of increasing distance are identified in Table 2 below and Figure 3).

| Table 2: Public Lands Located Near the Rivers Road Preserve | | | |
|---|------------------|-----------|-------------------------------|
| Preserve Name | Distance (miles) | Direction | Type |
| Corkscrew Regional Ecosystem Watershed | 1.5 | N | State/ SFWMD |
| Red Maple Swamp Preserve | 2.5 | N | County / Conservation Collier |
| Alligator Flag Preserve | 4 | W | County / Conservation Collier |
| Nancy Payton Preserve | 5 | S | County / Conservation Collier |
| Logan Woods Preserve | 5.5 miles | NW | County / Conservation Collier |
| Winchester Head | 8 | NE | County / Conservation Collier |
| Picayune Strand State Forest | 8 miles | S | State / DEP |
| Red Root Preserve | 10 | NE | County / Conservation Collier |
| Railhead Scrub Preserve | 10 | NW | County / Conservation Collier |
| Florida Panther National Wildlife Refuge | 10 miles | SE | Federal Government |
| Panther Walk Preserve | 11 | NE | County / Conservation Collier |
| Pepper Ranch Preserve | 15 | NE | County / Conservation Collier |
| Caracara Prairie Preserve | 15 | NE | County / Conservation Collier |

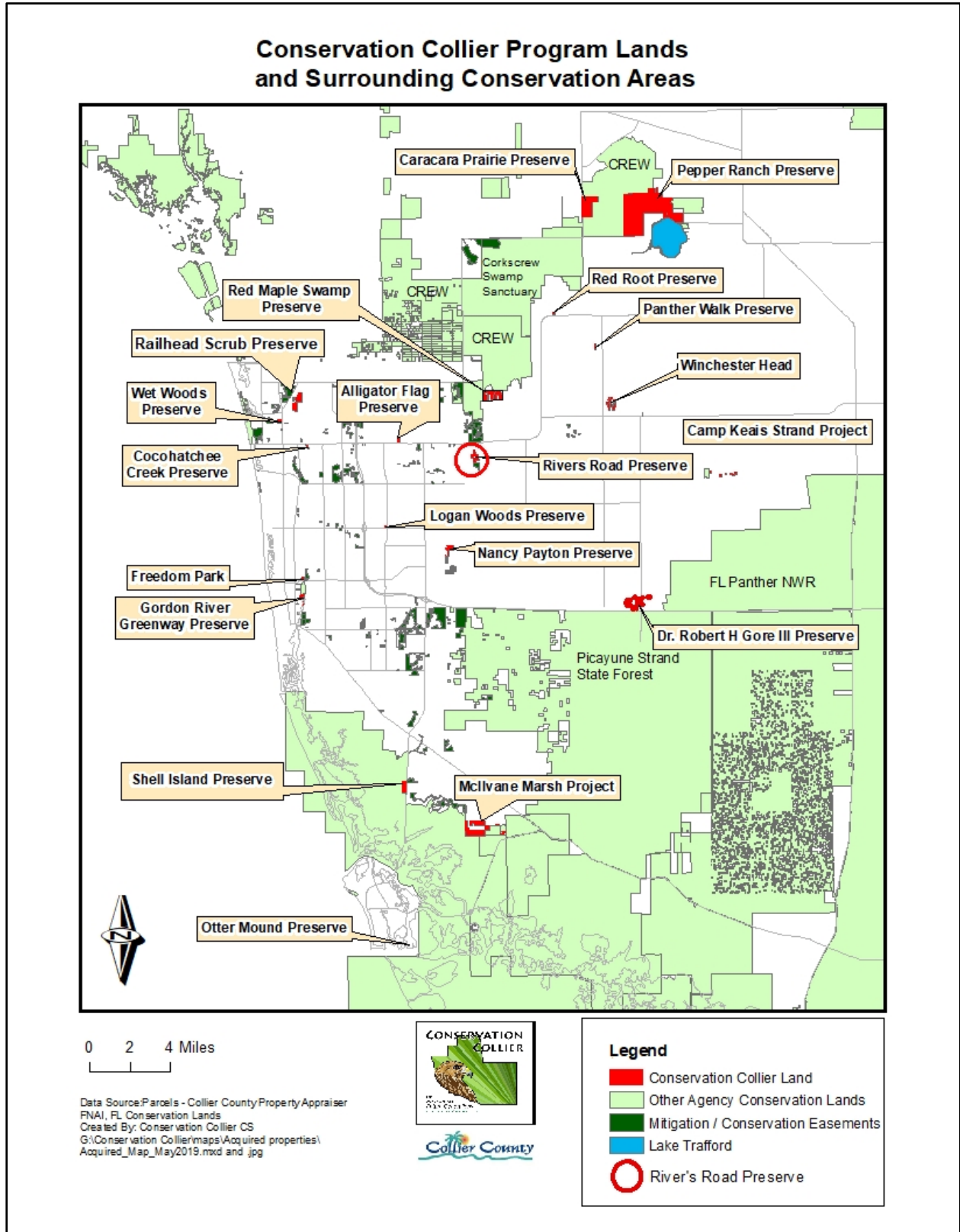


Figure 3. Conservation Collier Preserves and Designated State and Federal Land or Conservation Easements Existing in Collier County

1.6 Public Involvement

Neighborhood involvement was sought through direct mailing notices for public meetings to residents within the surrounding area, owners of properties that border the preserve, and organizations with an interest in the preserve. Any major changes or management activities, such as prescribed fire that are likely to generate an intrusive aspect or that in some way affect neighboring properties will be reviewed with these contacts prior to conducting the activity. Preserve activities will be posted on the Conservation Collier website and also through public notices. Staff will also seek volunteers and partnerships through these contacts.

Two local Boy Scouts completed their Eagle Scout Projects on the preserve. In 2014, Joseph Reems Landrith built and donated a large picnic table and four benches that were placed in the picnic area and along the hiking trails. In 2017, Thomas Hogle built an educational kiosk that was installed next to the parking area (see photos below). Both projects have benefited the preserve experience for visitors and will continue to do so for years to come.



Staff will continue to work with local Boy and Girl Scout troops and may attempt to partner with neighboring churches. Naples Church to the north has a preserve to the south of their property that is directly adjacent to the Rivers Road Preserve along the northeast side. Staff will attempt to work with them to coordinate management activities.

2.0 Natural and Cultural Resources

2.1 Physiography

The Rivers Road Preserve lies within the Southwestern Flatwoods District. This largely low, flat district was developed on rocks and sediments that range mainly from Miocene to Pleistocene in age. Surficial materials are dominantly sand (often with relatively clayey substrate) limestone and organic deposits (Myers & Ewel 1990).

2.1.1 Topography and Geomorphology

The preserve is located in the Southwestern Slope region of the South Florida Water Management District. Topography has been established using a Light Detecting and Ranging (LIDAR) map (Figure 4). The topographic contours of the preserve range from 7 feet in the pop ash areas and around the man-made lake to 14 feet in the upland areas.

2.1.2 Hydrology/Water Management

Flat topography, sandy soils and seasonal precipitation strongly influence hydrological processes in flatwoods. During the rainy season, flatwood soils become saturated and poorly aerated and there may be standing water for varying periods of time. During the dry season however, high evapotranspiration draws much water from the upper horizons thus soil moisture becomes rapidly depleted and persistent drought conditions result (Myers & Ewel 1990). A small pond was excavated in 2000 on a residential property to the east of the preserve, with a portion of the pond within the preserve. The northern portion of the preserve has an unpaved road running alongside the western boundary while another unpaved road is just beyond the eastern boundary. In between the two roads and to the north of the preserve are just over 30 acres of land currently being used for church buildings and mostly cleared open space. To the south of the property is the Olde Florida Golf Course Conservation Area that was set aside when the golf course was built in the early 1990s. No water management structures exist on the preserve and no water management improvements are planned for the future. The property is mapped by the South Florida Water Management District (SFWMD) to contribute significantly to the Lower Tamiami aquifer at 21"-102" annually and the surficial aquifer significantly at 56"-67" annually.

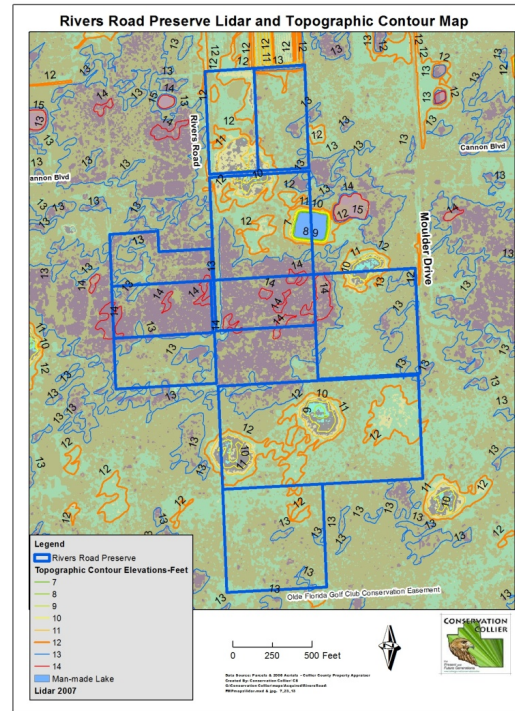


FIGURE 4. RIVERS ROAD PRESERVE Lidar and Topographic Contour Map

2.1.3 Geology

The geology of Collier County is characterized by complex sequences of interbedded sands, clays, and limestone. Closest to the surface is the Holocene aged Pamlico Sand Formation, approximately ten feet thick and composed primarily of unconsolidated quartz sand and some silt. The Pamlico Sand unconformably overlies the Pleistocene aged Fort Thompson and Caloosahatchee Formations, which vary from a few feet to more than twenty feet in thickness and are characterized by shelly and sandy limestone with vugs and solution cavities (Miller 1986).

Below the Fort Thompson and Caloosahatchee Formations are the Ochopee and Buckingham Members of the Pliocene aged Tamiami Formation, which are at least 200 feet thick in the surrounding areas (Oaks & Dunbar 1974). The Ochopee Limestone unconformably overlies the Buckingham Limestone and/or the equivalent Cape Coral Clay. This unconformity marks the bottom of the surficial aquifer separating it from the brackish underlying aquifer below. Then the Hawthorn Formation, rich in phosphate and other heavy minerals (Scott 1988), overlies the Oligocene age Suwannee Limestone and Eocene age Ocala Limestone that form the Floridan Aquifer System in Southwestern Florida.

2.1.4 Soils

Soils data is based on the Soil Survey of Collier County, Florida (USDA/NRCS, 1990, rev. 1998). Approximately 55% of the soils mapped on this preserve are Riviera fine sand, limestone substratum, a hydric soil. This nearly level, poorly drained slough soil usually supports scattered areas of South Florida slash pine, cypress, cabbage palm, wax myrtle, sand cord grass, gulf muhly, blue maidencane, South Florida Bluestem and chalky bluestem. Vegetation observed in the preserve areas containing this soil includes South Florida slash pine, cypress, cabbage palm, and wax myrtle. Approximately 45% of the soils mapped on this preserve are Boca fine sand, a non-hydric soil. This nearly level, poorly drained soil usually supports scattered areas of pine and cabbage palm and an understory of saw palmetto, chalky bluestem, creeping bluestem, lopsided Indiangrass, and pineland threeawn. Vegetation observed on the preserve where these soils are contained includes cabbage palms with an understory of saw palmetto and some pines.

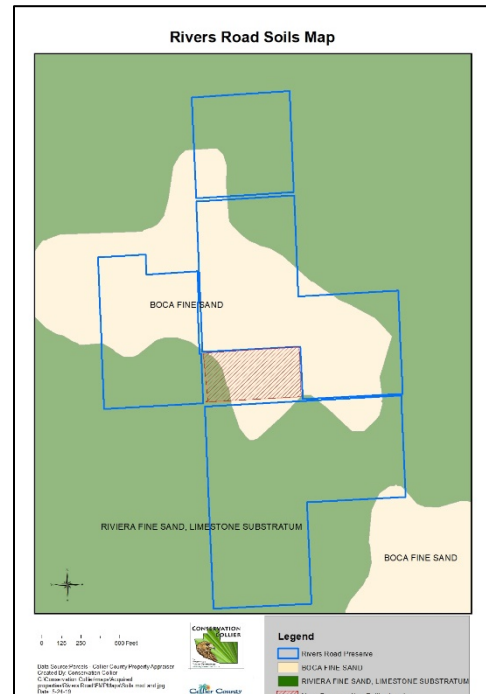


Figure 5. Rivers Road Preserve Soils

2.2 Climate

The Rivers Road Preserve is located in an area of Florida that is influenced by both a humid subtropical climate and a tropical savanna climate in which temperatures are moderated by winds from the Gulf of Mexico and the Atlantic Ocean. A tropical savanna climate is characterized by sharply delineated wet and dry seasons and average monthly temperatures greater than 64° Fahrenheit. Monthly rainfalls may exceed ten inches during the wet season. Humid subtropical climates are characterized by less extreme rainfall fluctuations between wet and dry seasons and average monthly temperatures less than 64° Fahrenheit in some months.

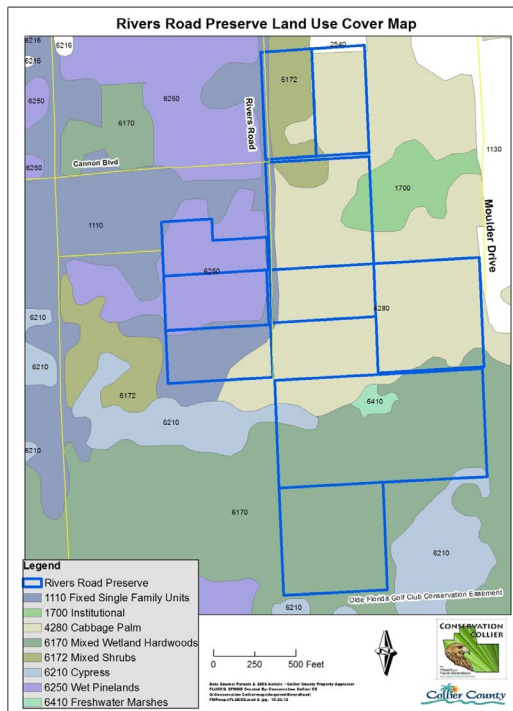
The average annual temperature for this portion of Collier County is approximately 75° Fahrenheit. The warmest months are usually July and August. The humidity is high during these months but frequent afternoon thunderstorms prevent excessively high temperatures.

Two-thirds of the annual rainfall occurs in the wet season from May to October. Thunderstorms are frequent during the wet season occurring every two out of three days between June and September. Rainfall records for the area indicate that there is no significant variation in the annual rainfall throughout much of the county; however, large variations often occur during a single year. The hurricane season extends from June through November with peak activity occurring in September and October when ocean temperatures are highest.

2.3 Natural Plant Communities

A plant community refers to the suite of plant species that form the natural vegetation of any place. In addition to anthropogenic influence, the combination of factors such as geology, topography, hydrology, underlying soils and climate determine the types of plants found in an area. These plants in turn determine the animal species that may be found in an area.

The Florida Land Use, Land Cover Classification System (FLUCCS) GIS layer provided by the South Florida Water Management District classifies the entire preserve as a combination of Pine Flatwoods-Melaleuca Infested, Mixed Wetland Hardwoods, Cypress-Melaleuca Infested and Wetland Forested Mixed (Figure 6). Site evaluations confirm the Pine Flatwoods, Mixed Wetland Hardwoods, Cypress and Wetland Forested mixed designations, however, very few melaleuca trees were observed throughout the preserve. Other communities observed include Freshwater Marsh, Cabbage Palm, Pine/Cabbage Palm, Cypress/Cabbage Palm Disturbed, Cypress, Pine, Cabbage Palm, and Inland Ponds and Sloughs.



When purchased, the preserve also had several cleared areas, several areas designated for single family residences, a portion of a small pond excavated in 2000 and several infestations of exotic plants, including 25-40% coverage of Brazilian Pepper (*Schinus terebinthifolia*) and a significant infestation of air potato (*Dioscorea bulbifera*) throughout on the western side of the preserve and on the southeastern portion as well. Exotic treatments have been done bi-annually and annually since then and the preserve is now in maintenance state. Additional details are provided in Section 2.6 and plans for management of exotics will be covered in the Invasive, Exotic Plant Species Control Plan (Table 10).

Figure 6: Rivers Road Preserve Land Cover / Land Use Map

2.4 Native Plant and Animal Species

The 76.74 acre preserve is a combination of Cabbage Palm, Inland Ponds and Sloughs, Mixed Wetland Hardwoods, Cypress, Pine Flatwoods, Mixed Wetland Forests and Freshwater Marsh. The preserve also contains an outstanding example of pop ash swamps and several wetlands. One hundred sixty-two vascular plant species were recorded on the preserve and 36 (22%) of these plants are indicated as not native to our area (Appendix 2). All invasive exotic plants will require removal and maintenance. The canopy is dominated by slash pine trees (*Pinus elliottii*), cabbage palms (*Sabal palmetto*), scattered cypress (*Taxodium ascendens*) in the upland areas. Willow (*Salix caroliniana*), pop ash (*Fraxinus caroliniana*) and red maple (*Acer rubrum*) can be found in the wetland areas. The midstory contains areas of ragweed (*Ambrosia sp.*), dogfennel (*Eupatorium capillifolium*), sawgrass (*Cladium jamaicense*), saw palmetto (*Serenoa repens*), American

beautyberry (*Callicarpa americana*) and myrsine (*Rapanea punctata*). The groundcover is a combination of ferns such as bracken fern (*Pteridium aquilinum*), swamp fern (*Blechmaum serrulatum*), chain fern (*Woodwardia virginica*), alligator flag (*Thalia geniculata*) and sagittaria (*Sagittaria lancifolia*), amongst other groundcovers common in Pine/Cabbage Palm communities and freshwater marsh communities. Epiphytes and vines have been observed throughout the preserve. Listed plant species include common wild pine (*Tillandsia fasciculata*), hand fern (*Ophioglossum palmatum*) and reflexed (inflated) wild pine (*Tillandsia balbisiana*).

Occurrences of fauna at the preserve are based on direct visual and auditory observations of animals by Collier County staff and outside researchers during site visits or evidence of activity such as spoor, scat, or burrows, and from the site information available in documents such as:

- the site’s initial criteria screening report,
- the property’s interim management plan,
- anecdotal information from persons with knowledge of the site.

Mammal species known to occur or individuals and/or evidence of activity directly observed within the preserve include the white-tailed deer (*Odocoileus virginianus*), bobcat (*Lynx rufus*), Florida black bear (*Ursus americanus floridanus*), racoon (*Procyon lotor*), opossum (*Didelphis virginiana*), armadillo (*Dasypus novemcinctus*), and wild feral hogs (*Sus scrofa*). Numerous Florida panther (*Puma concolor coryi*) telemetry points and photo accounts have been recorded in the area and one point was recorded approximately 1/3 mile from the preserve. There is a wildlife underpass under Immokalee Road north of the preserve that provides access through the Twin Eagles subdivision to over 60,000 acres of conservation lands, including state-owned lands, Audubon’s Corkscrew Swamp and the Corkscrew Ecosystem Lands. Bird observations by Collier County staff are included in Table 3.

| Table 3: List of Avian Species Recorded on the Site | | | |
|---|-----------------------------|-----------------------|-------------------------------|
| Common Name | Scientific Name | Common Name | Scientific Name |
| Red-winged Blackbird | <i>Agelaius phoeniceus</i> | Gray Catbird | <i>Dumetella carolinensis</i> |
| Red-shouldered Hawk | <i>Buteo lineatus</i> | Blue Jay | <i>Cyanocitta cristata</i> |
| Mourning Dove | <i>Zenaidura macroura</i> | Blue-gray Gnatcatcher | <i>Poliophtila caerulea</i> |
| Common Ground-dove | <i>Columbina passerina</i> | White-eyed Vireo | <i>Vireo griseus</i> |
| Red-bellied Woodpecker | <i>Melanerpes carolinus</i> | Northern Cardinal | <i>Cardinalis cardinalis</i> |
| Turkey Vulture | <i>Cathartes aura</i> | Wild Turkey | <i>Meleagris gallopavo</i> |
| Downy Woodpecker | <i>Picoides pubescens</i> | Northern Mockingbird | <i>Mimus polyglottos</i> |
| Great Crested Flycatcher | <i>Myiarchus crinitus</i> | Piliated woodpecker | <i>Dryocopus pileatus</i> |

The Florida Breeding Bird Atlas lists 32 bird species that have been recorded as confirmed, probable, or possibly breeding in the vicinity of the site (in Corkscrew SW USGS quadrangle) that may be present at Rivers Road Preserve (Table 4). The Breeding Bird Atlas documents breeding distributions of all bird species in Florida between 1986 and 1991. Some of these species may breed at the Rivers Road Preserve.

| Table 4: Breeding Bird Species Recorded in the Belle Meade NW Quadrangle Encompassing the Rivers Road Preserve | | | |
|--|-----------------------------|-------------------------------|-----------------------------------|
| Common Name | Scientific Name | Common Name | Scientific Name |
| Northern Bobwhite | <i>Colinus virginianus</i> | Purple Martin | <i>Progne subis</i> |
| Green Heron | <i>Butorides striatus</i> | Northern Rough-winged Swallow | <i>Stelgidopteryx serripennis</i> |
| Swallow-tailed Kite | <i>Elanoides forficatus</i> | Tufted Titmouse | <i>Parus bicolor</i> |
| Red-shouldered Hawk | <i>Buteo lineatus</i> | Carolina Wren | <i>Thryothorus ludovicianus</i> |
| Mourning Dove | <i>Zenaida macroura</i> | Blue-gray Gnatcatcher | <i>Poliopitila caerulea</i> |
| Common ground dove | <i>Columbina passerina</i> | Northern Mockingbird | <i>Mimus polyglottos</i> |
| Yellow-billed Cuckoo | <i>Coccyzus americanus</i> | Brown Thrasher | <i>Toxostoma rufum</i> |
| Barn Owl | <i>Tyto alba</i> | Pine Warbler | <i>Dendroica pinus</i> |
| Common Nighthawk | <i>Chordeiles minor</i> | Prairie Warbler | <i>Setophaga discolor</i> |
| Red-bellied Woodpecker | <i>Melanerpes carolinus</i> | Common Yellowthroat | <i>Geothlypis trichas</i> |
| Downy Woodpecker | <i>Picoides pubescens</i> | Eastern Towhee | <i>Pipilo erythrophthalmus</i> |
| Red-cockaded Woodpecker | <i>Picoides borealis</i> | Northern Cardinal | <i>Cardinalis cardinalis</i> |
| Great Crested Flycatcher | <i>Myiarchus crinitus</i> | Red-winged Blackbird | <i>Agelaius phoeniceus</i> |
| Loggerhead Shrike | <i>Lanius ludovicianus</i> | Eastern Meadowlark | <i>Sturnella magna</i> |
| White-eyed Vireo | <i>Vireo griseus</i> | Common Grackle | <i>Quiscalus quiscula</i> |
| Blue Jay | <i>Cyanocitta cristata</i> | Boat-tailed Grackle | <i>Quiscalus major</i> |

(Breeding Bird Atlas Explorer (online resource). 2012. U.S. Geological Survey)

The only reptile species observed to date on the preserve are the Cottonmouth/Water Moccasin (*Agkistrodon piscivorous conanti*) and the Southern Black Racer (*Coluber constrictor priapus*). There have been no amphibian species observed on the site to date besides the exotic brown anole (*Anolis sagrei*), however staff will continue to monitor the site during site visits and will document any other reptiles and/or amphibians found.



Cottonmouth Snake on the Rivers Road Preserve Photo Taken by Hans VanCleave



Tree Snail. Photo taken by County Staff on the Rivers Road Preserve

Invertebrates observed at the preserve include butterflies such as Queen (*Danaus gilippus*) and Zebra Longwing (*Heliconius charithonia*). Other wildlife species noted on the preserve include the Tree Snail (Order Pulmanata), and Crayfish (Order Decapoda).

Other wildlife species that have not been recorded undoubtedly occur at Rivers Road Preserve. Future, more detailed, wildlife surveys will be conducted on the preserve and the plan will be updated as new species are documented.

2.5 Listed Species

Official listings of rare and endangered species are produced at the federal level by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, and at the state level by the Florida Fish and Wildlife Conservation Commission and the Florida Department of Agriculture and Consumer Services. FNAI produces a list of rare and endangered species, and maintains a database of occurrences of these species in Florida.

2.5.1 Listed Plant Species

Three plant species found at the Rivers Road Preserve are listed by the Florida Department of Agriculture and Consumer Services (FDACS) - (2) as Endangered, (1) as Threatened, and none as Commercially Exploited. There are no federally listed endangered or threatened plant species. A brief description of these species and their status is included in Table 5 and in the following paragraphs. Additional listed plant species may be found at Rivers Road Preserve following further field surveys. Confirmation of listed plant identifications should be made by a qualified botanist.

| Table 5: Listed Plant Species Detected at the Rivers Road Preserve | | |
|--|-------------------------------|---------------|
| Common Names | Scientific Names | FDACS (State) |
| Hand fern | <i>Ophioglossum palmatum</i> | Endangered |
| Reflexed wild pine | <i>Tillandsia balbisiana</i> | Threatened |
| Stiff-leaved wild pine | <i>Tillandsia fasciculata</i> | Endangered |
| Giant wild pine | <i>Tillandsia utricula</i> | Endangered |

Hand Fern (*Ophioglossum palmatum*)

This plant is commonly found on cabbage palms and has been found in multiple areas along the east and southern coast of Florida. Early 20th century observers spoke of hand fern gathered by the wagon load from Florida’s swamps. Hand fern is still collected but it dies in cultivation due to lack of essential fungi. When palm boots decay and fall to the ground, or are destroyed by fire, hand ferns are killed. Only 50 populations remain in Florida, about half in conservation areas.



Hand fern found on site.
Photo taken by Conservation Collier staff



Reflexed wild pine (*Tillandsia balbisiana*)

This air plant is abundant and occurs throughout the preserve. It is also considered threatened by the State of Florida due to the Mexican Bromeliad Weevil. It is equally well-adjusted to deep shade where leaves grow long or to bright sunlight where they are contorted and highly colored from gray-green to blue-bronze or red (NAS 2007).

Reflexed Wild Pine Photo by
Melissa Abdo Courtesy of The
Institute for Regional Conservation

Stiff-leaved wild pine (*Tillandsia fasciculata*)

Although this air plant is abundant throughout South Florida, it is listed by the State as endangered as they are threatened by the Mexican Bromeliad weevil. Leaves may grow to as much as forty inches, they form large plants in tree tops and are often mistaken for bird or squirrel nests. They grow equally well in canopy or near ground (NAS 2007). It is also referred to as a common wild pine or cardinal air plant. This air plant has been noted in several areas throughout the preserve. The photo to the left was taken in the northern portion of the preserve within a small pop ash marsh.



Stiff-leaved wild pine
Photo by Collier County
Staff



Giant wild pine (*Tillandsia utriculata*) is the largest epiphyte and is relatively common in hammocks and swamps in South Florida. It can reach 12-30 inches in height and its flower spike may be more than six feet in height. It is also listed by the State of Florida as endangered

2.5.2 Listed Wildlife Species

The Florida Natural Areas Inventory (FNAI) maintains a database of occurrences of rare, threatened, and endangered species in Florida. Within the Rivers Road Preserve, The Florida Natural Areas Inventory (FNAI) has documented the occurrence of the endangered Florida panther (*Puma concolor coryi*) (Appendix 3). The FNAI database report indicated three (3) other species likely to be found in this area including Florida back bear (*Ursus americanus floridanus*), Mangrove fox squirrel (*Sciurus niger avicennia*), and the Wood stork (*Mycteria americana*). Florida black bear have been detected and documented by the former property owners on the southern portion of the preserve. The habitat of the preserve also supports the presence of Gopher tortoise (*Gopherus polyphemus*), Eastern indigo snake (*Drymarchon couperi*), Florida bonneted bat (*Eumops floridanus*), and Snail kite (*Rostrhamus sociabilis plumbeus*). Table 6 below identifies the status of each and a brief description of the only documented listed species is included in the following paragraphs. Cottonmouth/Water Moccasin (*Agkistrodon piscivorous conanti*) have also been observed on the preserve.

Table 6: Listed Wildlife Species Found or Potentially Found at Rivers Road Preserve

| Common Name | Scientific Name | Federal | State | FNAI | Observed or Potential |
|----------------------------|--|---------|-------|------|-----------------------|
| Florida black bear | <i>Ursus americanus floridanus</i> | | T | L | O |
| Cottonmouth/Water Moccasin | <i>Agkistrodon piscivorous conanti</i> | T | SSC | | O |
| Florida panther | <i>Puma concolor coryi</i> | E | E | D | O |
| Big Cypress fox squirrel | <i>Sciurus niger avicennia</i> | | T | L | P |
| Wood Stork | <i>Mycteria americana</i> | E | E | L | P |
| Florida Burrowing Owl | <i>Athene cunicularia floridana</i> | | SSC | P | P |
| Eastern Indigo Snake | <i>Drymarchon couperi</i> | T | T | P | P |
| Florida bonneted bat | <i>Eumops floridanus</i> | | T | P | P |
| Red-cockaded Woodpecker | <i>Picoides borealis</i> | E | E | P | P |
| Snail Kite | <i>Rostrhamus sociabilis plumbeus</i> | E | E | P | P |

E – Endangered, T – Threatened, SSC – Species of Special Concern, O – Observed, P – Potential, L-Likely

Florida Black Bear (*Ursus americanus floridanus*)

The Florida black bear is a subspecies of the black bear found throughout North America. Black bears have been observed on several occasions at Rivers Road Preserve. Florida black bears in south Florida are listed as threatened by the FWC. Because of its large home range and low population density the black bear is particularly vulnerable to habitat loss. Even though their population is affected by illegal killing and road kills, habitat loss is the major cause of concern (Humphrey 1992).



Black Bear photos taken in the Rivers Road Preserve. Photos taken by former property owner Hans VanCleve.

Cottonmouth/Water Moccasin (*Agkistrodon piscivorous conanti*)

Cottonmouth snakes are listed as a species of special concern by the State of Florida. The coloration of this snake can be variable. Older and larger snakes tend to be uniformly black, brown to reddish brown, while the young are banded with a dark color against a lighter background. Most abundant in flooded woodlands, the Florida Cottonmouth is also found around rivers, streams and ponds. It is often seen along the water's edge, on the bank or on a log or rock and it can also be found in pine woods or other dry habitats. Though the Cottonmouth occurs throughout the state, it is not as abundant as the many species of harmless water snakes that occur in much the same habitat.

Florida Panther (*Puma concolor coryi*)

This large cat is a year-round resident of undeveloped lands in South Florida. The Florida Panther is listed as a Federally and State endangered species. The U.S. Fish and Wildlife Service and FWC track radio-collared panthers in Collier County. Radio telemetry reports as well as wildlife camera photos of non-collared panthers have verified that Panthers do pass through this area. These large cats require extensive blocks of mostly forested communities. Large wetlands that are generally inaccessible to humans are important for diurnal refuge. A large tract of land may be developed to the east of the preserve within the next couple of years. Environmental groups have worked

with the developer to protect a vital wildlife corridor along the western boundaries of their developmental area. This corridor connects two conservation areas and runs through a wildlife underpass under Immokalee Road (see Figure 7). The corridor is currently part of a SFWMD environmental resource permit and most likely will become part of the developer's required preserve area. Wildlife cameras have captured photos of Florida Panther on the Rivers Road Preserve hiking trails in June 2018 (see photo below).



Wildlife camera photo of a Florida Panther on the Rivers Road Preserve June 2018 courtesy of the Fstop Foundation

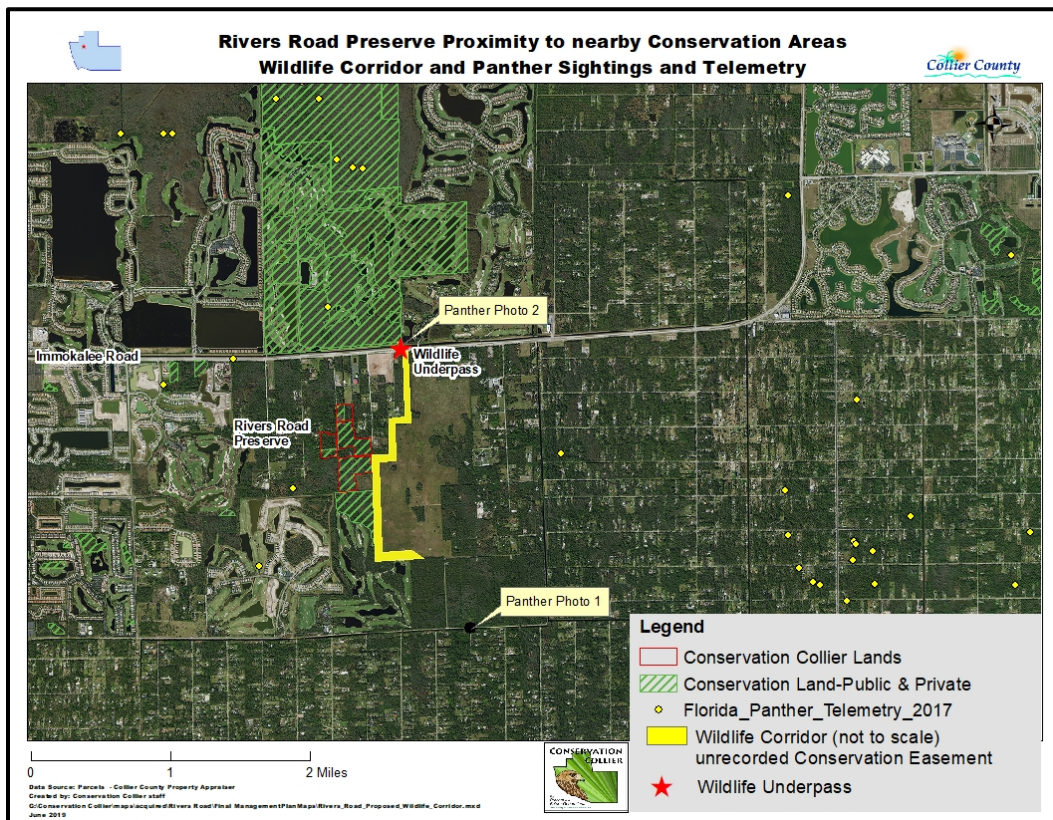


Figure 7. Rivers Road Preserve Proximity to nearby Conservation Areas Wildlife Corridor and Panther Sightings and Telemetry. Also shows locations where wildlife camera photos below were taken.



Photo 1

Photo of an uncollared panther taken by an FWC Wildlife Camera along a canal bridge over 13th Ave. N.W. southeast of the preserve. Photo taken 1/22/11.



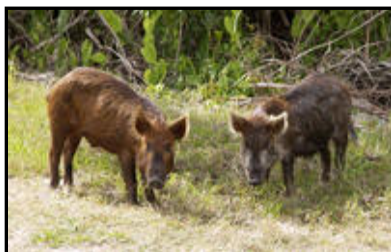
Photo 2

Wildlife camera photo showing an uncollared panther exiting the wildlife underpass under Immokalee Road northwest of the preserve. Photo taken 3/14/13.

2.6 Invasive, Non-Native and Problem Species

Several invasive, non-indigenous plant and animal species are known to occur within Florida. A comprehensive list of invasive plant species is available from the Florida Exotic Pest Plant Council (FLEPPC). Although Florida does not have an official invasive, non-indigenous animal species list, at least 400 exotic fish and wildlife animal species have been reported, and approximately 125 species are established.

2.6.1 Exotic Wildlife Species



Feral Hogs photo provided by USGS and taken by NASA

Evidence of wild hog (*Sus scrofa*) exists on the preserve, multiple hog wallows are present, especially in the southern portion of the preserve indicating this species could potentially become a nuisance. They can also be referred to as wild boar or feral pig, and may have been introduced to Florida as early as 1539 (FFWCC 2002). According to Kevin Love, a land manager with the Southwest Florida Water Management District, “Feral hogs are a big problem on all conservation lands. [They are] one of the most severe exotic problems facing Florida.” Their favorite food is acorns but they roam in large groups and will eat native frogs,

snakes and ground nesting birds while rooting up the ground with their snouts – destroying acre upon acre. They may weigh over 150 pounds, grow to be 5-6 feet long and reproduce at a rapid rate. They travel in herds containing several females and their offspring. Wild hogs occur

throughout Florida in various habitats, but prefer moist forests, swamps and pine flatwoods. They are omnivorous and feed by rooting with their broad snouts. They may cause great damage of the understory and leave an area looking like a plowed field (Hoppe 2006). Feral hogs consume ground-nesting bird eggs and disturb soil and sensitive vegetation, which in turn invites invasive exotic plant growth.

2.6.2 Invasive and Problem Plant Species

Invasive and exotic plants on the preserve include air potato (*Dioscorea bulbifera*), Brazilian pepper (*Schinus terebinthifolia*), earleaf acacia (*Acacia auriculiformis*), Caesar’s weed (*Urena lobata*), lantana (*Lantana camara*), java plum (*Syzygium cumini*), rosary pea (*Abrus precatorius*), melaleuca (*Melaleuca quinquenervia*), , and wedelia (*Wedelia trilobata*). Other plants that are non-native include tabebuia (*Tabebuia spp.*), bougainvillea (*Bougainvillea glabra*), citrus (*Citrus spp.*), and monk orchid (*Oeceoclades maculata*). All FLEPPC listed invasive, exotic plants documented on the preserve are listed in Table 7.

Of the exotic plants found on the preserve, the 2019 Florida Exotic Pest Plant Council List considers eleven of these species to be Category I Invasive plants that may alter native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. Five species are considered Category II plants, meaning they have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These definitions do not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused (FLEPPC 2007). Treatment of these species is covered in Section 4.4, Goal 3 and in Table 11.

| Table 7: Invasive Exotic Plant Species at Rivers Road Preserve | | |
|--|-------------------------|-----------------|
| Scientific Name | Common Name(s) | FLEPPC Category |
| <i>Abrus precatorius</i> | Rosary pea | I |
| <i>Acacia auriculiformis</i> | Earleaf acacia | I |
| <i>Dioscorea bulbifera</i> | air potato | I |
| <i>Lantana camara</i> | shrub verbena/Lantana | I |
| <i>Lygodium microphyllum</i> | Old world climbing fern | I |
| <i>Melaleuca quinquenervia</i> | melaleuca | I |
| <i>Momordica charantia</i> | balsam pear | II |
| <i>Nephrolepis spp.</i> | sword fern spp. | I |
| <i>Pennisetum purpureum</i> | Napier grass | II |
| <i>Psidium guajava</i> | guava | I |
| <i>Pteris vittata</i> | Chinese brake fern | II |
| <i>Sanseverina hyacinthoides</i> | bowstring hemp | II |
| <i>Schinus terebinthifolia</i> | Brazilian pepper | I |
| <i>Syzygium cumini</i> | Java plum | I |
| <i>Urena lobata</i> | Caesar’s Weed | I |
| <i>Wedelia trilobata</i> | wedelia | II |

The majority of the Brazilian pepper and air potato once present were located within the disturbed areas of the preserve, such as the power line corridors and pathways that may have previously been

used to traverse the property. Air potato mainly existed primarily in areas where dilapidated structures were removed prior to County purchase of the property. These areas have been treated several times over the past 5 years and minimal infestation remains.

Under certain conditions, especially following hydrologic disturbance, some native plant species can become invasive. For example, Cabbage palms can also become invasive when hydrology is altered and without fire. Management of these species may be necessary.

2.7 Forest Resources

No commercial forests exist, and timber extraction may not appropriate for this site. If portions of the preserve require thinning, prescribed fire could assist to thin out young pines.

2.8 Archaeological, Historical and Cultural Resources

The Rivers Road Preserve property is not within an area of historical and archaeological probability. According to a letter obtained by County Staff dated, January 8, 2013, the Florida Master Site file of the Division of Historical Resources show that no archaeological sites or any other cultural resources have been recorded for the section, township and range in which the preserve exists (see Appendix 4). The County will notify the Division of Historical Resources immediately if evidence is found to suggest otherwise. If such resources are identified on-site, staff shall cordon off the area, and a professional survey and assessment shall be instituted. The archaeologist shall prepare a report outlining results of the assessments and issue recommendations to County staff about management of any sites discovered, per provisions of the Land Development Code Section 2.2.25. This report shall be sent to the Division of Historical Resources. The County shall cooperate fully with direction from the Division of Historical Resources on the protection and management of archaeological and historical resources. The management of these resources will comply with the provisions of Chapter 267, Florida Statutes, specifically Sections 267.061 2 (a) and (b).

3.0 Use of the Property

3.1 Previous and Current Use

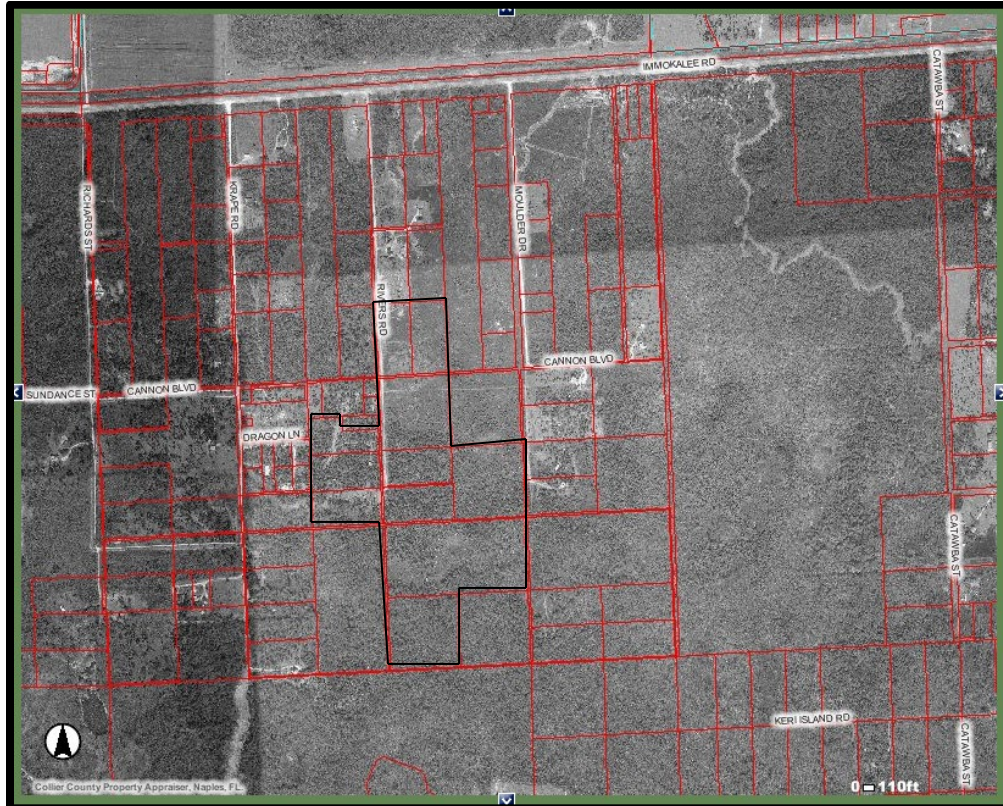


Figure 8. 1985 Aerial Map (Collier County Property Appraiser’s Office)

Historical Aerials were researched back to 1940, however, flights were taken to the north, east and west of the property but not directly over the current preserve property. The 1958 aerial shows that Immokalee Road had been built to the north with no additional development surrounding. The 1963 surrounding aerials showed new roads and existing farm fields to the west. The 1973 aerials showed small roads being cleared just east of Rivers Road and one parcel cleared just south of Immokalee Road where the Living Word Church now exists and some small homes N, E, and W of the preserve. The 1985 aerial (Figure 8) shows that the majority of the preserve land was still undeveloped and undisturbed. River’s Road existed at that time. A small home existed on the Northwestern most parcel and some clearing and single family development had occurred on the two parcels west of Rivers Road. The area that will be used as the parking area (discussed later in the plan) was cleared sometime between 1975 and 1985.

The majority of the site was previously zoned agriculture with a Mobile Home Overlay, allowing for minimal development at no greater than one unit per five acres. There were a few small structures on the site such as sheds and trailers, including one abandoned trailer. Several formerly cleared roads cut across portions of the property to serve as access to power lines and/or to allow the former property owners access. A small pond constructed on an adjacent parcel to the east overlaps onto the preserve. The entire perimeter of the pond has been cleared and sawgrass, sagittaria, ragweed, willow, red maple, cypress trees, pine and cabbage palms surround the clearing. Prior to conveyance of the properties, a significant amount of trash and debris was

removed by the former property owners, including several very dilapidated structures scattered throughout.

The preserve public use area can be accessed by Rivers Road, a gravel road, off of Immokalee Road. Temporary signs identifying the property as a Conservation Collier Preserve and listing prohibited activities have been posted at the northern most part of the preserve along Rivers Road and Moulder Drive. There are no current concessions or leases on the preserve property.

Evidence that the preserve has been used for baiting and possibly hunting has been found near the property line so coordination with neighbors will be critical as restoration plans are implemented, particularly during active restoration, prescribed burns and when public access is granted.

Following removal of old structures, including septic tanks and trailers, the southwestern portion of the property is beginning to show signs of natural restoration, with natural recruitment of pines, grasses and myrtle. Continual treatment and removal of exotics will further encourage natural revegetation.



3.2 Public Uses and Assessment of their Impacts

The preserve is open to the public for hiking, bird watching, picnicking, and horseback riding. . Public hunting is not allowed within the preserve. Details of planned uses for the Rivers Road Preserve and assessment of their potential impacts are provided in the following sections.

3.3 Identification of Public Uses Consistent with Preservation, Enhancement, Restoration, Conservation and Maintenance of the Resources.

The Conservation Collier Ordinance 2002-63 constrains the use of this property to “primary objectives of managing and preserving natural resource values and providing appropriate natural resource-based recreational & educational opportunities.” Natural resource-based recreation shall mean all forms of uses, which are consistent with the goals of this program, and are compatible with the specific parcel (Ord. No. 02-63, as amended§ 5, 12-3-02). Additionally, no dumping, use of unauthorized vehicles, or removal or destruction of natural or historical/archaeological resources will be permitted within the preserve. The goal is to allow limited, non-destructive public access to native plant communities and animal species. Currently, the preserve rules are those identified in Collier County Ordinance 2011-38 (available from www.municode.com), as amended.

As defined in Ordinance 2002-63, as amended, Section 5.9, the following are natural resource-based uses consistent with Rivers Road Preserve:

- Hiking: Consistent with the nature of the site and its purpose.
- Nature Photography: There is potential for nature photography of wildlife and plant life.
- Bird Watching: There is potential for worthwhile bird watching on this site.
- Environmental Education: special requests for guided hikes for groups can be arranged with Conservation Collier Staff. Educational signage will be posted in the kiosk.

3.4 Planned Public Uses and Assessment of their Impacts

Trail Network – Trails are established throughout the property and allow for hiking and nature observation within the preserve (Figure 10). Firebreaks double as hiking trails to avoid altering additional habitat. Trails are maintained and monitored to ensure that visitors stay on them and no new trails are being made. Clearing the trails of fallen trees and debris and creating new trails may also enable and increase the illegal use of all terrain vehicles (ATVs) and dirt bikes on the property so monitoring will be necessary.

Easements, Concessions and Leases

An ingress/egress easement exists over Rivers Road, which extends through the preserve and ends at a private residence at 1920 Rivers Road that is enclosed within the preserve boundaries as an out-parcel. There are no current concessions or leases on the preserve property.

Parking / Handicap Facilities No facilities exist on the preserve besides Rivers Road, a well-maintained gravel easement road, which allows visitors to view the preserve from their vehicles as they drive south towards the parking area. A small mowed parking area exists in the southwest portion of the preserve. In the future, if funds allow, 1-2 handicap parking spaces will be created and a hard packed or paved trail will lead to an accessible picnic area. An information kiosk exists adjacent to the picnic area. Currently, the grass parking lot is mowed by the adjacent land owner as a volunteer contribution on an as needed basis.

Fencing / Gates – Fencing along the northern and western portions of the preserve was installed in 2015 to deter dumping, encroachment and illegal access. No other fencing needs are anticipated.

3.5 Adjacent Land Uses

Single family homes exist to the north, east and west of the property, with one private residence within the boundaries of the preserve as an out-parcel. A church encompassing several parcels exists to the north and northeast of the property along with a parcel that contains remnants of a small tree nursery. A conservation easement exists to the south of the property.

3.6 Prospective Land Acquisitions

There are currently no surrounding properties under consideration as prospects for acquisition. The only parcel that was previously considered, was the outparcel in the center of the preserve that is completely surrounded by preserve land. This parcel was determined to not be a viable purchase by the County due to the existing structure that exists on the property. Surrounding undeveloped parcels can currently be donated to the program or nominated to the program for acquisition if the program is approved to continue acquisition in the future.

3.7 Proposed Single - or Multiple - Use Management

Management of this parcel for public use will focus on maintenance of the trail, signage, kiosk and picnic area (Table 8). All of the uses are restricted to those consistent with conservation of plants, animals, any historical/archaeological features, and passive enjoyment of these resources by visitors.

| Table 8: Analysis of Multiple-Use Potential | | | |
|---|-----------------|--------------------|-----------------|
| Activity | Approved | Conditional | Rejected |
| Protection of endangered and threatened species | Y | | |
| Ecosystem maintenance | Y | | |
| Soil and water conservation | Y | | |
| Hunting | | | N |
| Fishing | | | N |
| Wildlife observation | Y | | |
| Hiking | Y | | |
| Bicycling | | Y | |
| Horseback riding | Y | | |
| Timber harvest | | Y | |
| Cattle grazing | | | N |
| Camping | | | N |
| Apiaries | | | N |
| Linear facilities | | | N |
| Off road vehicle use | | | N |
| Environmental education | Y | | |
| Citriculture or other agriculture | | | N |
| Preservation of archaeological and historical sites | Y | | |
| (Other uses as determined on an individual basis) | | | |

4.0 Future Use of the Rivers Road Preserve including Management Issues, Goals and Objectives

This section describes the main management issues, goals, and objectives for Rivers Road Preserve as well as the overall management framework. Central to the management of the Preserve is the mission of the Conservation Collier Program, and the goals and objectives set forth in this management plan.

4.1 Management Plan Framework

Each property purchased by Conservation Collier shall have its own management plan. At the time the property was purchased, the Conservation Collier Ordinance required that an “Interim” Management Plan be developed within 60 days of closing. Interim plans include basic items such as removal of invasive exotics and trash, establishing site security, developing management partnerships and planning for public access. The interim plan for this site was officially approved in September 2011. The ordinance then requires a “Final” management plan be developed within two years. Subsequently, the property management plan must be updated every five years. Final management plans, however, are considered living documents and can be updated at any time. Review of all management plans start in the Lands Evaluation and Management Subcommittee and then must be approved by both the CCLAAC and the BCC.

4.1.1 Preserve Manager: Contact Information

The Site Manager for Rivers Road Preserve will be a designated Collier County Environmental Specialist who can be contacted through electronic mail:
ConservationCollier@Colliergov.net.

4.1.2 Preserve Rules and Regulations

No dumping, use of unauthorized vehicles, or removal or destruction of any natural or historical/archaeological resources shall be permitted within the preserve. The goal is to allow limited, non-destructive public access to maintain natural resource habitat and native plant communities and animal species.

4.2 Desired Future Conditions

This section includes a description of the proposed future condition for the site’s natural areas. Management techniques to achieve these conditions are listed in the following sections.

After management goals are met, Rivers Road Preserve will consist of pine flatwoods, mixed wetland hardwoods, cypress, wetland forested and freshwater marsh habitats. Several outstanding examples of pop ash swamp will be present. The canopy will be comprised of maple, pop ash, red bay, slash pine, laurel oak, cabbage palm, willow and cypress. The mid-story will be maintained and continue to consist of scattered natives including: marlberry, saltbush, American beautyberry, common button bush, sawgrass, dog fennel, dahoon holly, gallberry, rusty lyonia, red mulberry, wax myrtle, wild coffee, myrsine, winged sumac, saw palmetto, saffron plum and hog plum. Groundcover will remain native and will include: swamp fern, habernaria, ludwigia, maidencane, passion flower, frog-fruit, pickerelweed, Bracken fern sagittaria, blue porterweed, alligator flag, southern cattail and chain fern. Prescribed burns will be conducted in the Pine Flatwoods areas on a 3-5 year cycle to reduce saw palmettos and keep hardwoods and palm cover sparse (<25%), allowing for a diverse and dense herb layer.

Management of the preserve will also improve habitat for the non-listed wildlife species that have been observed on the preserve and will make the habitat desirable for the listed species that may be in the area of the preserve.

4.3 Major Accomplishments during previous years

| Table 9: Major Accomplishments | |
|--|-----------------|
| Accomplishment | Year (s) |
| Initial removal of dilapidated structures, old automobiles, septic and other trash by previous property owners | 2008 |
| Posting temporary signage along Rivers Road and Moulder Drive | 2008 |
| Posted additional signage along Rivers Road and Moulder Drive | 2013 |
| Final Management Plan Completed | 2014 |
| Hiking trails created | 2015 |
| Preserve opened to the public | 2016 |

4.4 Goals and Objectives for 10 year period

A set of goals and objectives for the Rivers Road Preserve were developed in conjunction with the drafting of this Management Plan. The goals and objectives in this plan are tailored specifically for the Rivers Road Preserve, based on the purposes for which the lands were acquired, the condition of the resources present, and management issues for the property. On-site managers should be familiar with the entire Management Plan. Goals and objectives from the interim management plan for the Rivers Road Preserve were reviewed to determine if they remain

meaningful and practical and if so, were carried over into this plan. The goals and objectives presented here reflect programmatic goals and ideas of Conservation Collier personnel in charge of managing and protecting the area. These goals shall not be modified, but specific application of management techniques may take into consideration input by user groups and other stakeholders from outside the program, accommodating user needs and desires where practicable and where overarching management goals are not violated.

Management issues are discussed below in separate sections. Within each section, approaches for dealing with these issues are described. The ability to implement the specific goals and objectives identified in this plan is dependent upon the availability of funding resources. The following goals have been identified for the Rivers Road Preserve:

Goal 1: Maintain High Quality Habitat with Limited Disturbance for the Benefit of Native Flora and Fauna

Goal 2: Remove and Manage Invasive, Exotic Plants

Goal 3: Monitor Wildlife

Goal 4: Create and Implement a Prescribed Fire Program

Goal 5: Continue to Restore Native Vegetation

Goal 6: Maintain Public Access Trails and Amenities

Goal 7: Facilitate Uses of the Site for Educational Purposes

Goal 8: Provide a Plan for Disaster Preparedness

Goal 9: Coordinate with Stakeholders, Partners, and Regional Agencies

Goal 10: Monitor Public Use

Goal 1: *MAINTAIN HIGH QUALITY HABITAT WITH LIMITED DISTURBANCE FOR THE BENEFIT OF NATIVE FLORA AND FAUNA*

Action Item 1.1 Eliminate or Reduce Human Impacts

The preserve is currently easily accessible for dumping, use of off-road vehicles, and hunting. In order to provide for the safety of those who will be lawfully using this site for passive recreation and research, and to ensure that the programs of ecological preservation and restoration can take place unabated, security measures have been put into place.

The property owner in the center of the preserve became an official Collier County volunteer in 2016 and since then has helped to keep watch over the preserve on a daily basis. He will call the CCSO if assistance is needed.

Action Item 1.2: Removal of refuse and dilapidated structures

Although former property owners were required to remove trash prior to conveyance to Conservation Collier, site visits revealed small pockets of trash in several areas. On the northern portion of the preserve, there was evidence that a small structure may have been once used and abandoned. Water piping and timber was piled up and nearby there was fencing and old appliances near the property line. All debris has since been removed by a County contractor.

Action Item 1.3: Prohibit unauthorized access to the preserve / Security management

Conservation Collier signs exist in two locations, one on Rivers Road and one on Moulder Drive. The signs make it clear that there is to be “no littering” and “no hunting” and “no unauthorized vehicles”. Similar signs will be posted at the trailhead areas once constructed. This will fulfill the legal posting requirement. If signs are removed or vandalized, they will be fixed and replaced as needed. They may need to be stabilized with concrete if they continue to be removed.

Staff will continue to work with enforcement agencies such as the Collier County Sheriff’s Department Agriculture Division and FFWCC to enforce trespassing by citizens on off-road vehicles, poachers and litterers. A Property Owner’s agreement with the Collier County Sheriff’s office (CCSO) has been implemented. This makes the CCSO aware that the preserve exists and provides them with a preserve location and trail map. This allows them to seek out and arrest individuals who may be engaging in illegal activities on the preserve. One warning will be given by the Sheriff’s office officers, followed by arrest for repeat offenders. If anyone is caught poaching on the property or in possession of a firearm, they will automatically be arrested and taken to jail. Staff has received approval from the BCC to sign Sheriff’s Department affidavits to press charges as needed. Staff will also continue to stay in contact with preserve neighbors for trespassing updates. A fence was installed along the northern and westernmost portion of the preserve. Fencing will be monitored on a regular basis to ensure that fencing is not disturbed and that no trespassing or unauthorized activities are occurring. Staff will also consider installing an electronic gate along Rivers Road that would automatically close each night at dusk if funding allows.

Action Item 1.4: Identify locations of rare and listed native plant and animal species

The location of rare listed plant species will be identified using a global positioning system (GPS) device and mapped to allow staff to monitor them. Public trails will be constructed to avoid areas where rare and listed species exist. Actual and potential locations of resident animal life will also be identified and documented and steps will be taken to construct visitor amenities away from animal nesting sites.

Action Item 1.5: Inspect and Monitor Trails

Visitors are encouraged to stay on established trails while hiking. Staff will conduct bi-weekly to monthly inspections of the public access areas to ensure no hazards are present. Horseback riding is allowed on the trails. Well-mannered dogs will be allowed in the preserve on leash only. If problems start to occur, this privilege will no longer be allowed.

Action Item 1.6: Enforce regulations prohibiting trash in or near the preserve

Staff will monitor the trails on a regular basis and if excessive dumping or littering start to occur, enforcement actions will be sought through the County Sheriff’s Department. A garbage can is currently available next to the parking area. A bear proof garbage can will be added before the end of 2019 as a proactive measure.

Action Item 1.7: Discourage visitation to the park at night

A sign designating park hours as dawn to dusk will be installed at the entrance to the preserve and adjacent landowners will be given an emergency phone number if they detect human activity on the preserve after hours. If problems arise, the Collier County Sheriff’s Office will be contacted to patrol the area and preserve on a routine basis.

Goal 2: Remove and Manage Invasive, Exotic Plants

Action Item 2.1: Map location of exotics

Exotics have been noted in several areas and sporadically throughout the preserve. Detailed mapping of the location and type of exotics is necessary to determine the extent of each population and for identifying the estimated method and cost of removal.

Action Item 2.2: Set up permanent photo points throughout the preserve

Identify locations for photo points throughout the preserve and record photo points with a GPS. During photo documentations, one photo is taken in each of the cardinal directions (north, east, south and west) and a 360-degree panoramic photo is taken. These photos will help to monitor exotic removal and native plant recruitment over time. If necessary, more photo points will be established to aid in management decision activities.

Action Item 2.3: Explore grants for exotic vegetation removal

Staff received notification in April 2014 from the USFWS, Partners for Fish and Wildlife Program that a grant of \$15,000 would be awarded specifically for exotic removal within the preserve. In November 2014, an additional \$15,000 from the Florida Fish and Wildlife Conservation Commission's Invasive Plant Management Section was awarded for further treatment of invasive exotic plants on the preserve. Additional grants from will be pursued in the future for continued maintenance of the exotic vegetation as appropriate.

Action Item 2.4 Monitor biological control beetle project

The United States Department of Agriculture (USDA)-Agricultural Research Service (ARS) selected the preserve to be part of an Air potato beetle (*Lilioceris cheni*) statewide release project. The beetles are a host-specific specialist and only feed on air potato leaves. Five pairs of the beetles were released on July 10th, 2013. An additional 100 beetles were released by USDA on the private property in the center of the preserve in August 2014. Since the releases, a significant amount of biomass reduction has been observed on the Air potato plants in the general area each summer growing season since. USDA-ARS and County staff will monitor the amount of damage the beetles may inflict on the air potato plants over time. Permission to release this beetle was acquired from USDA-APHIS after extensive testing demonstrated its host specificity with virtually no risk to other plant species. If this bio-control program is successful, this could potentially save the program money that otherwise would have been spent to treat the plants with herbicide.



Air potato beetle (*Lilioceris cheni*)
Photo by USDA

Action Item 2.5: Treat Invasive Exotic Plants

The following invasive, exotic plants will require removal using the recommended methods.

| Table 10: Invasive, Exotic Plant Species Control Plan for the Rivers Road Preserve | | |
|---|-------------------------|---|
| Scientific Name | Common Name(s) | Description and Recommended Control(s) |
| <i>Abrus precatorius</i> | rosary-pea, crab-eyes | Cut stem or basal bark and treat with 10% Garlon 4. Site must be revisited frequently to pull seedlings. |
| <i>Acacia auriculiformis</i> | earleaf acacia | Hand pull seedlings, basal bark application of 10% Garlon 4 or cut-stump treatment with 50% Garlon 3A. |
| <i>Dioscorea bulbifera</i> | air potato | Pick up /dig up potatoes in the winter, cut and remove above ground vines; Foliar treat with 1.5-2% glyphosate; or 1.5% Glyphosate + Escort (0.5 grams per gallon) |
| <i>Lantana camara</i> | shrub verbena | Basal application with 10% Garlon 4 or cut stump treatment with Garlon 3A or 10% Garlon 4. |
| <i>Lygodium microphyllum</i> | old world climbing fern | Thoroughly spray foliage to wet with 1.25% Garlon 4 (4 pt/acre), 0.6% Roundup Pro (maximum 5 pt/acre), 1.0%-3.0% Rodeo (maximum 7 pt/acre). Only Rodeo can be used if plants are growing in aquatic site. Plants growing high into trees, cut vines and treat lower portions. Do not apply when plants are under environmental stress. |
| <i>Melaleuca quinquenervia</i> | melaleuca | For seedlings and saplings: (1) hand pull, being sure not to break plant off of root system and remove or place in piles to help reduce the chance that they will re-root or; (2) Treat with foliar, low volume spot application of 5% Rodeo. For mature trees: (1) Fell large trees with chain saw leaving a level surface, or fell small trees with machete and treat with triclopyr or glyphosate products according to frill and girdle directions on SLN. Use aquatic versions where standing water is present. Monitor for resprouting and retreat as necessary. (3) Mature trees are very difficult to control with foliar applications. |
| <i>Momordica charantia</i> | balsam pear | A foliar application of Roundup at 1.5% provides control. Follow-up applications are necessary |
| <i>Nephrolepis spp.</i> | sword fern | A foliar application of Roundup at 1.5% provides control. Follow-up applications are necessary |
| <i>Pennisetum purpureum</i> | napier grass | Foliar 1-3% glyphosate-if surrounded by natives, cut the plants close to ground level and spray with glyph. When it regrows to 8-12 inches in height-remove stems from site |
| <i>Psidium spp.</i> | guava spp. | Basal bark application of 10% Garlon 4 in carrier oil. |
| <i>Pteris vittata*</i> | Chinese brake fern | 2 to 3% solution of glyphosate, hand pull remove from site |
| <i>Sanseverina hyacinthoides*</i> | bowstring hemp | Foliar apply 5%-10% Garlon 4 in oil or water. In sandy soils where a greater potential exists for non-target damage plants can be cut and 15%- 25% Roundup applied to the cut surfaces |
| <i>Schinus terebinthifolius</i> | Brazilian pepper | Hand pull seedlings. Mechanical mowing and/or cut-stump treatment with 50% Garlon 3A, 10% Garlon 4 or a basal bark application of 10% Garlon 4. Foliar application of Garlon 4, Garlon 3A, Roundup Pro, Roundup Super Concentrate, or Rodeo, according label directions may be used where appropriate. Glyphosate products are less |

| | | |
|--------------------------|---------------|---|
| | | effective when used alone in spring and early summer. Use Rodeo where plants are growing in aquatic sites. |
| <i>Syzygium cumini</i> | Java plum | Mature trees may take up to 9 months to die. Cut-stump treatment with 50% Garlon 3A or 10% Garlon 4, or use a basal bark treatment with 10% Garlon 4. |
| <i>Urena lobata</i> | Caesar's Weed | Hand pull seedlings, Foliar treatment with 2-5% glyphosate in water can be sprayed on young plants. Its best to treat in the spring or summer prior to seed maturation. Responds aggressively to fire |
| <i>Wedelia trilobata</i> | wedelia | Treat with a 2% solution of glyphosate while large, dense populations may require a 5% solution. Follow-up treatments should be conducted as needed. Triclopyr at 1-2% is also effective. |

Action Item 2.6: Remove, treat and monitor populations of invasive exotic plants

The control of invasive, exotic species is critical for the preservation of the natural communities in the Rivers Road Preserve. Approved Collier County contractors will continue to be hired to remove and treat the invasive exotic plants. These contractors will chemically treat in place or cut and treat all shrub and tree-like species on the FLEPPC Category I or II list as well as identified nuisance weedy species. Dense mono-cultures of Brazilian pepper along Rivers Road were initially mechanically reduced to ground level and stumps were treated with herbicide. Specific treatment methods should be done according to the recommended control column in Table 10, unless new treatments are discovered that work well and do not cause non-target damage. Extreme care should be used to avoid any non-target damage, near sensitive natives, native seedlings and mature pine trees. The use of imazapyr containing herbicides should be avoided on site. After initial removal and treatment, staff continues to ensure treatment areas are inspected for re-sprouting and that new seedlings are treated as needed until maintenance state is achieved. Once maintenance state is achieved, exotic maintenance will be done once a year and will become a minimal expense.

Action Item 2.7: Establish long-term vegetation monitoring

Long-term management of the preserve should be based on biological data. Changes following baseline conditions should be assessed as negative or positive, and management strategies changed appropriately.

Goal 3: Monitor Wildlife

Action Item 3.1: Establish long-term wildlife monitoring

While some wildlife data has been collected, additional baseline data should also be collected, especially on invertebrates, small mammals, reptiles, and amphibians. The site manager may contract this work out or enlist the assistance of local educators to coordinate student research projects. Wildlife and plant sampling, including bird surveys, should take place at regular intervals (ca. 5-10 years) to detect long-term trends.

In 2018, the Conservation Collier program began to partner with the Fstop Foundation which is a citizen scientist program. Their mission is to create awareness through the use of photography. The program engages volunteers in producing data that helps show the importance of the Florida Panther as an umbrella species. They have set up wildlife camera stations on three Conservation

Collier Preserves including the Rivers Road Preserve. The photos are shared with the program and the Florida Fish and Wildlife Conservation Commission including the two photos below. Fstop is a 501(c)3 and receive their funding from private donations and corporate matching funds.



Bobcat on the Rivers Road Trail.
Photo courtesy of Fstop Foundation



White-tailed deer on the Rivers Road trail.
Photo courtesy of the Fstop Foundation

Action Item 3.2: Native wildlife species management

Management of native animal species at the Rivers Road Preserve should correspond with the management goals of the pine flatwoods, mixed wetland hardwoods, cypress, wetland forested and freshwater marsh habitats. Maintenance of viable populations of native animal species should be conducted by implementing management measures that maintain the viability of the natural habitat. The Rivers Road Preserve should be managed to provide adequate habitat for listed species found on or near the site. Some management recommendations for state and federally listed plant and animal species found on the preserve are listed below. General management for all listed species would be consistent with general vegetation management recommendations, exotic species control, and fire management.

Action Item 3.3: Problem wildlife species management

Indigenous and non-native vertebrate and invertebrate species may become pests under certain conditions. Control of indigenous pest species is recommended if they interfere with management goals. To date, evidence of wild hogs making wallows on the preserve has been noted, but no actual hogs have been seen.

Action Item 3.4: Acquire services of licensed or qualified contractors for the removal of invasive exotic or problematic animal species

Wild hogs have not been observed on the preserve, however, if they become a nuisance, they may be trapped using pens with trap doors and baited with acorns or old corn. A contractor can be hired to accomplish this if the need arises. Wild hogs may be hunted in other areas of the County that are designated wildlife management areas however; hunting will be prohibited on the preserve. Total exclusion of hogs is not usually possible; however, the amount of hog damage will be monitored to determine the appropriate action needed.

If feral cat colonies are found near the preserve, the element that sustains an undesirable population should be identified and efforts made to ask property owners to control (i.e. refuse bins, dumpsters, and supplementary feeding by humans). Traps may also be set if other methods are unsuccessful. A similar approach shall be taken to control feral dog populations, through elimination of the elements that sustain their undesirable population.

Goal 4: Create and Implement a Prescribed Fire Program

Fires were a naturally occurring event in native communities prior to mankind's intervention. The primary ecological functions of fire are to eliminate accumulated plant material, return nutrients to the soil, and germinate fire-dependent species. In today's preserve areas prescribed burning is an essential tool in both land and wildlife management, and helps reduce potential catastrophic wildfires that can occur in the wildland/urban interface areas. Proper prescribed burns promote the growth of green shoots, roots, and rhizomes of grasses and sedges that are then available for foraging. In wetlands, burning creates deep pools and edges for nesting and feeding of waterfowl and controls undesirable vegetation.

Much of Collier County is comprised of natural communities that are dependent on fire to maintain species composition and diversity. The use of prescribed fire as a management tool will be critical to the long-term health of the natural communities and native species at the Rivers Road Preserve.

Action Item 4.1: Create a Prescribed Fire Management Plan

Below is the prescribed fire management plan for Rivers Road Preserve. The preserve land manager with assistance from the Florida Forest Service (FFS) and/or a Certified Prescribed Burn Manager will implement the prescribed fire management plan according to the specific needs of Rivers Road Preserve. Staff may coordinate this effort with other local qualified agencies for review and approval.

Objectives

The prescribed fire plan for the Rivers Road Preserve will be a program that mimics the natural fire cycle for the various natural community types identified within the preserve. Timing, based on weather conditions and ignition practices can be modified to accomplish goals ranging from exotic vegetation control to wildlife habitat enhancement and fuel reduction within burn units. This prescribed fire management plan will be implemented at Rivers Road Preserve for ecological purposes. The goals and objectives established for the preserve will be clearly laid out and incorporated into each prescription. Generally, prescribed burns conducted at the Rivers Road Preserve will involve a variety of firing techniques over a range of weather conditions to create mosaic burn patterns that will benefit an array of wildlife species.

Burn Units

The Preserve can be divided into smaller burn units. The creation of burn units not only facilitates the application of prescribed fire, it will also help create a mixture of burned and unburned areas across the preserve. Patches of unburned habitat in conjunction with newly burned areas will increase habitat heterogeneity, ensuring a wide range of habitat compositions year round for use by a diversity of wildlife species. The size and boundaries of each burn unit should be established based on the preserve boundaries and the location of existing barriers such as fence lines, ditches, roads and other existing structures. Fire breaks will consist of primitive roads, trails disked to bare mineral soil, wet lines, and/or natural vegetation breaks.

If new fire breaks are needed, efforts will be made to minimize disturbance to existing native vegetation during their creation and maintenance, and no wetlands will be adversely impacted as a result of fire break construction. In the event of a wildfire FFS may create fire breaks

within existing wetlands. If plow lines are put in as a result of a wildfire, whether they are in a wetland or upland, efforts will be made to restore those areas to prior grade.

Burn Frequency and Burn Season

Historically the frequency of wildfire in Florida's ecosystem varied from year to year. However, fire frequency for natural communities as found within the Rivers Road Preserve will generally follow these guidelines (FNAI 1990):

- mesic pine flatwoods – frequent (2-4 year cycle);
- wet pine flatwoods – frequent (3-7 year cycle);
- depression marshes – more frequent around the periphery (3-7 year cycle) and becoming more occasional toward the center (8-25 year cycle);
- cypress/pine/cabbage palm – transitional community from moist upland to hydric sites – occasional (8-25 year cycle);
- upland mixed forest – rare or no fire; densely closed canopy limits air movement and light penetration, making high humidity relatively constant.

Burn units incorporating multiple natural communities under different fire cycles will be burned based on the community requiring the shortest cycle. The other communities within that burn unit that are on a longer fire cycle will likely not burn as frequently since fuels will not have built up. The seasonality, weather factors, or ignition techniques of the prescribed burn will also be chosen to selectively burn the community within the unit with the shortest fire cycle.

Fire maintenance of hydric hammocks will be accomplished primarily by burning the adjacent flatwoods and marshes, reducing the fuel needed to ignite the hammock. Maintenance of natural species composition and protection from excess fuel build-up will be accomplished by allowing fire to enter the edges but not completely burn through the hammocks. Fire will be introduced into the edges of hammocks under moist conditions that will not result in a destructive fire through the hammock. Fire frequency in this situation will be dictated by the frequency of fires in adjacent communities.

Fire will be applied to freshwater marshes in conjunction with the burning of surrounding pine flatwoods to maintain open herbaceous ponds and control woody plants found primarily on the edge of these depressions. The centers of depression marshes are much wetter than the surrounding flatwoods and may not burn at the same time the flatwoods are ignited. In this case, a separate fire under guarded conditions may be needed to carry the fire across the marsh.

Qualitative observations will be made within each burn unit on an annual basis to determine current fuel loads, habitat structure, and habitat quality. The burn schedule will then be modified as needed based on these qualitative observations. Areas where fire cannot be implemented will instead be mowed, roller chopped, or pruned to mimic effects of fire. The burn manager will conduct post-burn inspections to ensure the burn objectives are being met for each natural community. When possible, vegetation monitoring activities will be conducted around burn events to help assess the effectiveness of the prescribed burn regime.

Burn Schedule

Generally, prescribed burns within the Rivers Road Preserve will be conducted during the growing season (mid-March through early September) as well as during the dry season (November to mid-May). Essentially, burns will be scheduled when conditions allow, and the timing selected to best suit the objectives for each burn unit, as well as to provide protection to listed species.

Burn Manager Duties

Florida Statute 590.125 and Chapter 5I-2 of the Florida Administrative Code (FAC) grant the Florida Forest Service the authority to regulate prescribed burning in Florida. Prescribed burning will be planned and carried out by a Certified Prescribed Burn Manager (as licensed by the FFS) and experienced fire crews utilizing a Prescribed Burn Plan form, referred to from here on as the prescription. The planning and application of prescribed burning will comply with all applicable federal, state, and local regulations.

Each prescription will include the following at a minimum:

- purpose for the burn;
- brief description of the natural community type(s) to be burned;
- a map depicting the location of the burn, firebreak locations, potential hazard areas and escape routes for the fire crew;
- acceptable ranges of weather and soil moisture conditions;
- a pre-burn inspection of burn unit, firebreaks and any potential hazards (including power transmission lines, active cattle grazing locations, and existing manmade structures) within the burn unit;
- names and contact information for neighbors, lease holders, local fire district and other pertinent stakeholders to be contacted prior to ignition;
- techniques used to ignite the controlled burn;
- personnel, equipment and safety requirements;
- personnel assignments and responsibilities; and
- post-burn evaluation.

All necessary permits and authorizations will be obtained by the Certified Prescribed Burn Manager before implementation of the burn. As part of each prescription, the burn manager will develop an emergency action plan that will include escape routes for all personnel and actions to be taken in the event of unexpected weather changes or fire behavior.

Weather and Fuel Considerations

When developing recommendations for a prescribed burn, the Burn Manager will give careful consideration to weather and fuel conditions including, but not limited to: wind, relative humidity, temperature, rainfall and soil moisture, air mass stability and atmospheric dispersion. It will be the responsibility of the Burn Manager to obtain current weather forecasts from FFS, and other weather sources as necessary, prior to executing the prescribed burn. Although preferred weather and fuel conditions may vary based on specific burn objectives, Wade and Lundsford (1989) suggest the following as preferred conditions for prescribed burns in southern forests:

- 6 to 20 mph persistent surface winds;
- 30 to 55 percent relative humidity;

- temperatures above 80 degrees Fahrenheit are recommended when the primary objective is to control undesirable species;
- damp soil moistures;
- slightly unstable or neutral airmass stability; and
- KBDI of 0 to 600 dependent on burn objectives.

Smoke Management

Smoke management is an essential component of the burn prescription. The Burn Manager will evaluate the potential impacts of each prescribed burn to smoke-sensitive areas located within a 20-mile radius from the location of the burn by employing a Screening System, such as recommended in Wade and Lundsford (1989). Based on definitions contained within the state regulations, smoke sensitive areas are areas within which smoke could have an adverse impact for reasons of visibility, health or human welfare (NRCS 2003). Monitoring of the prescribed burn will continue until smoke no longer presents a potential hazard and there is no potential for the fire to reignite and cause an uncontrolled fire.

Post-Burn Evaluation

The purpose of the post-burn evaluation is to ensure the objectives of the burn were attained and gain information to be used in future burns (Wade and Lundsford 1989). The post-burn evaluation will be conducted by the Burn Manager within one week following the burn, as well as a second evaluation after the first post-fire growing season. Quantitative vegetation monitoring, photo documentation and wildlife monitoring can be implemented to further aid in determining if the objectives of each burn were met.

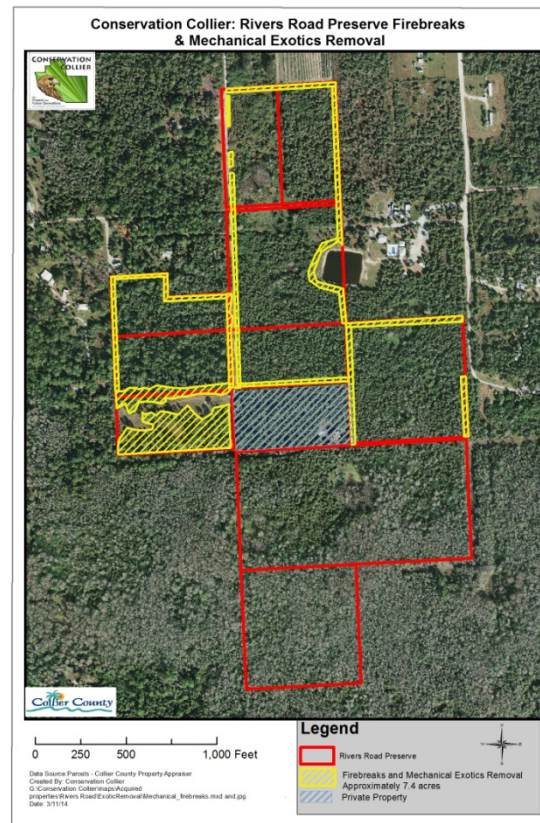


Figure 9. Rivers Road Firebreaks and Mechanical Exotic Removal Map

Action Item 4.2: Develop Burn Units

Burn units will need to be delineated for Rivers Road Preserve, as outlined in the prescribed fire management plan above prior to the implementation of the plan.

Action Item 4.3:

Install Perimeter Fire Lines

Fire lines were installed utilizing best management practices to minimize impacts to mature trees, natural communities and wildlife populations. Firebreaks will be disked or mulched down to soil and mature pine trees will be avoided. They are approximately 15-20 feet wide

due to the amount of thick canopy adjacent to neighboring residences (Figure 9). Firebreaks also double as hiking trails in several areas.

Action Item 4.4: Hold Pre-Fire Public Meetings and Notify Surrounding Community

Public meeting(s) will be held before each burn and a system of notifying neighboring landowners in advance of prescribed burns will be established (via door postings, email, phone trees, etc.) this system will be executed before each prescribed fire. A press release will also be sent out to notify the newspaper, radio and news channels. Information will also be provided to the County Manager, County Commissioners and local fire departments prior to any burns.

The use of prescribed fire as a management tool will be critical to the long-term health of the natural habitat and native species at the Rivers Road Preserve. Pine Flatwoods communities and marshes require periodic fires. If pine flatwoods areas such as this go without fire for too many years, fuels build up and wildfires can occur. The first controlled burn should be conducted in the winter. The site should be burned in 3-5 year increments eventually moving towards burning in the growing season. The County will work closely with the Florida Forest Service (FFS) to conduct the first prescribed burn on the property. We will also work with the County Fire Department to protect the surrounding structures and property.

Goal 5: Continue to Restore Native Vegetation

Action Item 5.1: Encourage natural recruitment

In at least one area of the preserve where several old structures were removed, signs of natural recruitment of pines, grasses and myrtle have been noted. Removal of exotics will further encourage restoration. Further planting of pines may be considered in this area and due to the proximity to the planned parking / picnic area and trailhead, may provide an opportunity for educating visitors about restoration.

Action Item 5.2: Plant supplemental ground cover species

After a burn regime is established, vegetation monitoring will take place. If natural restoration does not occur, supplemental ground cover species will be planted.

Action Item 5.3: Monitor and treat new invasive, exotic species that may occur post-fire and in fire breaks to prevent them from hindering native recruitment and re-growth

After prescribed burns, any newly identified areas of invasive, exotics will be noted and a treatment plan prepared.

Goal 6: Maintain Public Access Trails and Amenities

Action Item 6.1: Develop an ADA accessible trail and parking area

A small grassy parking area was created at the end of Rivers Road in the short term to accommodate a 5-10 vehicles. In the future, if funds allow, 1-2 handicapped parking spaces will be built using crushed/hardened rock, shell or concrete and a trail will lead to the picnic area.

Action Item 6.2: Maintain picnic area

A picnic area was created by a local Eagle Scout in 2014 under the pines adjacent to the planned parking area. This area has a large picnic table and a bench. This area will be monitored for trash and safety of amenities.

Action Item 6.3: Maintain trail system

After appropriate actions were taken to reduce or eliminate exotic vegetation, trails were established throughout the property to allow for hiking and nature observation within the preserve (Figure 10). The current hiking trails are approximately 1.76 miles long and wind throughout the northern portion of the preserve, with trail heads near the future parking area and adjacent to Rivers Road. Trails overlap with firebreaks in several areas. The first trailhead along Rivers Road northeast of the parking area leads into a trail that heads east and partially follows a formerly cleared road adjacent to a power line corridor. The trail then leads to the north past a pond up into the northern portion of the preserve and gives hikers the option to hike back down Rivers Road to the parking area or to loop back around and down to the pond the same trail they started in on. All trails follow as closely as possible any areas that were disturbed or cleared of exotics. This area originally had scattered Brazilian Pepper, some melaleuca and significant quantities of cabbage palm. There are several marshy areas that were avoided, however, allowing the trail to come close to these areas for viewing was considered.

The second trailhead is located adjacent to the northwest of the parking / picnic area and directs visitors in a loop through an area that was cleared of air potato and Brazilian pepper and follows an old fire line. The USDA started a biological control program to reduce the prevalence of air potato in this area. Trails may be marked with information regarding this program and the results if successful.

Additional hiking trails are proposed to be approximately 0.45 miles long and may connect to current trails on the eastern side of the preserve and may continue south into the pop ash marsh area, with a potential boardwalk (approximately 600 feet long) constructed to allow viewing of the marsh while prohibiting access. The boardwalk would be built only if future funding or grant funding allows.

Once established, all trails will need to be maintained and monitored to ensure that visitors stay on them and no new trails are being made. Clearing the trails of fallen trees and debris and creating new trails may also enable and increase the illegal use of all terrain vehicles (ATVs) and dirt bikes on the property. Local birding groups may frequent the preserve and County staff may provide quarterly public tours of the site. Local schools may also use the site for nature based field trips. Signs will be installed on the fire line to ask visitors to respect the privacy of adjacent landowners where appropriate.

Goal 7: Facilitate Uses of the Site for Educational Purposes

Action Item 7.1: Develop interpretive signage to educate preserve visitors

Site specific signage will be developed to educate visitors on plant and animal identification and ecosystem information. Plant identification signs have been placed throughout the trail system. The kiosk near the parking area has information about preserve flora and fauna and a large map of

the trails. Additional educational signage may be installed near the picnic area and other areas in the future if funding allows.

Action Item 7.2: Provide preserve brochures in rainproof box on site

A trail map or a brochure outlining the native plant communities and wildlife present at the preserve will be created by County staff and kept in rainproof boxes attached to the kiosk near the preserve entrance(s). These boxes will be inspected monthly by the Preserve Manager and refilled as necessary.

Action Item 7.3: Coordinate with local groups to encourage site visitation

Staff may work within the Parks and Recreation Department to encourage visitation by summer campers. Local Boy and Girl Scout Troop and local church groups were notified about the site and were encouraged to assist in small projects on site such as building picnic tables, benches and a kiosk. Birding groups will also be notified about birding opportunities on site.

Goal 8: Provide a Plan for Disaster Preparedness

The Conservation Collier Program has a plan in place to examine the preserve and future access ways after storms. Essentially, this is a visit before a storm to secure the property and a visit after the storm within 48 hours to assess damage (see Action Items 8.3 and 8.4). Collier County has several vendors under contract for disaster debris removal.

Action Item 8.1: Establish pathway for emergency rescue crews to access

Creating pathways for fire and rescue will include maintaining fire breaks around the preserve. Emergency medical technician and paramedic access may be accommodated via these fire breaks or on at-grade stabilized pathways. They may use Rivers Road or Moulder Drive. Fire lines will be maintained to allow for FFS to access areas of the property however, once controlled burns are conducted the chances of a wildfire will be greatly reduced. Helicopter landing GPS coordinates will be included in the final approved burn plan.

Action Item 8.2: Survey trees along the trail and the perimeter of the property annually for damage

Staff will utilize the services of a certified arborist if needed to determine diseased, weak, or damaged trees/limbs surrounding the trails and kiosks that should be removed for safety reasons and prior to and following hurricane season. This activity is intended to reduce the risk of visitor injury.

Action Item 8.3: Visit preserve within 48 hours after a storm event to assess damage

Staff will take photos of damage and fill out appropriate Collier County Risk Management Department forms. If damage is extensive, the preserve will be closed until public safety hazards are cleared.

Action Item 8.4: Promptly clear storm debris from preserve

If necessary, a Collier County emergency debris removal contractor will be contracted as soon as possible after the storm to schedule clean-up. Removal of debris and damaged or downed trees along the trail system may be needed. Downed trees and limbs that do not appear to be a public

safety hazard will be cleared at the discretion of the Preserve Manager. As much of the hurricane debris as possible may be chipped and retained on-site to be used as mulch for the trail system.

Goal 9: Coordinate with Stakeholder, Partners and Regional Agencies

Action Item 9.1: Coordinate with and notify stakeholders

Notify surrounding property owners, including adjacent public schools, churches, and interested community members of the plans for the preserve and receive input on the final management plan revisions every 10 years starting in September 2024.

Action Item 9.2: Interagency Agreements and Cooperating Agencies

An interagency agreement may be formed between two or more agencies that frequently assist each other in performing prescribed burning activities. The Florida Forest Service may also require the County to sign an interagency agreement if required before they can offer assistance.

Action Item 9.3: Cooperating Agencies

Coordinate with the following as appropriate:

- Florida Audubon Society-bird watching opportunities
- Florida Forestry Service-prescribed burning assistance
- Collier County Fire Department-prescribed burning assistance
- Collier County Sheriff's Office-patrolling and enforcement

Action Item 9.4: Potential Cooperating Organizations

Coordinate with the following as appropriate:

- Naples Chapter of the Florida Native Plant Society
- Local Boy and Girl Scout Troops
- Other community groups to assist with trail maintenance and other similar projects

Goal 10: Monitor Public Use

Action Item 10.1: Onsite grand opening ceremony

On May 2016, an onsite grand opening ceremony was held to commemorate the opening of the preserve. The Chair of the CCLAAC, the program director and the preserve manager spoke and a ribbon was cut at the trailhead. Neighbors of the preserve and the Parks and Recreation Assistant Director attended, and attendees were led on a guided hike.



Action Item 10.2: Monitor Trails and Picnic Areas

Staff will visit the preserve on a bi-monthly basis to check the hiking trails and picnic area. The picnic area will be monitored for weeds and trash.

Action Item 10.3 Recruit Volunteers

Staff currently works with the landowner who lives in the center of the preserve. He has become a Collier County Parks and Recreation volunteer. He monitors public use as he enters and leaves his property on a daily basis. He is in close contact with staff and informs us if there are any concerns or issues. He also has two wildlife cameras set up at the entrance to his driveway, so he can monitor potential trespassers and wildlife. He also mows the parking area on an as needed basis and maintains the entrance road.

The preserve has been utilized by horseback riders as tracks and horse dropping are frequently found on the trail and Rivers Road. Staff may attempt to recruit local horseback riders and/or equestrian groups to volunteer to clean up the trails and to trim overhanging branches.

Local college students need to complete volunteer hours each year. When they approach the program to volunteer, staff may utilize them to assist with trail maintenance or other projects at the Preserve.

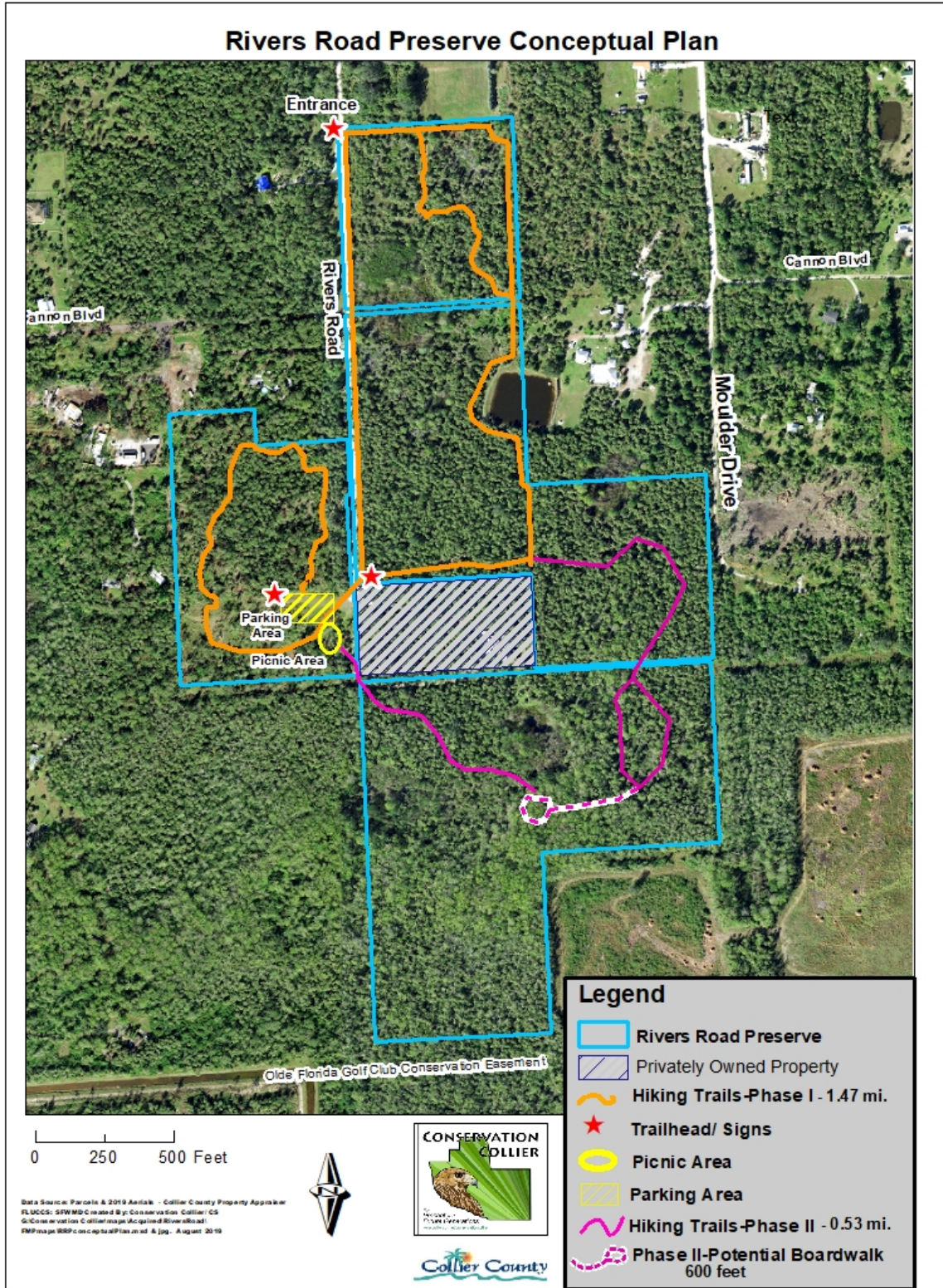


Figure 10. Rivers Road Preserve Conceptual Plan

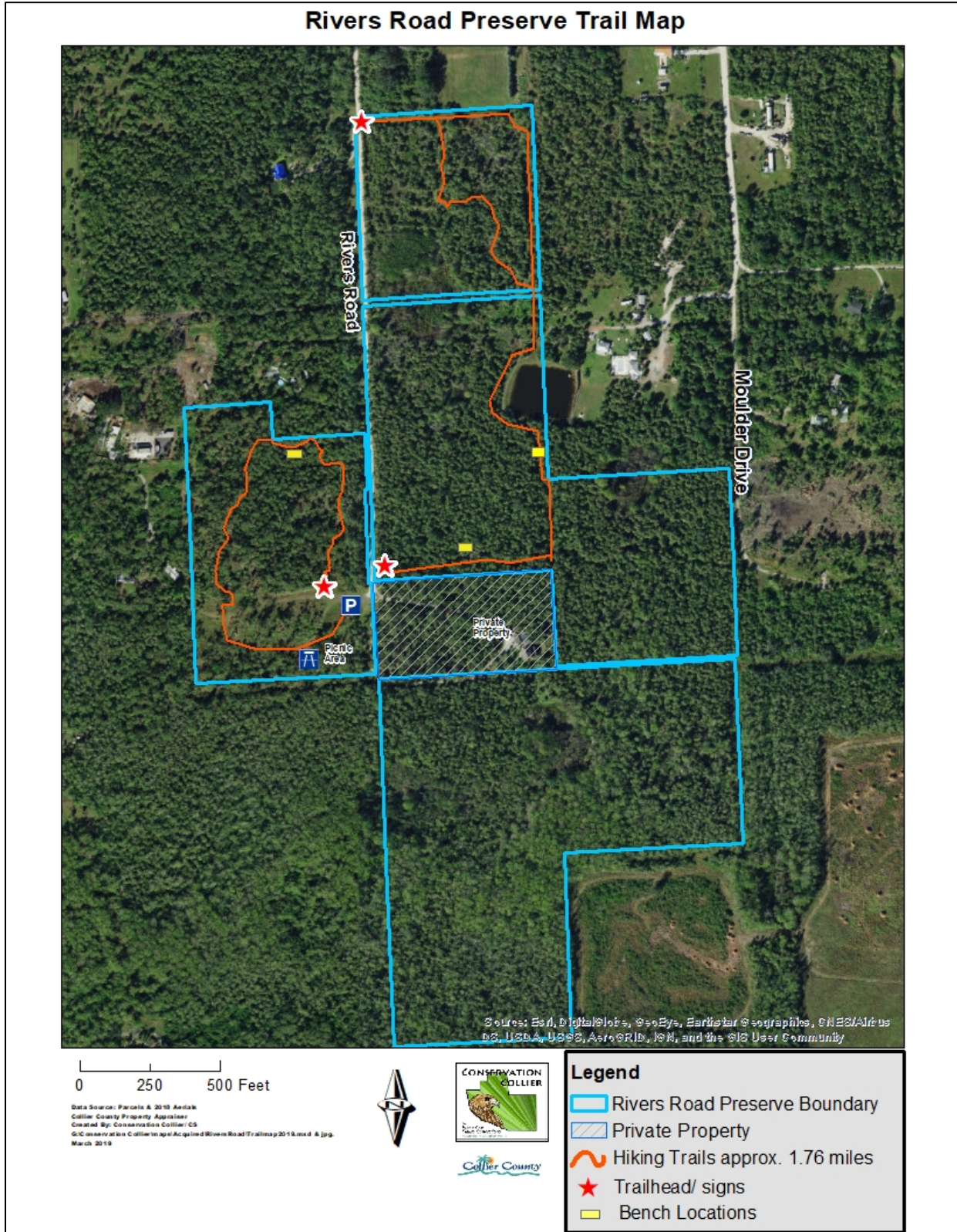


Figure 11. 2019 Rivers Road Preserve Trail Map

4.5. Establish an Operational Plan for the Rivers Road Preserve

This section provides management recommendations for operation of the Rivers Road Preserve. It discusses maintenance and budgeting needs, the possibilities for contracting the restoration activities, coordination, and other management issues.

4.5.1 Maintenance

The primary maintenance activities for the preserve will include the control of dumping and littering within and around the preserve and trail. Other preliminary maintenance activities for the preserve will include invasive exotic species control and trail maintenance.. Once the preserve is open to the public other significant maintenance activities will be necessary for the upkeep of all amenities and signage including but not limited to the trailhead/parking areas and interpretive signage.

4.5.2 Estimated Annual Costs and Funding Sources

Preliminary budget estimates for Rivers Road Preserve include cost breakdowns associated with resource restoration and management. The funding source identified for the restoration and management activities is the Conservation Collier Program Management Trust Fund. Table 11 shows the activities planned for the next ten years and the initial and annual cost estimate of each activity. This budget was developed using data from Conservation Collier and other cooperating entities, and is based on actual costs for land management activities and maintenance. The budget considers available funding and is consistent with the direction necessary to achieve the goals and objectives for Rivers Road Preserve. The costs provided in Table 11 are based on actual costs over the last 5 years and estimated costs for upcoming years.

While reviewing the budget table, please note that staff received notification in April 2014 from the USFWS, Partners for Fish and Wildlife Program that a grant of \$15,000 would be awarded specifically for exotic removal within the preserve. In November 2014, the program received an additional \$15,000 from the Florida Wildlife Conservation Commission Invasive Plant Management Section to treat invasive exotic plants. This saved the program this amount of money in those particular fiscal years. Additional grants will continue to be sought to supplement existing management funds on an as needed basis. Staff may also utilize the Collier County Sheriff's Department weekenders program for certain labor projects and may also separately involve the County Scout programs for trail and amenity creation and enhancement. Private conservation organizations may also provide funding for specific projects.

Table 11. Estimated Annual Land Management Budget

| Table 11: Estimated Annual Land Management Budget (Amounts in \$) | | | | | | | | | | | |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------------------|------------------|------------------|------------------|------------------|
| Item | YEARS | | | | | | | | | | Total |
| | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 | |
| Facilities Development | | | | | | | | | | | |
| Trail Creation and Maintenance | | | \$5,500 | 2000 | \$2,000 | \$1,600 | \$1,600 | \$1,600 | \$1,600 | \$1,600 | \$17,500 |
| Parking Area-open mowed* | | | | | | | | | | | \$0 |
| Fence (4' field fence) | | \$5,020 | | | | | | | | | \$5,020 |
| Boundary survey | \$6,850 | \$955 | | | | | | | | | \$7,805 |
| Interior Info signage: Interpretative | | | | | | | | | | | \$0 |
| Small signs | | \$500 | | | | | | | | | \$500 |
| Plant signs | | \$500 | | | | | | | | | \$500 |
| Entry signage / small kiosk *donated | | | | | | | | | | | \$0 |
| Benches (3), Picnic table (1)*donated | | | | | | | | | | | \$0 |
| Resource Restoration/Monitoring | | | | | | | | | | | \$0 |
| Remove exotics (maintenance) and vines (acres)* | \$58,845 | \$3,994 | \$27,788 | \$8,156 | \$8,156 | \$8,204 | \$8,500 | \$8,500 | \$8,500 | \$8,500 | \$149,143 |
| Fire Break Installation/fuel reduction and maintenance | \$20,350 | \$16,000 | | | | | | | | | \$36,350 |
| Plant Survey | \$650 | | | | | | | | | \$1,000 | \$1,650 |
| Grand Total | \$86,695 | \$26,969 | \$33,288 | \$10,156 | \$10,156 | \$9,804 | \$10,100 | \$10,100 | \$10,100 | \$11,100 | \$220,968 |
| *Boy Scouts donated 4 benches and one large picnic table and a large kiosk for public use | | | | | | | | | | | |
| *Grants were received from in USFWS (\$15,000) in May 2014 and FWC (\$15,319) in November 2014. | | | | | | | | | | | |
| * Neighbor/volunteer mows the parking area on a regular basis | | | | | | | | | | | |

Appendix 1

Rivers Road Legal Descriptions

Property Identification Number: **00216000001**

Legal Description: THE WEST ONE-HALF (W ½) OF SOUTHWEST QUARTER (SW ¼) OF SOUTHWEST QUARTER (SW ¼) OF NORTHEAST QUARTER (NE ¼), LESS WEST AND SOUTH TEN (10') FEET THEREOF, LOCATED IN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

AND

Legal Description: THE EAST HALF (E ½) OF THE SOUTHWEST QUARTER (SW ¼) OF THE SOUTHWEST QUARTER (SW ¼) OF THE NORTHEAST (NE ¼) QUARTER, LESS THE SOUTH TEN (10') FEET THEREOF, IN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

Property Identification Number: **00215440002**

Legal Description: THE WEST ½ OF THE NORTH ONE HALF (N½) OF THE NORTHWEST QUARTER (NW ¼) OF THE SOUTHEAST QUARTER (SE ¼), LESS NORTH TEN (10') FEET AND WEST (10') FEET, AND THE EAST (10') FEET THEREOF, SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

AND

Legal Description: N ½ OF SW ¼ OF NW ¼ OF SE ¼, LESS W 10 FT AND LESS S 10 FT, WITHIN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

AND

Legal Description: SOUTHEAST QUARTER (SE ¼) OF THE NORTHWEST QUARTER (NW ¼) OF THE SOUTHEAST QUARTER (SE ¼), OF SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

Property Identification Number: **00217080004**

Legal Description: THE SOUTH HALF (S ½) OF THE NORTHEAST QUARTER (NE ¼) OF THE NORTHEAST QUARTER (NE ¼) OF THE SOUTHWEST QUARTER (SW ¼), LESS THE NORTH 130' FEET OF THE EAST 335.08 FEET THEREOF, IN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

AND

Legal Description: THE NORTH HALF (N ½) OF THE SOUTHEAST QUARTER (SE ¼) OF THE NORTHEAST QUARTER (NE ¼) OF THE SOUTHWEST QUARTER (SW ¼), LESS THE EAST 10 FEET THEREOF, IN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

AND

Legal Description: S½ OF SE ¼ OF NE ¼ OF SW ¼, LESS E 10 FT AND LESS S10 FT, WITHIN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

Property Identification Number: **00214760000**

Legal Description: N ½ OF SW ¼ OF SE ¼, LESS N 10 FT, LESS E 10 FT AND LESS W 10 FT, WITHIN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

AND

Legal Description: SW ¼ OF SW ¼ OF SE ¼, LESS W 10 FT AND LESS S 10 FT, WITHIN SECTION 30, TOWNSHIP 48 SOUTH, RANGE 27 EAST, COLLIER COUNTY, FLORIDA.

Appendix 2

Floristic Inventory of the Rivers Road Preserve

Comprehensive Plant List. Data compiled by Dr. James Burch, Phd. Summer 2013

(Other plants documented by County staff noted in table).

Plants listed in the State of Florida Hydric Soil Field Indicators and National List of Plant Species that Occur in Wetlands are indicated, respectively, beneath each species as appropriate. Listing is from State of Florida Wetland Plant List (State of Florida Hydric Soil Field Indicators, lists for Chapter 62340; Tobe et al. 1998) and National List of Plant Species that Occur in Wetlands (Reed 1998). FAC = facultative wetland species; FACW = facultative to wet wetland species; OBL = obligate wetland species; * = non-native plant species.

All plants listed by the Florida Exotic Pest Plant Council as invasive exotic are noted in table as Category I or II. Other exotic plants are noted with an asterisk following the scientific name.

| Scientific Name | Common Name | Wetland status | Listed status | FLEPPC Category | Staff |
|------------------------------------|----------------------|----------------|---------------|-----------------|-------|
| <i>Abrus precatorius</i> * | rosary pea | | | I | |
| <i>Acacia auriculiformis</i> * | earleaf acacia | | | I | x |
| <i>Acer rubrum</i> | red maple | FACW, FAC | | | |
| <i>Aeschynomene Americana</i> | jointvetch | -, FACW | | | |
| <i>Agave sp.</i> * | agave | | | | |
| <i>Aloe vera</i> * | aloe | | | | |
| <i>Alternanthera ramosissima</i> | chaff flower | | | | |
| <i>Ambrosia artemesiifolia</i> | ragweed | FAC, FAC | | | |
| <i>Andropogon glomeratus</i> | bushybeard bluestem | FACW, FACW+ | | | |
| <i>Andropogon virginicus</i> | bluestem | FAC, FAC- | | | |
| <i>Ardisia escallonioides</i> | marlberry | FAC | | | x |
| <i>Arecastrum romanzoffianum</i> * | queen palm | | | | |
| <i>Baccharis halimifolia</i> | salt bush | FAC, FAC | | | |
| <i>Berchemia scandens</i> | rattan vine | --, FAC- | | | |
| <i>Bidens alba</i> | beggar ticks | FAC | | | |
| <i>Blechnum serrulatum</i> | blechnum, swamp fern | FACW, FACW+ | | | |
| <i>Boehmeria cylindrica</i> | false nettle | OBL, FACW+ | | | |
| <i>Bougainvillea glabra</i> * | bougainvillea | | | | x |
| <i>Buchnera Americana</i> | blue hearts | | | | |
| <i>Bumelia celastrina</i> | buckthorn | FAC, -- | | | |
| <i>Bumelia tenax</i> | buckthorn | FAC, -- | | | |
| <i>Callicarpa americana</i> | beauty berry | | | | |
| <i>Campsis radicans</i> | trumpet creeper | --, FAC | | | |
| <i>Carex gigantea</i> | large sedge | OBL, OBL | | | |
| <i>Carphephorous corymbosus</i> | chaffhead | | | | |

| | | | | | |
|----------------------------------|-----------------------|------------|--|---|---|
| <i>Cassia chamaecrista</i> | pigeon pea | | | | |
| <i>Cassytha filiformis</i> | love vine | -- , FAC- | | | |
| <i>Catharanthus roseus*</i> | Madagascar periwinkle | | | | |
| <i>Cenchrus incertus</i> | sandspur | | | | |
| <i>Centella asiatica</i> | spadeleaf | FACW, FACW | | | |
| <i>Cephalanthus occidentalis</i> | button bush | OBL, OBL | | | |
| <i>Cereus sp.*</i> | cactus | | | | |
| <i>Citrus spp.*</i> | citrus | | | | |
| <i>Chiococca parviflora</i> | snowberry | FAC, -- | | | |
| <i>Cladium jamaicense</i> | saw grass | OBL, OBL | | | |
| <i>Commelina diffusa</i> | dayflower | FACW, FACW | | | |
| <i>Conoclinium coelestinum</i> | mist flower | FAC, FAC | | | |
| <i>Conyza canadensis</i> | dwarf horseweed | | | | |
| <i>Coreopsis leavenworthii</i> | tickseed | FACW, FACW | | | |
| <i>Crinum americanum</i> | swamp lilly | OBL, OBL | | | |
| <i>Crotalaria incana</i> | rattlesnake weed | | | | |
| <i>Crotalaria rotundifolia</i> | | | | | |
| <i>Croton punctatus</i> | Gulf croton | | | | |
| <i>Cyperus sp.</i> | sedge | FACW | | | |
| <i>Delonix regia*</i> | royal poinciana | | | | |
| <i>Desmodium incanum</i> | -- | | | | |
| <i>Desmodium tortuosum*</i> | -- | | | | |
| <i>Dichanthelium acuminatum</i> | grass | FACW, FAC | | | |
| <i>Dichanthelium sp.</i> | grass | | | | |
| <i>Dioscorea bulbifera*</i> | air potato | | | I | |
| <i>Emilia sonchifolia*</i> | tassel flower | | | | |
| <i>Encyclia tampensis</i> | butterfly orchid | | | | |
| <i>Eragrostis elliottii</i> | grass | FAC, FACW | | | |
| <i>Eryngium baldunii</i> | snakeroot | FAC, FACW+ | | | |
| <i>Eupatorium capillifolium</i> | dog fennel | FAC, -- | | | |
| <i>Eustachys glauca</i> | grass | FACW, FACW | | | |
| <i>Ficus aurea</i> | strangler fig | FAC, FACW | | | |
| <i>Fimbristilis spathacea</i> | hurricane grass | FAC, FACW+ | | | |
| <i>Fraxinus caroliniana</i> | pop ash | OBL, OBL | | | |
| <i>Galactea prostrata</i> | milk pea | | | | |
| <i>Gaura angustifolia</i> | beeblosom | | | | |
| <i>Gratiola hispida</i> | -- | FAC, FAC | | | |
| <i>Habernaria sp.</i> | bog orchids | FACW | | | x |

| | | | | | |
|------------------------------------|---------------------|------------|------|--|---|
| <i>Hamelia patens</i> | fire bush | | | | x |
| <i>Heterotheca subaxillaris</i> | camphorweed | | | | |
| <i>Hypericum tetrapetalum</i> | -- | FAC, FACW | | | |
| <i>Ilex cassine</i> | dahoon holly | OBL, FACW | | | |
| <i>Ilex glabra</i> | gallberry | --, FACW | | | |
| <i>Ipomoea indica</i> | morning glory | FAC, -- | | | |
| <i>Ipomoea sagittata</i> | morning glory | --, FACW | | | |
| <i>Ipomoea trichocarpa</i> | morning glory | | | | |
| <i>Iresine diffusa</i> | blood leaf | | | | |
| <i>Lantana camera</i> * | lantana | | I | | x |
| <i>Leersia hexandra</i> | cut grass | OBL, OBL | | | |
| <i>Leucaena leucocephala</i> * | tantan | | | | |
| <i>Lippia nodiflora</i> * | carpetweed | | | | |
| <i>Ludwigia sp.</i> | ludwigia | OBL | | | x |
| <i>Lyonia ferruginea</i> | rusty lyonia | | | | x |
| <i>Lythrum alatum</i> | loosestrife | OBL, FACW+ | | | |
| <i>Mangifera indica</i> * | mango | | | | |
| <i>Melaleuca quinquenervia</i> * | cajeput | FAC, FAC | I | | |
| <i>Melanthera nivea</i> | squarestem | FACW, -- | | | |
| <i>Melochia corchorifolia</i> * | chocolate weed | FAC, FAC | | | |
| <i>Mikania scandens</i> | hempweed | --, FACW+ | | | |
| <i>Momordica charantia</i> * | bitter gourd | | | | |
| <i>Morus rubra</i> | red mulberry | FAC, FAC | | | |
| <i>Myrcianthes fragrans</i> | naked wood | | | | |
| <i>Myrica cerifera</i> | wax myrtle | FAC, FAC+ | | | |
| <i>Mycoblastus sp.</i> | blood lichen | | | | x |
| <i>Oeceoclades maculata</i> * | monk orchid | | | | x |
| <i>Ophioglossum palmatum</i> | hand fern | | E-FL | | x |
| <i>Oplismenus setarius</i> | basket grass | FAC, -- | | | |
| <i>Oxalis corniculata</i> | sorrel | | | | |
| <i>Panicum hemitomon</i> | maidencane | OBL | | | |
| <i>Parthenocissus quinquefolia</i> | Virginia creeper | --, FAC | | | |
| <i>Passiflora suberosa</i> | wild passion vine | | | | |
| <i>Pennisetum purpureum</i> * | Napier grass | FAC, -- | II | | |
| <i>Persea borbonia</i> | red bay | --, FACW | | | |
| <i>Phlebodium aureum</i> | golden serpent fern | | | | |
| <i>Phyla stoechadifolia</i> | southern fogfruit | FAC,FAC | | | |
| <i>Phyllanthus abnormis</i> | phyllanthus | | | | |
| <i>Phyllanthus urinaria</i> * | phyllanthus | FAC | | | |

| | | | | | |
|-----------------------------------|-----------------------|------------|----|--|---|
| <i>Physalis arenicola</i> | ground cherry | | | | |
| <i>Pinus elliotii</i> | slash pine | FACW, FACW | | | |
| <i>Pluchea odorata</i> | fleabane | FACW, FACW | | | |
| <i>Polygala grandiflora</i> | candyroot | FACW, -- | | | |
| <i>Polypodium polypodioides</i> | resurrection fern | | | | |
| <i>Polypremum procumbens</i> | rustweed | FAC, -- | | | |
| <i>Pontederia cordata</i> | pickerelweed | OBL | | | |
| <i>Psidium guajava*</i> | guava | | II | | |
| <i>Psychotria nervosa</i> | wild coffee | FAC, -- | | | |
| <i>Pteridium aquilinum</i> | bracken fern | | | | |
| <i>Pteris vittata*</i> | -- | | II | | |
| <i>Quercus laurifolia</i> | laurel oak | FACW, FACW | | | |
| <i>Quercus virginiana</i> | live oak | | | | |
| <i>Rapanea punctata</i> | myrsine | --, FAC | | | |
| <i>Rhoeo discolor*</i> | oyster plant | | | | |
| <i>Rhus copallina</i> | sumac | | | | |
| <i>Rhynchospora colorata</i> | white top sedge | FACW, FACW | | | |
| <i>Rhynchospora intermedia</i> | beakrush | FACW, FACW | | | |
| <i>Richardia grandiflora*</i> | Richardia | | | | |
| <i>Rubus trivialis</i> | dewberry | FAC, FAC | | | |
| <i>Sabal palmetto</i> | sabal palm | FAC, FAC | | | |
| <i>Sagittaria lancifolia</i> | duck potato | OBL, OBL | | | |
| <i>Salix caroliniana</i> | willow | OBL, OBL | | | |
| <i>Sanseveria hyacinthoides*</i> | bowstring hemp | | II | | |
| <i>Sarcostemma clausum*</i> | white vine | --, FACW | | | |
| <i>Schinus terebinthifolius*</i> | Brazilian pepper | FAC, FAC | I | | |
| <i>Scoparia dulcis</i> | sweetbroom | FAC | | | |
| <i>Serenoa repens</i> | saw palmetto | | | | |
| <i>Setaria geniculata</i> | knotroot bristlegrass | FAC, FAC | | | |
| <i>Sida cordifolia</i> | Indian mallow | | | | |
| <i>Sideroxylon celastrinum</i> | saffron plum | FAC | | | |
| <i>Sideroxylon tenax</i> | bully | | | | |
| <i>Smilax auriculata</i> | greenbriar | | | | |
| <i>Smilax laurifolia</i> | greenbriar | FACW+ | | | |
| <i>Smilax tamnoides</i> | greenbriar | --, FAC | | | |
| <i>Spermacoce verticillata*</i> | -- | | | | |
| <i>Sporobolus indicus*</i> | smut grass | OBL, OBL | | | |
| <i>Stachytarpheta jamaicensis</i> | blue porterweed | | | | x |
| <i>Stenotaphrum secundatum</i> | St. Augustine grass | | | | |

| | | | | | |
|-------------------------------|-------------------|------------|------|----|---|
| <i>Syzygium cumini</i> * | Java plum | | | I | |
| <i>Tabebuia</i> sp.* | Tabebuia | | | | x |
| <i>Taxodium distichum</i> | bald cypress | OBL, OBL | | | |
| <i>Thalia geniculata</i> | alligator flag | OBL, OBL | | | |
| <i>Thelypteris normalis</i> | fern | FACW, FACW | | | |
| <i>Tillandsia balbisiana</i> | air plant | | T-FL | | |
| <i>Tillandsia fasciculata</i> | cardinal airplant | | E-FL | | x |
| <i>Tillandsia recurvata</i> | ball moss | | | | |
| <i>Tillandsia setacea</i> | air plant | | | | |
| <i>Tillandsia usneoides</i> | Spanish moss | | | | |
| <i>Tillandsia utriculata</i> | air plant | | E-FL | | |
| <i>Toxicodendron radicans</i> | poison ivy | --, FAC | | | |
| <i>Tripsacum dactyloides</i> | Fakahatchee grass | FAC, FAC | | | |
| <i>Typha domingensis</i> | Southern Cattail | OBL | | | x |
| <i>Urena lobata</i> * | Caesar's weed | | | I | |
| <i>Verbesina virginica</i> | frostweed | FAC | | | |
| <i>Vitis munsoniana</i> | muscadine grape | --, FAC | | | |
| <i>Vittaria lineata</i> | shoestring fern | --, FAC | | | |
| <i>Woodwardia virginica</i> | chain fern | FACW | | | x |
| <i>Wedelia trilobata</i> * | wedelia | | | II | |
| <i>Ximenia americana</i> | hog plum | | | | |

Appendix 3

Florida Natural Areas Inventory Biodiversity Matrix

FNAI Biodiversity Matrix



FLORIDA
Natural Areas
INVENTORY

1018 Thomastown Road
Suite 200-C
Tallahassee, FL 32303
850-224-6207
850-861-9364 fax
www.fna.org

Florida Natural Areas Inventory

Biodiversity Matrix Query Results

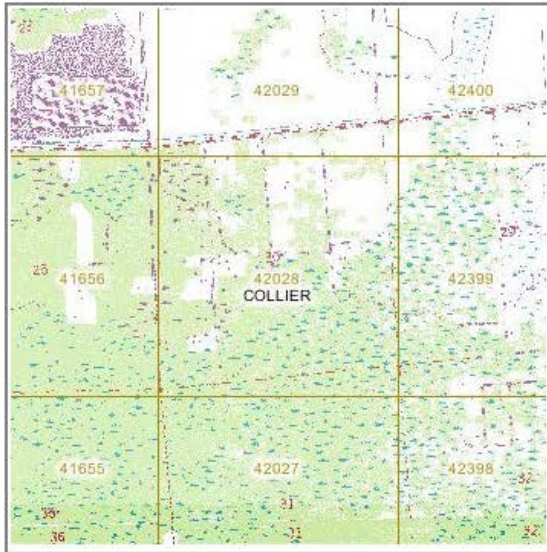
UNOFFICIAL REPORT

Created 5/15/2013

([Contact FNAI Data Services Coordinator](#)
for an official **Standard Data Report**)

NOTE: The Biodiversity Matrix includes only rare species and natural communities tracked by FNAI.

Report for 1 Matrix Unit: 42028



Descriptions

DOCUMENTED - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit.

DOCUMENTED-HISTORIC - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit; however the occurrence has not been observed/reported within the last twenty years.

LIKELY - The species or community is *known* to occur in this vicinity, and is considered likely within this Matrix Unit because:

1. documented occurrence overlaps this and adjacent Matrix Units, but the documentation isn't precise enough to indicate which of those Units the species or community is actually located in; or
2. there is a documented occurrence in the vicinity and there is suitable habitat for that species or community within this Matrix Unit.

POTENTIAL - This Matrix Unit lies within the known or predicted range of the species or community based on expert knowledge and environmental variables such as climate, soils, topography, and landcover.

Matrix Unit ID: 42028

1 Documented Element Found

| Scientific and Common Names | Global Rank | State Rank | Federal Status | State Listing |
|--|-------------|------------|----------------|---------------|
| Puma concolor coryi Florida Panther | G5T1 | S1 | LE | FE |

0 Documented-Historic Elements Found

4 Likely Elements Found

| Scientific and Common Names | Global Rank | State Rank | Federal Status | State Listing |
|--|-------------|------------|----------------|---------------|
| <i>Mesic flatwoods</i> | G4 | S4 | N | N |
| Mycteria americana Wood Stork | G4 | S2 | LE | FE |
| Sciurus niger avicennia Mangrove Fox Squirrel | G5T2 | S2 | N | ST |
| Ursus americanus floridanus | G5T2 | S2 | N | ST* |

http://data.labins.org/...ing/FNAI_BioMatrix/GridSearch.cfm?sel_id=42028&extent=633674.6875,252604.21875,635284.125,254213.578125[5/15/2013 2:31:43 PM]

FNAI Biodiversity Matrix

Florida Black Bear

Matrix Unit ID: 42028

13 Potential Elements for Matrix Unit 42028

| Scientific and Common Names | Global Rank | State Rank | Federal Status | State Listing |
|---|-------------|------------|----------------|---------------|
| <i>Athene cunicularia floridana</i> Florida Burrowing Owl | G4T3 | S3 | N | SSC |
| <i>Drymarchon couperi</i> Eastern Indigo Snake | G3 | S3 | LT | FT |
| <i>Elytraria caroliniensis</i> var. <i>angustifolia</i> Narrow-leaved Carolina Scalystem | G4T2 | S2 | N | N |
| <i>Eumops floridanus</i> Florida bonneted bat | G1 | S1 | PE | ST |
| <i>Gopherus polyphemus</i> Gopher Tortoise | G3 | S3 | C | ST |
| <i>Lechea cernua</i> Nodding Pinweed | G3 | S3 | N | LT |
| <i>Linum carteri</i> var. <i>smallii</i> Small's Flax | G2T2 | S2 | N | LE |
| <i>Mustela frenata peninsulæ</i> Florida Long-tailed Weasel | G5T3 | S3 | N | N |
| <i>Nemastylis floridana</i> Celestial Lily | G2 | S2 | N | LE |
| <i>Picoides borealis</i> Red-cockaded Woodpecker | G3 | S2 | LE | FE |
| <i>Polyrrhiza lindenii</i> Ghost Orchid | G2G4 | S2 | N | LE |
| <i>Rostrhamus sociabilis plumbeus</i> Snail Kite | G4G5T2 | S2 | LE | FE |
| <i>Roystonea elata</i> Florida Royal Palm | G2G3 | S2 | N | LE |

Disclaimer

The data maintained by the Florida Natural Areas Inventory represent the single most comprehensive source of information available on the locations of rare species and other significant ecological resources statewide. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. FNAI shall not be held liable for the accuracy and completeness of these data, or opinions or conclusions drawn from these data. FNAI is not inviting reliance on these data. Inventory data are designed for the purposes of conservation planning and scientific research and are not intended for use as the primary criteria for regulatory decisions.

Unofficial Report

These results are considered unofficial. FNAI offers a [Standard Data Request](#) option for those needing certifiable data.

Appendix 4

**Master Site File Letter from the Division of Historical Resources
indicating no recorded Archaeological or Cultural sites on the
Preserve**



This record search is for informational purposes only and does NOT constitute a project review. This search only identifies resources recorded at the Florida Master Site File and does NOT provide project approval from the Division of Historical Resources. Contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333 for project review information.

January 8, 2013

Alexandra Sulecki
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In response to your inquiry of January 7, 2013, the Florida Master Site File lists no previously recorded archeological sites or any other cultural resources in the following section of Collier County:

T48S R27E Section 30 based on the project area indicated on map submitted with search request.

When interpreting the results of this search, please consider the following information:

- This search area may contain *unrecorded* archaeological sites, historical structures or other resources even if previously surveyed for cultural resources.
- Federal, state and local laws require formal environmental review for most projects. This search **DOES NOT** constitute such a review. If your project falls under these laws, you should contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333.

Please do not hesitate to contact us if you have any questions regarding the results of this search.

Sincerely,

Eman M. Vovsi
Historical Data Analyst
Florida Master Site File
EMVovsi@DOS.MyFlorida.com

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