Pepper Ranch Preserve

Land Management Plan (5 Yr. Revision)

Managed by: Conservation Collier Program

Collier County, Florida

May 2011 – May 2021 (10-yr plan)

Prepared by:

Johnson Engineering & Conservation Collier Staff;

Collier County Parks and Recreation Division

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Pepper Ranch Preserve

Land Management Plan Executive Summary

Lead Agency: Conservation Collier Program

Properties included in this Plan: Pepper Ranch Preserve

Preserve lands consist of five contiguous parcels located within Sections 22, 26, 27, 28, 33 & 35, Township 46 South, Range 28 East, in Collier County. A property survey and full legal description is provided in Appendix 1.

Parcel Folio Numbers
00052360002
00053200006
00053000002
00052960004
00053840000

Original Acreage Breakdown:

Natural Community	Acreage
Improved pasture	619.64
Depression marsh, disturbed	311.29
Upland mixed forest	270.92
Slough	243.38
Bottomland forest	241.63
Upland mixed forest, disturbed	160.59
Mesic flatwoods	149.95
Strand swamp	82.41
Mesic flatwoods, disturbed	77.20
Improved pasture, hydric	47.70
Dry prairie, disturbed	45.09
Wet flatwoods	43.66
Depression marsh	42.60
Ditches	35.15
Upland mixed forest, burned	34.65
Shell road, graded and drained	20.63
Slough, disturbed	14.17
Prairie hammock	11.22

Spoil, exotics	9.49
Natural Community (continued)	Acreage
Wet prairie, disturbed	7.99
Bottomland forest, disturbed	6.27
Prairie hammock, disturbed	5.88
Oil field	5.63
Wet prairie	5.21
Primitive trail	4.90
Brazilian pepper, hydric	4.26
Dry prairie	3.53
Borrow pond	1.43
Spoil	1.24
Australian pine	1.15
Brazilian pepper	1.15
TOTAL	2510.01

Management Responsibilities:

Agency: Collier County - Conservation Collier Program
Preserve Manager: Designated Collier County Environmental Specialist

Designated Land Use: Preservation

Unique Features: Largest Conservation Collier acquisition to date with frontage on north side of Lake Trafford

Archaeological/Historical: The Pepper Ranch Preserve is within an area of historical and archaeological probability. One prehistoric and archaeological site has already been discovered near Lake Trafford and the visitor center is considered a historic structure. Other historical and archaeological sites are most likely present on the property. The County will notify the Division of Historical Resources immediately if evidence is discovered to suggest that any additional cultural resources are present.

Management Needs:

Monitoring of biological resources;

Exotic plant removal and maintenance

Conduct a hydrological analysis of the preserve to better determine restoration needs;

Possible restoration of select areas after exotic removal;

Implementation of a prescribed fire management program;

Habitat management to enhance protection of native and listed species populations; and

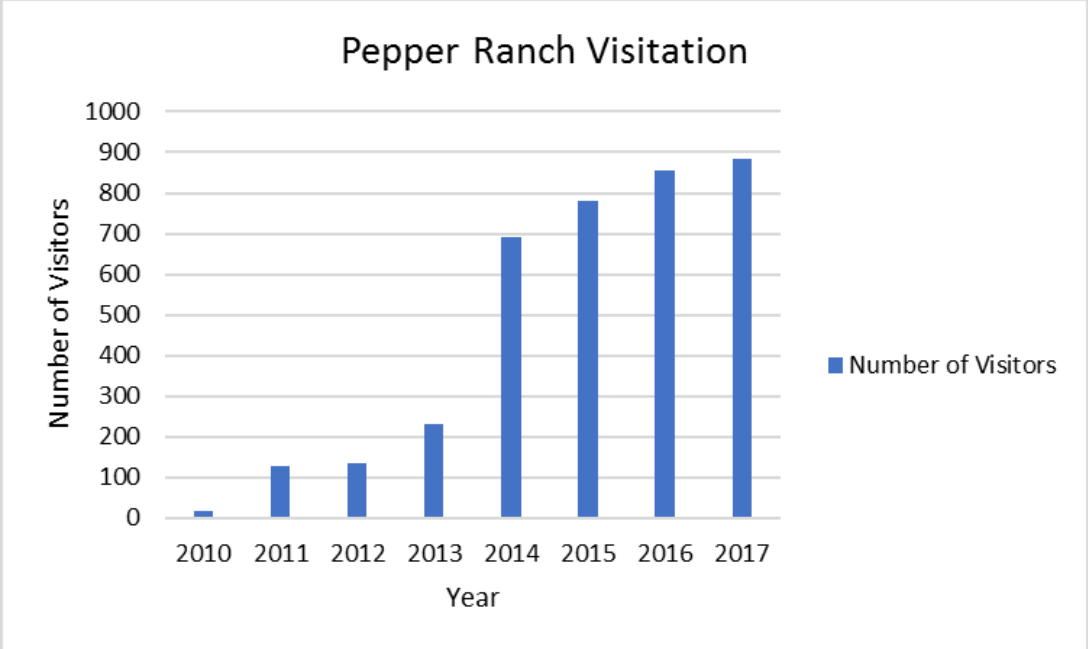
Monitoring public use.

Public Involvement:
Community involvement in the review of this management plan and all future updates are coordinated through the general public via public meetings. The community at large will be contacted through direct mailing notices to residents, other preserve managers and businesses within 1,500 feet of the preserve boundaries. Official public notices will be posted on the County website. Staff will seek to coordinate management actions, such as exotic removal and prescribed fires with managers/owners of adjoining public and private lands.

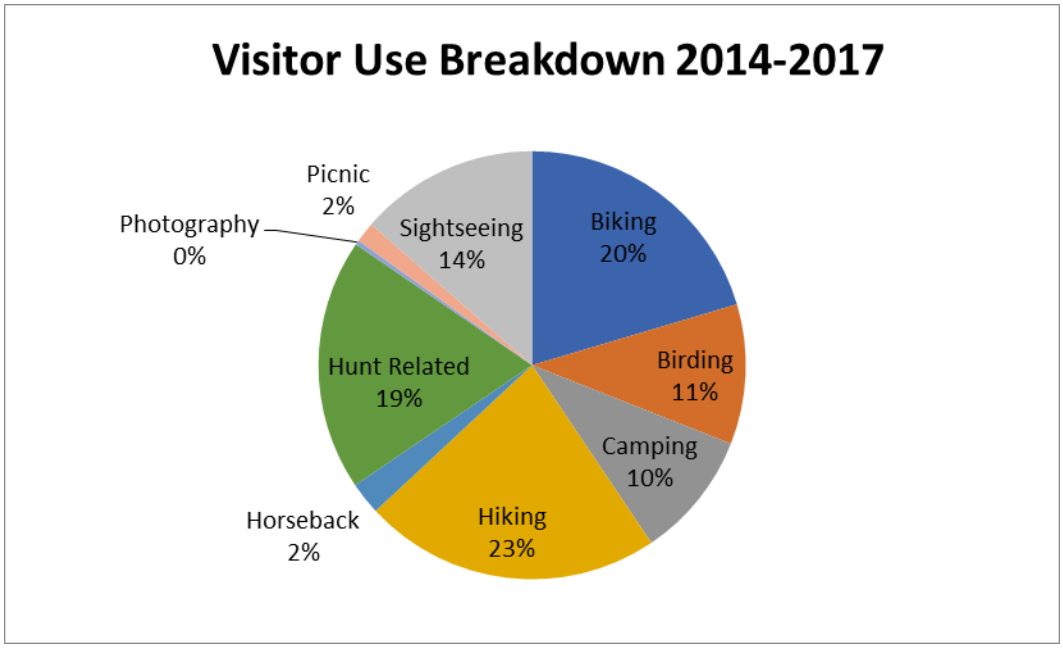
The off-road cycling group representing Southwest Florida, the Florida Mudcutters, have been active partners since May 2012. Members have volunteered over 2,000 hours to develop and maintain biking trails in designated locations along the western portion of the preserve.

Over 20 Boy Scouts have volunteered time and materials to improve the preserve and trail systems such as building picnic tables, kiosks, hitching posts, campground design and development and campground fire rings, marking trails and installing bat boxes. Each achieved their Eagle Scout status as a result of their contribution.

Public Use
The amount of public use the preserve receives during open season is increasing every year. Several different user groups utilize the preserve for different recreational opportunities. The table and graph below provide a snapshot of the increase in visitor use and the breakdown of use by the different user groups.



Total Pepper Ranch Preserve Visitation 2010 - 2017



Pepper Ranch Preserve Visitor Use by Category 2014-2017

Management Goals:

Goal 1: Maintain high quality habitat with limited disturbance for the benefit of native flora and fauna
(Old Language to remove- Eliminate or significantly reduce human impacts to indigenous flora and fauna)

Goal 2: Develop a baseline monitoring program

Goal 3: Remove or control populations of invasive, exotic or problematic flora and fauna to restore and maintain natural habitats

Goal 4: Create a Prescribed Fire Management Plan

Goal 5: Restore native vegetation as needed

Goal 6: Monitor public use

Goal 7: Facilitate uses of the site for educational purposes

Goal 8: Provide a plan for security and disaster preparedness

Goal 9: Provide preliminary panther habitat unit (PHU) calculations and a draft monitoring plan per U.S. Fish and Wildlife Service (USFWS) requirements for an onsite panther conservation bank

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1.0 Introduction

The Pepper Ranch Preserve is 2,510.01 acres of natural and agricultural lands located along the north shore of Lake Trafford in north central Collier County, Florida. The preserve contains various native plant communities, including bottomland forest, upland mixed forest, strand swamp, slough, pine flatwoods, depression marshes, and improved pastures.

A site assessment to determine compliance with the Conservation Collier initial screening criteria was conducted in September, October and November 2007 and the Conservation Collier Program purchased the property in February 2009. The County holds fee simple title to the Pepper Ranch Preserve. The Conservation Collier program manages these lands under authority granted by the Conservation Collier Ordinance 2002-63 as amended (2007-65) (available from www.municode.com). Initial acquisition activities are summarized in Table 1.

Table 1: Acquisition History and Status of Pepper Ranch Preserve

Year	Benchmark
2006	FLUCFCS mapping of a portion of the preserve conducted by Scheda
2007	Property nominated to the Conservation Collier Program
2007	Initial Site Assessment by Conservation Collier Staff
2007	Acceptance of Initial Criteria Screening Report by the Conservation Collier Land Acquisition Advisory Committee
2008	Phase I Environmental Assessment Conducted by Environmental Consulting and Technology, Inc. for Collier County
2008	Approved for purchase by the Board of County Commissioners (BCC)
2009	Purchase of the Pepper Ranch property
2009	Developed Interim Management Plan
2009	BCC approved the Interim Management Plan
2010	Completed Final Land Management Plan
2018	Land Management Plan 5-year update and approved by the CCLAAC

The preserve consists of approximately 43% (±1087.15 acres) wetland plant communities and approximately 57% (±1422.86 acres) upland plant communities. Conservation, restoration and natural resource-based recreation are the designated uses of this property. Management activities allowed include those necessary to preserve, restore, secure and maintain this environmentally sensitive land for the benefit of present and future generations. Public use of the site must be consistent with these management goals.

This is the Final Management Plan for the Pepper Ranch Preserve. This 10-year management plan was approved by the Collier County Board of County Commissioners (BCC) on 6/28/11. This plan replaced the Interim Management Plan. Changes made to this plan during the 5-year review process will be brought before the BCC for their approval in 2018.

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 conservation lands within Collier County, Florida (Ordinance 2002-63, as amended 2007-65). Properties must support at least two of the following qualities to qualify for further consideration: rare habitat, aquifer recharge, flood control, water quality protection, and listed species habitat. The BCC appointed a Land Acquisition Advisory Committee 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 Collier County BCC established the Conservation Collier program to implement the program and to manage acquired lands. As such, Conservation Collier holds management authority for the Pepper Ranch Preserve. Conservation Collier is therefore established to acquire, preserve, restore, and maintain vital and significant threatened natural lands, forest, upland and wetland communities located in Collier County, for the benefit of present and future generations.

1.2 Purpose and Scope of the Land Management Plan

The purpose of the plan is to provide management direction for Pepper Ranch 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 the 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 restoration needs, listed species protection and maintenance of the site free of invasive, exotic plant and animal species. This plan is divided into sections that incorporate an introduction, descriptions of the natural and cultural resources, projected uses of the property, management issues, and goals and objectives.

1.3 Location of the Pepper Ranch Preserve

Pepper Ranch Preserve is located at 6315 Pepper Road just west of the town of Immokalee, Florida (See Figure 1; legal description in Appendix 1). It is in north central Collier County, along the north shoreline of Lake Trafford within Sections 22, 26, 27, 28, 33, and 35, Township 46 South, and Range 28 East.

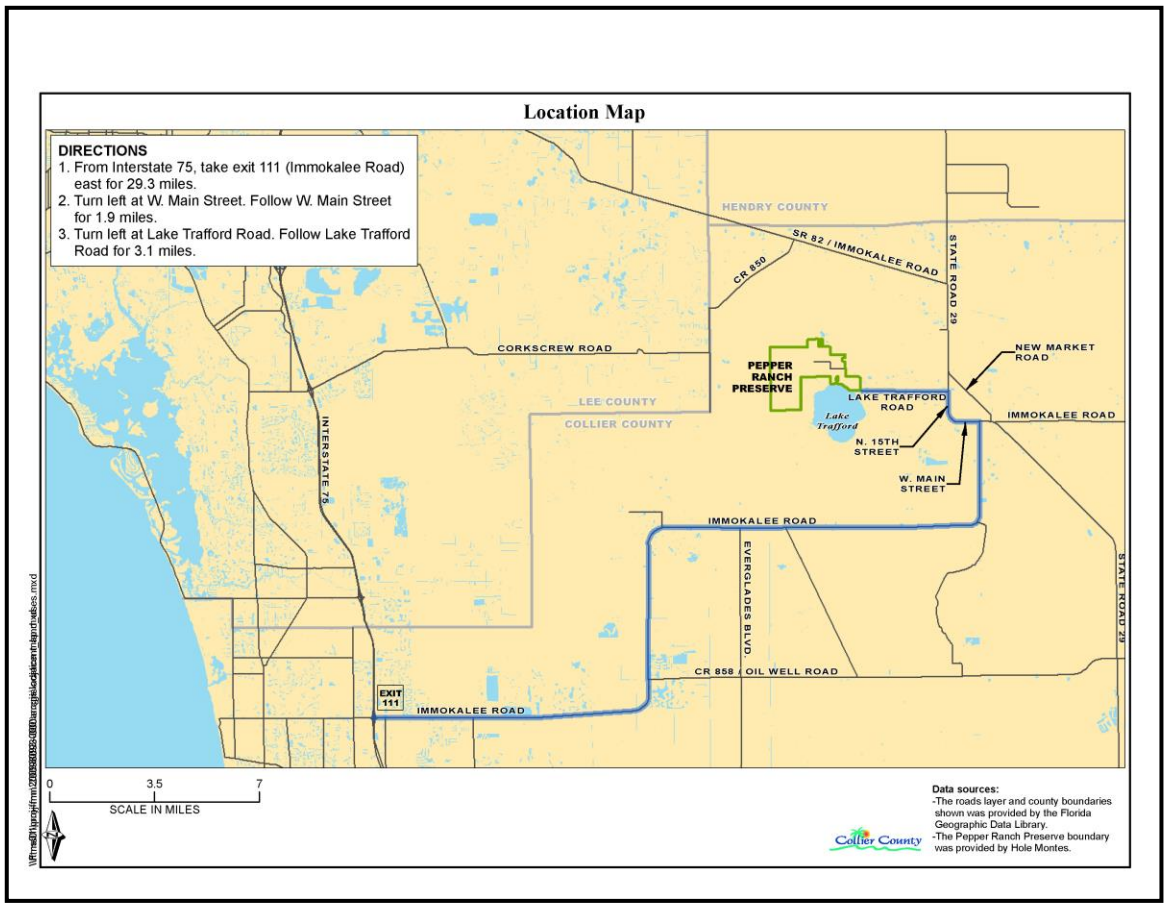
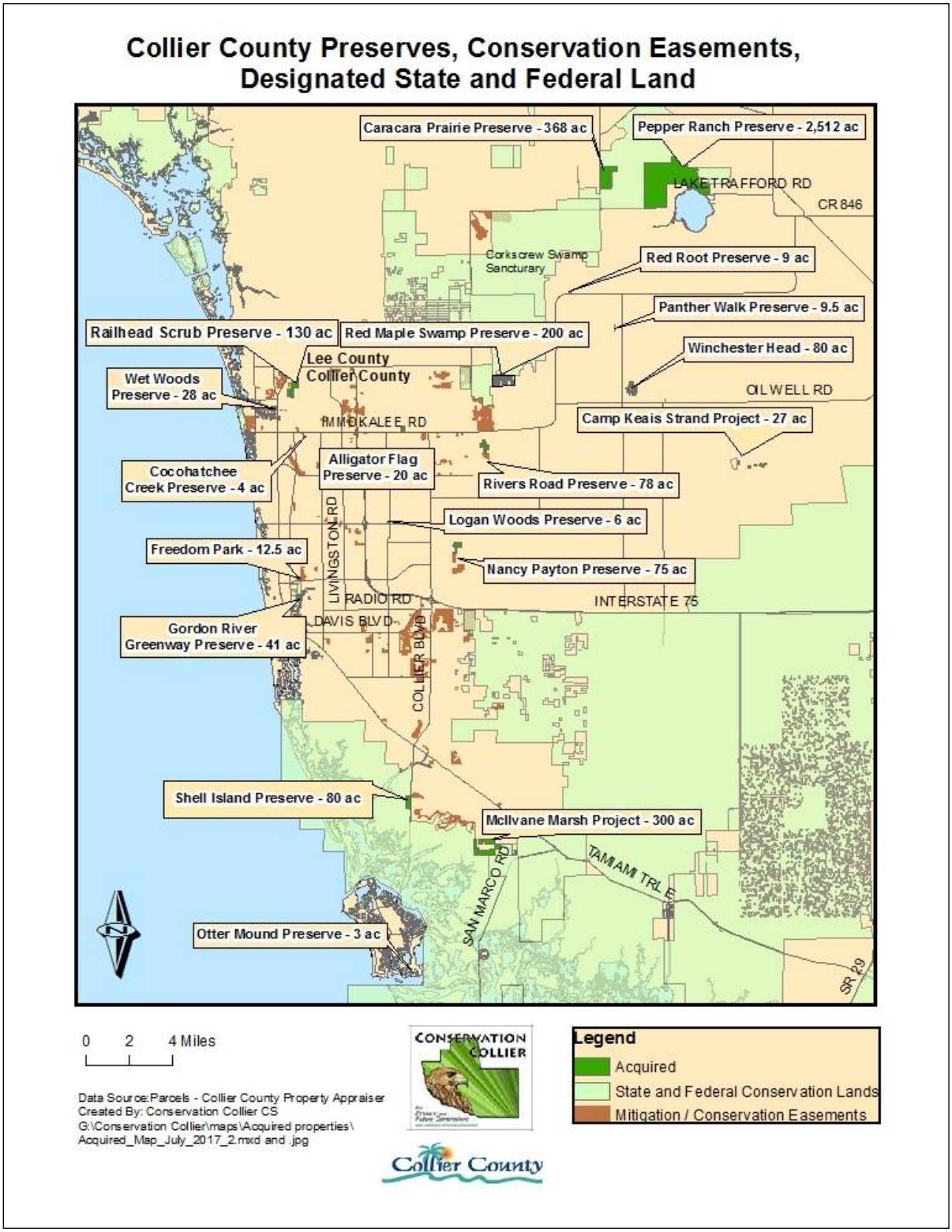


Figure 1: General Location of and Directions to Pepper Ranch Preserve.

1.4 Regional Significance of the Pepper Ranch Preserve

Ecosystem services such as the protection of water resources, flood control, maintenance of nutrient cycles, preservation of biological diversity, carbon sequestration, and the availability of recreational lands are imperative for the well-being of the citizens of Collier County and may be achieved through the preservation of natural areas. As of 2017, approximately 68% (over 880,980 acres) of all land in Collier County were protected in conservation areas (Figure 2) and managed by private, local, state and federal agencies (FNAI 2008). Collier County's Conservation Collier Program manages the 2,510.01-acre Pepper Ranch Preserve; it contains upland mixed forest, strand swamp, slough, prairie hammock, pine flatwoods, improved pasture, dry prairie, freshwater marshes, bottomland forest, and wet prairie.

Figure 2: Conserved Lands in Collier County, Florida Including Lands Owned by Conservation Collier.



1.5 Nearby Public Lands and Designated Water Resources

Pepper Ranch Preserve shares its western and a portion of its northern boundary with the Corkscrew Regional Ecosystem Watershed or CREW Trust conservation lands. The closest Conservation Collier Program property to Pepper Ranch Preserve is the Caracara Prairie Preserve, which is approximately 1.23 miles directly to the west. Other preserves, in order of increasing distance, are provided in Table 2. Figure 3 shows the locations of these preserves.

Table 2: Public Lands Located near the Pepper Ranch Preserve

Name	Distance (miles)	Direction	Type
CREW	0.00	W	State
Caracara Prairie Preserve	1.23	W	Conservation Collier
Corkscrew Swamp Sanctuary	2.03	SW	National Audubon Society
Red Root Preserve	5.26	S/SW	Conservation Collier
Imperial Marsh Preserve	5.63	SE	Lee County Conservation 20/20

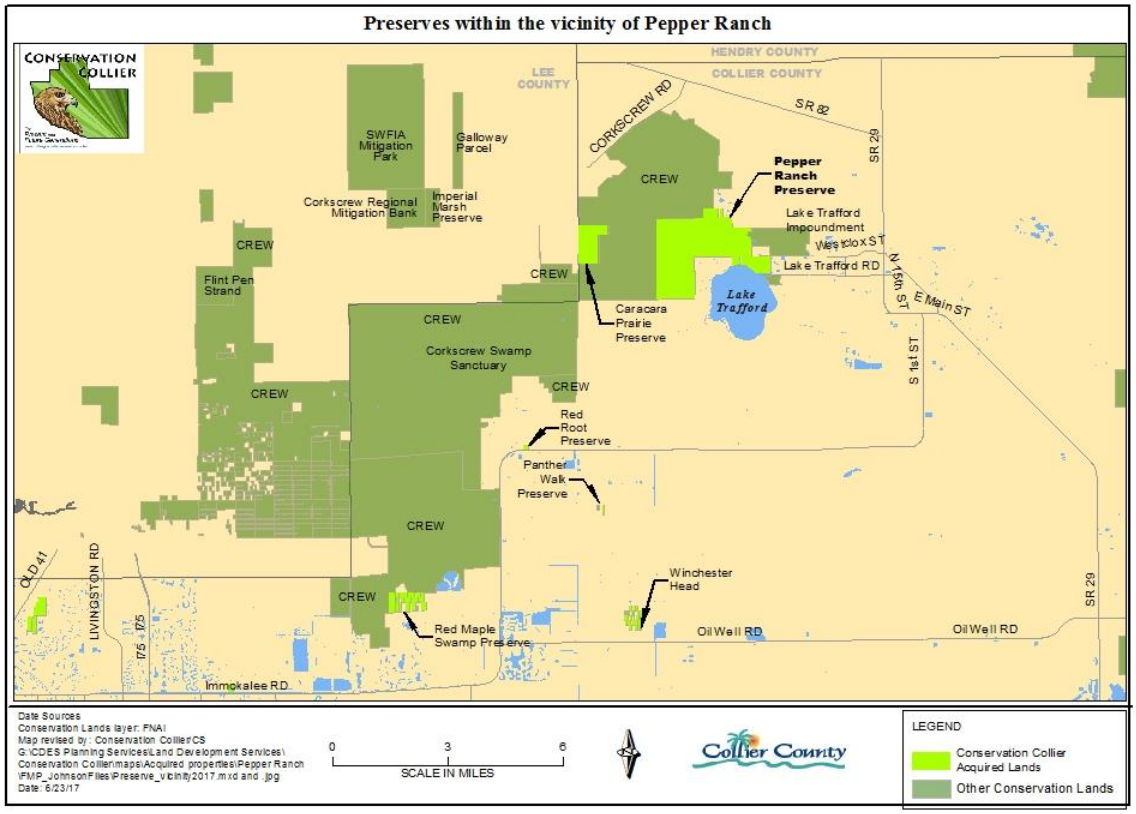


Figure 3: Preserves and Protected Lands in the Vicinity of Pepper Ranch Preserve

1.6 Public Involvement

Community involvement in the review of this management plan and all future updates are coordinated through the general public via public meetings. The community at large will be contacted through direct mailing notices to residents, other preserve managers and businesses within 1,500 feet of the preserve boundaries. Official public notices will be posted on the County website.

Staff worked with Immokalee Civic Group(s) including the Immokalee Community Redevelopment Association, Collier County Sheriff's Department and neighboring property owners to discuss public use and access issues. Two public meetings were held (January 28 and February 11, 2010) to provide the general public an opportunity to review and comment on this Pepper Ranch Preserve Land Management Plan. Specifically, these meetings gave the general public an opportunity to learn about the Conservation Collier Program, future land management plans and potential for public use at Pepper Ranch Preserve. This forum also allowed the public to voice any concerns or objections they may have had with any of these issues as presented here in the Final Land Management Plan.

Conservation Collier and the Collier County Board of County Commissioners (BCC) held two workshops (February 18 and March 18, 2010) with outdoor sportsmen's clubs and hunters to develop a Hunt Program for Pepper Ranch Preserve. Over 20 people attended the February 18th, 2010 meeting, including representatives from the Florida Fish and Wildlife Conservation Commission (FWC) and Commissioner Coletta, to discuss how best to create a Hunt Program for the preserve. A significant amount of information was collected from this meeting to incorporate into a Hunt Management Plan for the preserve including how often to allow hunts, how many hunters, what types of weapons, check station and registration logistics etc.

After the February 18th, 2010 meeting, the first draft of the Hunt Management Plan was created and posted for public review. During the March 18th, 2010 meeting, approximately 10 local hunters attended including Commissioner Coletta, to review the draft Hunt Management Plan. The consensus at this meeting was to divide the ranch into sections and each hunter would have to stay in their section during the hunt. The use of rifles was also discussed as well as safety zones and parking areas.

Over the weekend of April 16-18, 2010, the first Annual Youth Hunt was held at Pepper Ranch Preserve. FWC and volunteers managed the hunt and it was a huge success. Fifteen youth hunters participated, aged 12-17, and 4 hogs were harvested.

At the April 27, 2010 Collier County BCC meeting, the draft Public Hunt Management Plan for Pepper Ranch was brought for BCC approval. At this meeting, Conservation Collier staff was directed to hold two (2) additional public meetings to determine if hunting should be limited to youth hunts only or to the general public. These meetings were held on May 12 and May 19, 2010. The results of that meeting were to hold at least 2 youth hunts per year and leave the remaining hunts open to the general public.

Two additional public meetings were held to provide the public an opportunity to give input on the required 5-year plan update. The meetings were held on March 21, 2017 in Immokalee, and the second was held at the Collier County Extension office on March 28, 2017.

The off-road cycling group representing Southwest Florida, the Florida Mudcutters, have been active partners since May 2012. Members have volunteered over 2,000 hours to develop and maintain biking trails in designated locations along the western portion of the preserve.

The Caloosa Saddle Club, a local horseback riding group, expressed interest in bringing groups to the Preserve to ride on designated trails. Both groups provided County staff input on the conceptual plan for the trails.

Several Boy Scouts have volunteered time and materials to improve the preserve and trail systems such as building picnic tables, kiosks, hitching post, campground design and development and campground fire rings, marking trails and installing bat boxes.

Staff will seek to coordinate management actions, such as exotic removal and prescribed fires with managers/owners of adjoining public and private lands.

2.0 Natural Resources

2.1 Physiography

Pepper Ranch Preserve lies within the Floridian section of the Coastal Plain. The Coastal Plain extends from New Jersey to Texas and was formed mainly from sedimentary rocks deposited in marine environments (U.S. Geological Survey, USGS 2004).

2.1.1 Topography and Geomorphology

The site is located in the Southwestern Slope region of the South Florida Water Management District (SFWMD). According to the Florida Geographic Data Layer (FGDL), taken from the USGS Quadrangle Map, the topography of the area is relatively level with an average elevation of twenty feet above sea level and slopes gently southwestward toward the Gulf of Mexico. Surface water percolates directly through the pervious ground or it collects in natural depressions and man-made ditches onsite. In natural areas, when the ground is completely saturated the accumulated surface water will drain offsite through sheet flow.

2.1.2 Geology

The geology of northern Collier County, where the Pepper Ranch Preserve is located, 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. The Pepper Ranch Preserve is located within the Southwestern Slope. Geologically, this is the dominant feature of Collier County (Campbell 1990). Figure 4 provides a current aerial view of the Pepper Ranch Preserve.

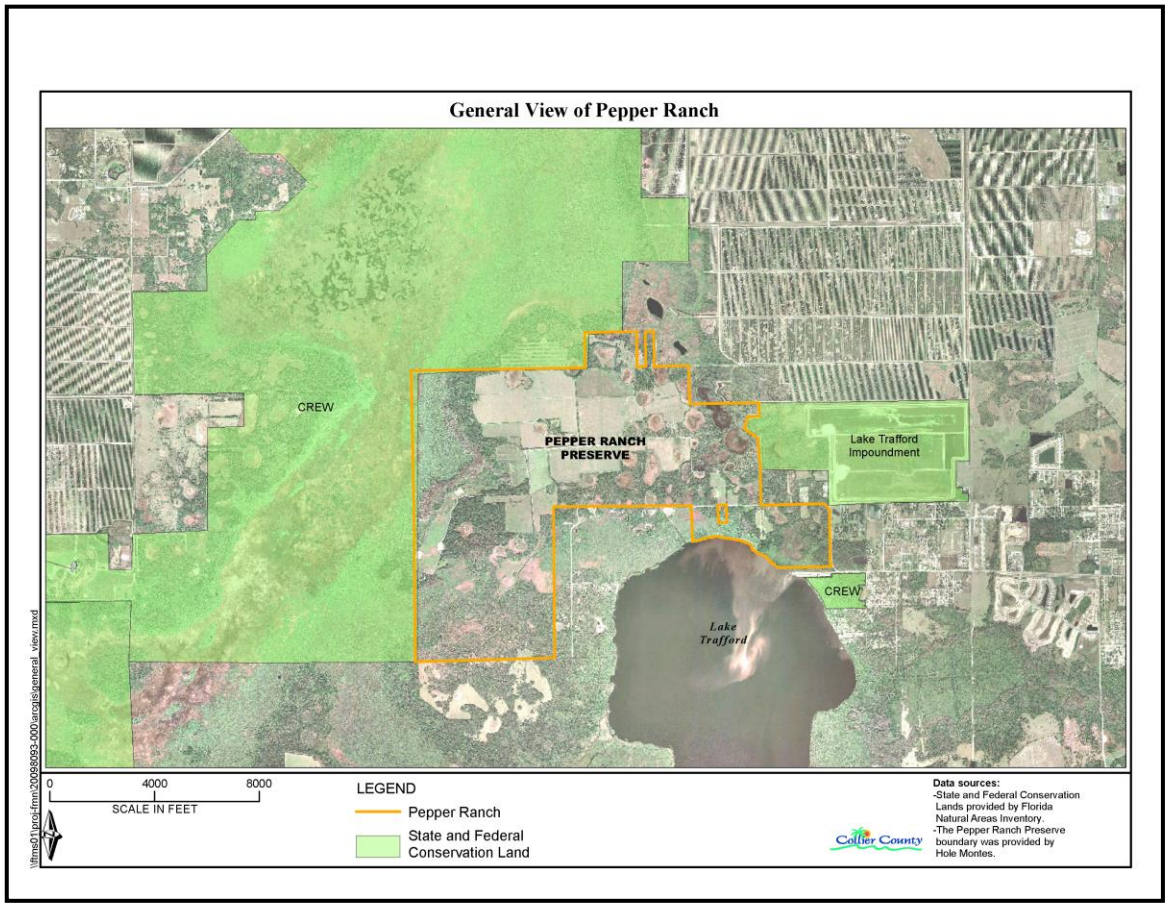


Figure 4: Aerial View of the Pepper Ranch Preserve

2.1.3 Soils

Mapped soils on this parcel were identified by the Natural Resource Conservation Services (NRCS) as Riviera Copeland fine sand, Oldsmar fine sand, Riviera fine sand, Ft. Drum and Malabar, Chobee Winder and Gator soils, Boca Riviera and Copeland depressional, Tuscawilla fine sand, Winder Riviera Chobee soils depressional, and Pennsuco silt loam (Figure 5).

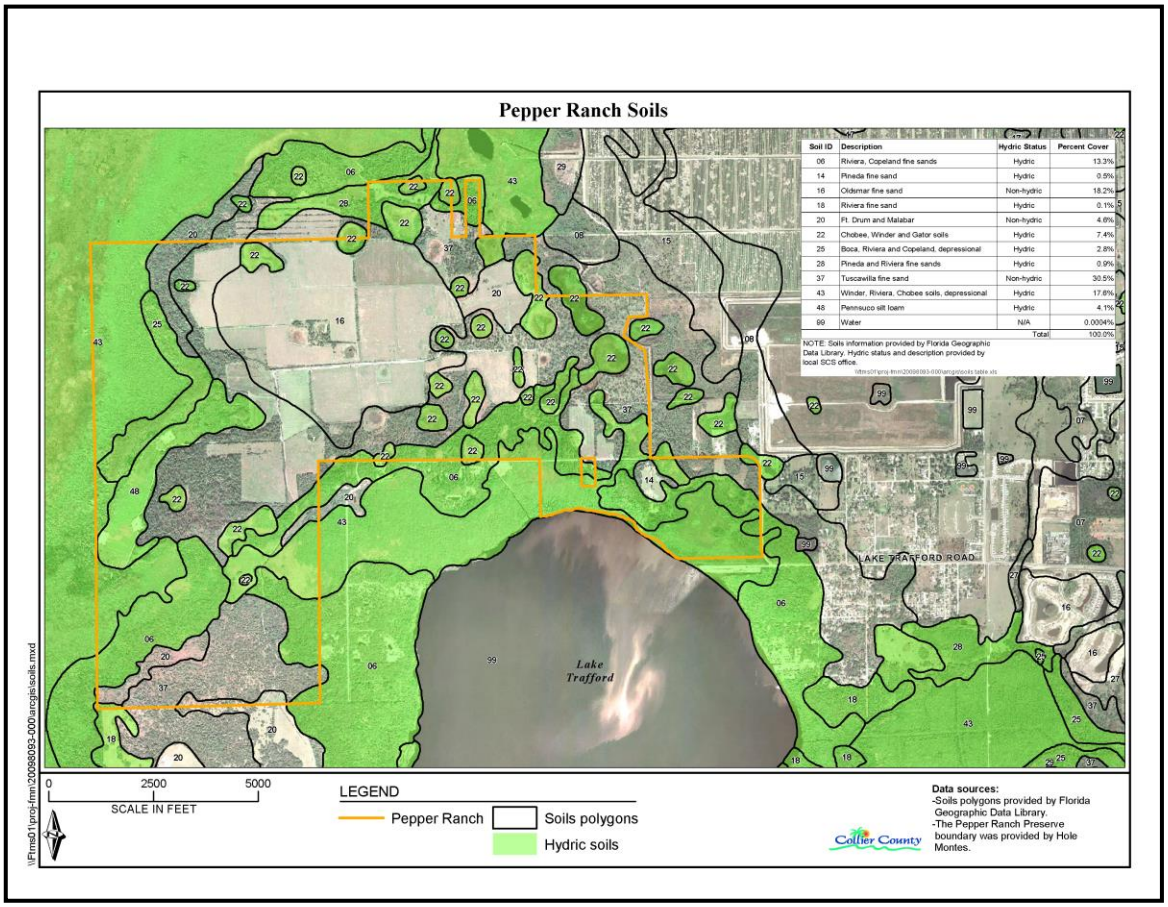


Figure 5: Soil Units on the Pepper Ranch Preserve

The following soils descriptions comprise the six hydric or depressional soils at Pepper Ranch Preserve. Winder Riviera Chobee soils underlie 17.6% of the Pepper Ranch Preserve and are very poorly drained soils, or depressional soils; they are typical of marshes. These soils under natural conditions remain ponded, i.e. have standing water, for 6 months or more during most years. Examples of natural vegetation found on these soils include: sawgrass, maidencane, pickerelweed, fireflag, willow, and other wetland plants (Liudahl et al. 1990). Riviera Copeland fine sand, which underlies 13.3% of the Pepper Ranch Preserve, is another hydric or depressional soil found on the preserve. They are a poorly drained soil and are typical of sloughs and cypress swamps. During

times of high rainfall, the soils are covered by shallow, slowly moving water for about 7 days. Otherwise during most of the wet season, under natural conditions, the seasonal high-water table is within a depth of 12 inches for 3-6 months; and for the remainder of the year the water table is below a depth of 12 inches receding to 40 inches or below during extended dry periods (Liudahl et al. 1990). Chobee Winder and Gator soils comprise 7.4% of Pepper Ranch Preserve. They are very poorly drained soils found in depressions and marshes. Under natural conditions these soils are ponded for 6 months or more of the year, for most years. The water table recedes to within 12 inches the remainder of the year and down to 12-40 inches during extended dry periods. Natural vegetation consists of pickerelweed, maidencane, rushes, fireflag, sawgrass, willow, and a few cypress trees (Liudahl et al. 1990). Pennsuco silt loam is a poorly drained soil found on low prairies and it comprises 4.1% of the soils found at Pepper Ranch Preserve. Under natural conditions, the seasonal high-water table is within a depth of 12 inches for 4-6 months during most years. A few inches of water is above the surface during extremely wet periods. Natural vegetation typically consists of sawgrass, reeds, scattered areas of cypress, maidencane, needlegrass, sedges, wax myrtle, and other wetland plants (Liudahl et al. 1990). The Boca, Riviera and Copeland map unit is a hydric soil that comprises 2.8% of the soils found at Pepper Ranch Preserve. It is found in depressions, cypress swamps, and marshes. Under natural conditions, these soils are ponded for 6 months or more each year. During the remainder of the year the water table is within a depth of 12 inches, and it recedes to a depth of 12-40 inches during extended dry periods. The natural vegetation consists mostly of cypress, pickerelweed, rushes, fireflag, sawgrass, and willow (Liudahl et al. 1990). Only a small percentage of the soils at Pepper Ranch Preserve are Riviera fine sand (0.1%), which is a poorly drained soil found in sloughs and broad, poorly defined drainageways. Under natural conditions, the seasonal high-water table is within a depth of 12 inches for 3-6 months during most years. During the other months, the water table is below a depth of 12 inches, and it recedes to a depth of more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days. Natural vegetation found on these soils consists of scattered areas of South Florida slash pine, cypress, cabbage palm, wax myrtle, sand cordgrass, gulf muhly, blue maidencane, South Florida bluestem, and chalky bluestem (Liudahl et al. 1990).

The following soils descriptions comprise the three non-hydric soils found at Pepper Ranch Preserve. Tuscawilla fine sand underlies 30.5% of the Pepper Ranch Preserve and is a non-hydric or non-wetland soil association found in areas typical of flatwoods and hammocks. Under natural conditions, the seasonal high-water table is at a depth of 6-18 inches for 1-6 months during most years. The remainder of the year the water table is below 18 inches. During times of drought, the water table can recede to a depth of greater than 40 inches. Natural vegetation consists of oak, cabbage palm, red maple, red bay, South Florida slash pine, wax myrtle, maidencane, and chalky bluestem (Liudahl et al. 1990). Oldsmar fine sand underlies 18.2% of the Pepper Ranch Preserve and is also a non-hydric soil. Oldsmar fine sand is a nearly level and poorly drained soil found in pine flatwoods. During extended dry periods, the water table may recede to a depth of 40+ inches, but under natural conditions, the seasonal high-water table is between a depth of 6-18 inches. Flora typically associated with this soil type includes South Florida slash

pine, cabbage palm, saw palmetto and wax myrtle (Liudahl et al. 1990). Fort Drum and Malabar fine sands are non-hydric soils typically found on ridges adjacent to sloughs. These soils comprise 4.6% of the soils at Pepper Ranch Preserve. Under natural conditions, the seasonal high-water table is at a depth of 6-18 inches for 1-6 months during most years. During the remainder of the year, the water table is below a depth of 18 inches, and it recedes to a depth of more than 40 inches during extended dry periods. Natural vegetation found on these soils is generally South Florida slash pine, saw palmetto, live oak, cabbage palm, wax myrtle, chalky bluestem, creeping bluestem, low panicum and pineland threeawn (Liudahl et al. 1990).

2.1.4 Hydrology/Water Management

Near the surface, the aquifer is highly permeable and the groundwater flows toward the west. However, permeability decreases downward from a porous limestone into poorly indurated sandstone cemented by micrite. The aquifer grades from freshwater downward into brackish water due to the proximity of the Gulf of Mexico to the west and the brackish water in the intermediate aquifer made primarily of Miocene aged sediments. Below that, the Hawthorne formation typically marks the upper boundary of the Floridian aquifer, which is contained within the underlying Oligocene age Suwannee Limestone (Lodge 2005).

There are numerous ditches and berms at Pepper Ranch Preserve that are associated with the former agricultural activities. There are also elevated roads with associated ditches that run through the center of the preserve, initially in an east-west direction, then running north-south all the way to the southwestern portion of the preserve (see Figure 6 for land use and cover map). These ditches and berms are likely affecting the hydrology of the wetlands in which they connect.

The Surficial Aquifer is an aquifer close to the surface and unconfined, typically associated with the groundwater table. This aquifer is generally limited to smaller uses such as household or small agricultural uses. The Lower Tamiami aquifer is below this aquifer and is recognized as being useful for long-term water needs. According to the SFWMD's technical publication 95-02 (Fairbank & Hohner 1995), the Surficial Aquifer recharge capacity on the Pepper Ranch Preserve is moderate at 43 to 56 inches annually, with parts of the eastern portion of the preserve exhibiting a recharge capacity of less than 43 inches annually. The Lower Tamiami Aquifer recharge capacity on the preserve is relatively low ranging from less than 7 inches and up to 14 inches annually.

2.2 Climate

The Pepper Ranch Preserve is located in an area of Florida where humid subtropical and tropical savanna climatic patterns overlap, with temperatures moderated by winds from the Gulf of Mexico and the Atlantic Ocean. Sharply delineated wet and dry seasons and average monthly temperatures greater than 64º Fahrenheit characterize a tropical savanna climate. Monthly rainfalls may exceed ten inches during the wet season. On the other hand, humid subtropical climates typically show less extreme rainfall fluctuations between wet and dry seasons and average monthly temperatures are less than 64º Fahrenheit in some months.

The average annual temperature for the coastal portion of Collier County is approximately 75º 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 not significant variation in the annual rainfall throughout much of the county; however, large variations often occur during a single year. The Atlantic 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 floristic species that form the natural vegetation of any place. In addition to anthropogenic influences, 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 there. The description or classifications of these floral communities differ by agency and are based on an agency's goals and objectives for identifying plant communities. As some categorizations are broad (e.g., forest) while others are specific (e.g., mesic pine flatwoods), determining how each organization classifies a community may be difficult. The plant communities observed on the Pepper Ranch Preserve are presented using the Florida Land Use, Cover and Forms Classification System (FLUCFCS) created by the Florida Department of Transportation (1999). This system classifies all land uses including plant communities. These classifications were then translated to the Florida Natural Areas Inventory (FNAI) classifications. The Guide to the Natural Communities of Florida (1990) was utilized to convert from FLUCFCS to FNAI designations.

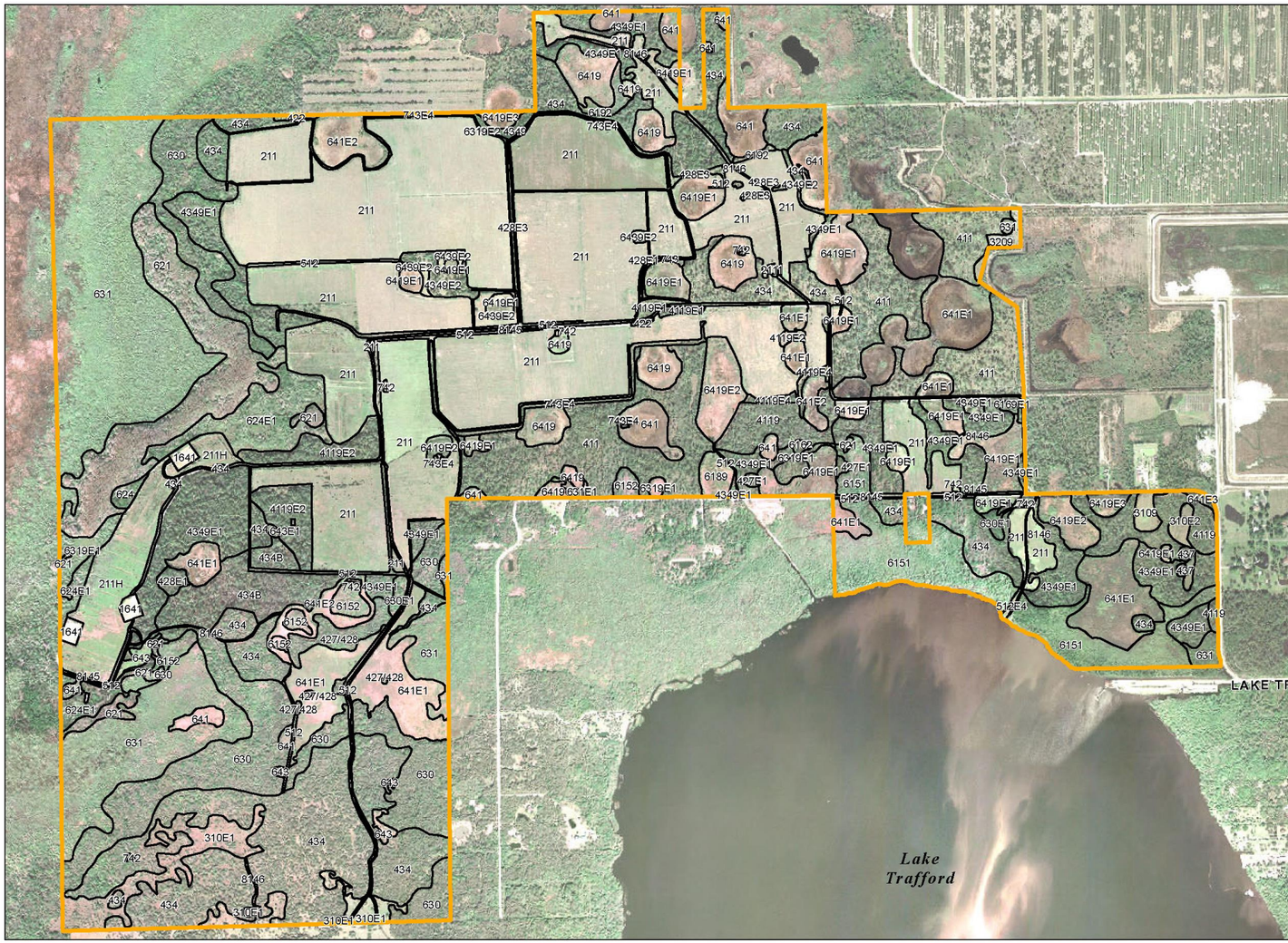
In the fall of 2009 Johnson Engineering ecologists mapped the vegetation communities and other land uses found on the Pepper Ranch Preserve using the FLUCFCS designations. There are 25 distinct plant communities/land uses on the preserve. Some of these land uses are further described as disturbed and/or by the level of invasive exotic plants they exhibit. The number 9 qualifier in the FLUCFCS code represents a disturbance in the plant community, generally due to a hydrologic impairment and in some cases the disturbance is from a cleared understory. The letter E qualifier represents the level of invasive exotic vegetation present by percent cover. Table 3 summarizes the plant communities mapped for the Pepper Ranch Preserve in 2009. The table also provides a brief description of each FLUCFCS code. Figure 6 visually depicts these land cover designations from 2009. Due to the size of Pepper Ranch Preserve, a 2'x3' map of the land cover designations for 2009 is provided in Appendix 2.

Table 3: Extent of Florida Land Use, Cover and Forms Classification System (FLUCFCS) Designations from 2009 on the Pepper Ranch Preserve			
FLUCFCS Code	**Description**	**Wetland Status**	**Acreage**
1641	Oil field	N	5.63
211	Improved pasture	N	619.26
2111	Cattle pen	N	0.38
3109	Upland prairie, disturbed	N	3.73
310E1	Upland prairie, disturbed, exotics 5-24%	N	37.35
310E2	Upland prairie, disturbed, exotics 25-49%	N	4.01
3209	Upland shrub, disturbed	N	3.53
411	Pine flatwoods	N	149.95
4119	Pine flatwoods, disturbed	N	40.80
4119E1	Pine flatwoods, disturbed, exotics 5-24%	N	1.44
4119E2	Pine flatwoods, disturbed, exotics 25-49%	N	27.45
4119E4	Pine flatwoods, exotics 75-100%	N	3.69
422	Brazilian pepper, non-hydric	N	1.15
427/428	Oak/Cabbage palm	N	11.22
427E1	Oak, exotics 5-24%	N	1.57
428E1	Cabbage palm, exotics 5-24%	N	3.82
428E3	Cabbage palm, exotics 50-74%	N	4.31
434	Oak, slash pine, cabbage palm	N	270.92
4349	Oak, slash pine, cabbage palm, disturbed	N	1.99
4349E1	Oak, slash pine, cabbage palm, disturbed, exotics 5-24%	N	149.74
4349E2	Oak, slash pine, cabbage palm, disturbed, exotics 25-49%	N	8.86
434B	Oak, slash pine, cabbage palm, burned	N	34.65
437	Australian pine	N	1.15
743	Spoil	N	1.24
743E4	Spoil, exotics 75-100%	N	9.49
8145	Shell road, graded and drained	N	20.63
8146	Primitive trail	N	4.90
512	Ditches	OSW	34.49
512E4	Ditches, exotics 75-100%	OSW	0.66
742	Borrow pond	OSW	1.43
211H	Improved pasture, hydric	W	47.70

Table 3: Extent of Florida Land Use, Cover and Forms Classification System (FLUCFCS) Designations from 2009 on the Pepper Ranch Preserve (continued)			
FLUCFCS Code	**FLUCFCS Code**	**FLUCFCS Code**	**FLUCFCS Code**
6151	Red maple swamp	W	76.56
6152	Pop ash swamp	W	15.05
6162	Pond apple depression	W	0.71
6169E1	Pond apple, laurel oak, cabbage palm, disturbed, exotics 5-24%	W	0.83
6189	Willow/shrub wetland, disturbed	W	5.44
6192	Brazilian pepper, hydric	W	4.26
621	Cypress	W	82.41
624	Cypress, pine, cabbage palm	W	2.51
624E1	Cypress, pine, cabbage palm, exotics 5-24%	W	41.15
630	Wetland forested mix	W	145.46
630E1	Wetland forested mix, exotics 5-24%	W	3.85
631	Shrub wetland	W	243.38
6319E1	Shrub wetland, disturbed, exotics 5-24%	W	12.26
6319E2	Shrub wetland, disturbed, exotics 25-49%	W	0.56
631E1	Shrub wetland, exotics 5-24%	W	1.35
641	Freshwater marsh	W	42.60
6419	Freshwater marsh, disturbed	W	44.83
6419E1	Freshwater marsh, disturbed, exotics 5-24%	W	70.99
6419E2	Freshwater marsh, disturbed, exotics 25-49%	W	26.19
6419E3	Freshwater marsh, disturbed, exotics 50-74%	W	5.92
641E1	Freshwater marsh, exotics 5-24%	W	135.72
641E2	Freshwater marsh, exotics 25-49%	W	26.37
641E3	Freshwater marsh, exotics 50-74%	W	1.27
643	Wet prairie	W	5.21
6439E2	Wet prairie, disturbed, exotics 25-49%	W	7.50
643E1	Wet prairie, disturbed, exotics 5-24%	W	0.49
		Total	2510.01

W – wetland
N – non-wetland
OSW – other surface water

Pepper Ranch FLUCFCS Mapping



FLUCFCS Code	Description	Acreage
1641	Oil field	5.63
211	Improved pasture	619.26
211I	Cattle pen	0.38
211H	Improved pasture, hydric	47.70
3109	Upland prairie, disturbed	3.73
310E1	Upland prairie, disturbed, exotics 5-24%	37.35
310E2	Upland prairie, disturbed, exotics 25-49%	4.01
3209	Upland shrub, disturbed	3.53
411	Pine flatwoods	149.96
4119	Pine flatwoods, disturbed	40.80
4119E1	Pine flatwoods, disturbed, exotics 5-24%	1.40
4119E2	Pine flatwoods, disturbed, exotics 25-49%	27.45
4119E4	Pine flatwoods, exotics 75-100%	3.69
422	Brazilian pepper, non-hydric	1.15
427/428	Oak/Cabbage palm	11.22
427E1	Oak, exotics 5-24%	1.57
428E1	Cabbage palm, exotics 5-25%	3.86
428E3	Cabbage palm, exotics 50-74%	4.31
434	Oak, slash pine, cabbage palm	270.92
4349	Oak, slash pine, cabbage palm, disturbed	1.99
4349E1	Oak, slash pine, cabbage palm, disturbed, exotics 5-24%	149.74
4349E2	Oak, slash pine, cabbage palm, disturbed, exotics 25-49%	8.86
434B	Oak, slash pine, cabbage palm, burned	34.65
437	Australian pine	1.15
512	Ditches	34.49
512E4	Ditches, exotics 75-100%	0.66
6151	Red maple swamp	76.56
6152	Pop ash swamp	16.05
6162	Pond apple depression	0.71
6169E1	Pond apple, laurel oak, cabbage palm, disturbed, exotics 5-24%	0.83
6189	Willow/shrub wetland, disturbed	5.44
6192	Brazilian pepper, hydric	4.26
621	Cypress	82.41
624	Cypress, pine, cabbage palm	2.61
624E1	Cypress, pine, cabbage palm, exotics 5-24%	41.15
630	Wetland forested mix	145.46
630E1	Wetland forested mix, exotics 5-24%	3.86
631	Shrub wetland	243.38
6319E1	Shrub wetland, disturbed, exotics 5-24%	12.26
6319E2	Shrub wetland, disturbed, exotics 25-49%	0.56
631E1	Shrub wetland, exotics 5-24%	1.36
641	Freshwater marsh	42.60
6419	Freshwater marsh, disturbed	44.83
6419E1	Freshwater marsh, disturbed, exotics 5-24%	70.99
6419E2	Freshwater marsh, disturbed, exotics 25-49%	26.19
6419E3	Freshwater marsh, disturbed, exotics 50-74%	5.92
641E1	Freshwater marsh, exotics 5-24%	135.72
641E2	Freshwater marsh, exotics 25-49%	26.37
641E3	Freshwater marsh, exotics 50-74%	1.27
643	Wet prairie	5.21
6439E2	Wet prairie, disturbed, exotics 25-49%	7.50
643E1	Wet prairie, disturbed, exotics 5-24%	0.49
742	Borrow pond	1.43
743	Spoil	1.24
743E4	Spoil, exotics 75-100%	9.49
8145	Shell road, graded and drained	20.63
8146	Primitive trail	4.90
	Total	2510.01

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Figure 6: Distribution of Natural Communities and other Land Uses on the Pepper Ranch Preserve; 2009 FLUCFCS Layer

The vegetation classification scheme of the FNAI and the Florida Department of Natural Resources (FDNR) (1990) are presented in Table 4. This table is based on the natural plant communities observed on the Pepper Ranch Preserve. The following subsections (2.3.1 - 2.3.6) provide information about the natural plant communities observed on the preserve according to their FNAI designations. Subsection 2.3.7 describes the altered communities found at Pepper Ranch Preserve. Figure 7 visually depicts the FNAI designations for the preserve based on the 2009 field verifications. Due to the size of Pepper Ranch Preserve, a 2'x3' map of the FNAI designations is provided in Appendix 3.

Table 4: Summary of Natural Communities on the Pepper Ranch Preserve

FNAI Natural Community Type	Global Rank	State Rank	Percent Cover[1]	Comments
Bottomland forest	G4	S3	9.87%	Also called bottomland hardwoods and mesic hammock
Depression marsh	G4	S4	14.09%	Also called isolated wetland and ephemeral pond
Dry prairie	G2	S2	1.94%	Also called palmetto prairie
Mesic flatwoods	G4	S4	8.97%	Also called pine flatwoods
Prairie Hammock	G3	S3	0.83%	Also called palm/oak hammock and hydric hammock
Slough	G3	S3	10.25%	
Strand swamp	G4	S4	3.28%	Also called cypress strand
Upland mixed forest	G4	S4	18.56%	Also called upland hardwood and mesic hammock
Wet flatwoods	G4	S4	1.74%	Also called hydric flatwoods
Wet prairie	G3	S2	0.53%	Also called savannah and coastal prairie

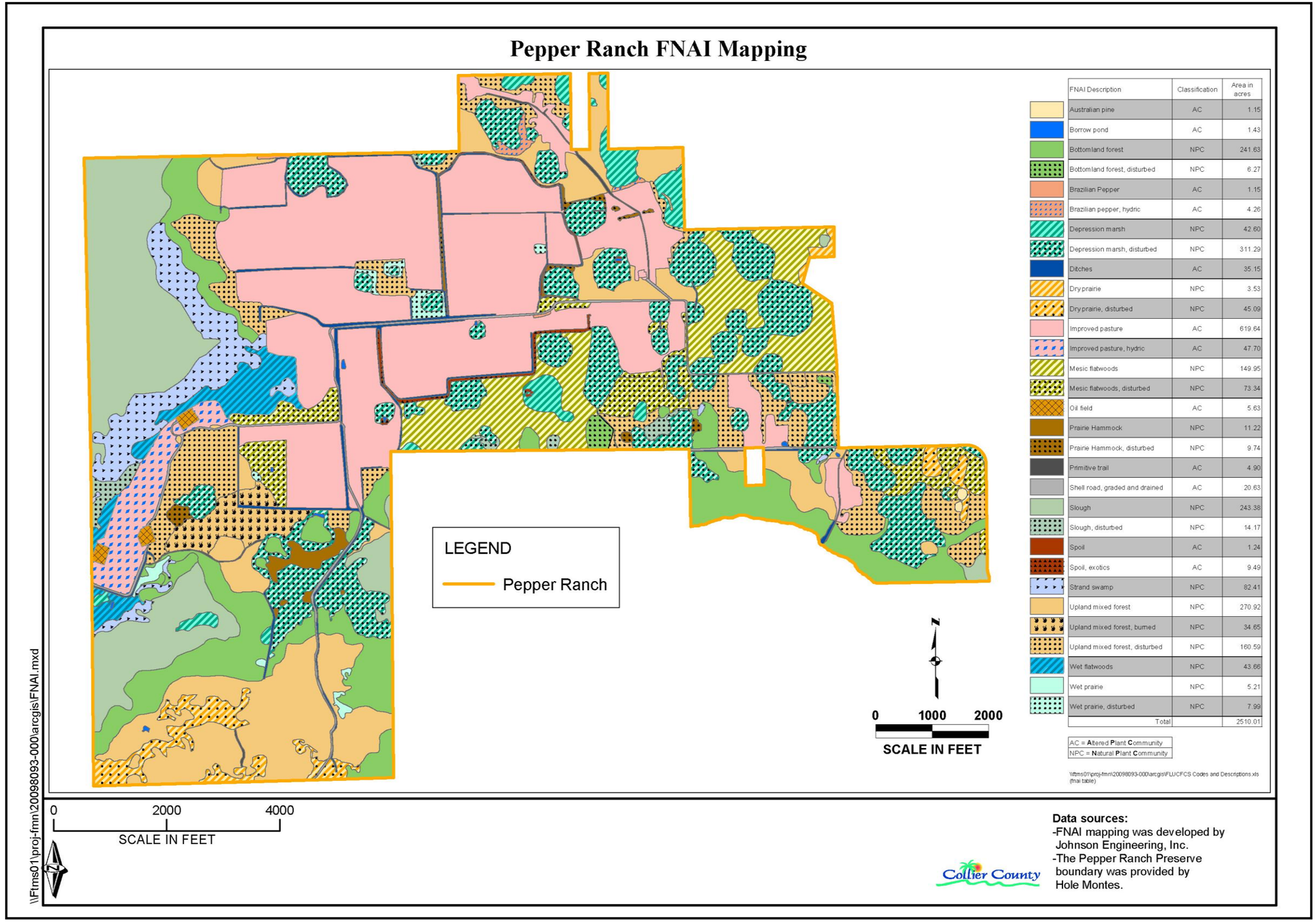
[1] 70.06% of Pepper Ranch Preserve is comprised of natural communities. The remaining 29.94% is comprised of altered communities as described in subsection 2.3.7.

Definition of Global (G) element ranks:

G2 = Imperiled globally because of rarity (6-20 occurrences or very little remaining area, e.g., <10,000 acres) or because of some factor(s) making it very vulnerable to extinction throughout its range;
G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factors making it vulnerable to extinction throughout its range, 21 to 100 occurrences;
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

Definition of State (S) element ranks:

S2 = Imperiled in state because of rarity (6-20 occurrences or little remaining area) or because of some factor(s) making it very vulnerable to extinction throughout it range;
S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences);
S4 = Apparently secure in state, although it may be rare in some parts of its state range.



FNAI Description	Classification	Area in acres
Australian pine	AC	1.15
Borrow pond	AC	1.43
Bottomland forest	NPC	241.63
Bottomland forest, disturbed	NPC	6.27
Brazilian Pepper	AC	1.15
Brazilian pepper, hydric	AC	4.26
Depression marsh	NPC	42.60
Depression marsh, disturbed	NPC	311.29
Ditches	AC	35.15
Dry prairie	NPC	3.53
Dry prairie, disturbed	NPC	45.09
Improved pasture	AC	619.64
Improved pasture, hydric	AC	47.70
Mesic flatwoods	NPC	149.95
Mesic flatwoods, disturbed	NPC	73.34
Oil field	AC	5.63
Prairie Hammock	NPC	11.22
Prairie Hammock, disturbed	NPC	9.74
Primitive trail	AC	4.90
Shell road, graded and drained	AC	20.63
Slough	NPC	243.38
Slough, disturbed	NPC	14.17
Spoil	AC	1.24
Spoil, exotics	AC	9.49
Strand swamp	NPC	82.41
Upland mixed forest	NPC	270.92
Upland mixed forest, burned	NPC	34.65
Upland mixed forest, disturbed	NPC	160.59
Wet flatwoods	NPC	43.66
Wet prairie	NPC	5.21
Wet prairie, disturbed	NPC	7.99
Total		2510.01

Figure 7: Extent of Natural Plant Communities Currently Found on the Pepper Ranch Preserve.

2.3.1 Uplands: Upland Mixed Forest

The upland mixed forest community comprises approximately 18.56% of the Pepper Ranch Preserve, the largest acreage of which is located primarily in the southwestern portion of the preserve but also occurs throughout the preserve in smaller acreages (Figure 7).

Upland Mixed Forest Community within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

Upland mixed forests in south Florida are also known as upland hardwoods, mesic hammocks, prairie hammocks, xeric hammocks, hydric hammocks (FNAI 1990) and mesic temperate hammocks (USFWS 1999). This plant community at Pepper Ranch Preserve is characterized by live oaks (*Quercus virginiana*) and laurel oaks (*Quercus laurifolia*) (both hardwood species), south Florida slash pine (*Pinus elliottii* var. *densa*), cabbage palms (*Sabal palmetto*), and some cypress (*Taxodium* spp.) and strangler figs (*Ficus aurea*), that together generally form a closed canopy. The midcanopy includes myrsine *(Myrsine guainensis)*, dahoon holly (*Ilex cassine*) and wax myrtle *(Myrica cerifera)*. The plant species found in the understory are mainly native species including blue maindencane (*Amphicarpum muhlenbergianum*), foxtail grass (*Setaria* sp.), carpet grasses (*Axonopus* spp.), slender goldenrod (*Euthamia caroliniana*), musky mint (*Hyptis alata*), chocolate weed (*Melochia corchorifolia*), swamp fern *(Blechnum serrulatum)*, capeweed (*Phyla nodiflora*), wild coffee (*Psychotria nervosa*) and varying densities of the invasive exotic torpedo grass (*Panicum repens*). Originally in the disturbed portions of this community, Brazilian pepper (*Schinus terebinthifolius*) comprised up to 24% of the midcanopy otherwise it is present at less than 5% coverage. In the herbaceous layer of the disturbed areas of this community there were significant levels (26-50% coverage) of caesarweed *(Urena lobata)* and some (1-5% coverage) dogfennel *(Eupatorium capillifolium)*. These areas have been treated several times since acquisition, however a significant seed source exists. Ongoing maintenance is being conducted on an annual or bi-annual basis.

The closed canopy and abundant hardwood mast provided by this plant community attract wildlife species seeking food, cover, roosting, and nesting sites. Additionally, these areas are ideal stopover areas for migratory passerines. Since these communities occur on relatively well-drained sites, they are also attractive for human habitation and recreational uses. These anthropogenic uses have increased the number of invasive plant and animal species in these areas and have resulted in degraded hardwood forests throughout the state (USFWS 1999).

2.3.2 Wetlands: Depression Marsh

Depression marsh, also known as freshwater marsh, isolated wetland, or ephemeral pond, comprises approximately 14.09% of the Pepper Ranch. Even though these wetlands are present throughout the preserve, they are more prevalent in the central portion of the preserve and eastward to the property boundary.

Freshwater marshes are often scattered among upland, pine flatwoods communities as is the case at Pepper Ranch Preserve. Only 12% of this plant community at Pepper Ranch Preserve appears to be hydrologically undisturbed. This determination was made solely by observing the plant composition in the disturbed marshes, which consisted of varying levels of upland and transitional species, nuisance and invasive exotic species, as well as by noting the relatively low water levels or lack thereof in comparison to the seemingly undisturbed marshes. Further hydrologic investigations would be necessary to determine if hydrology was the actual cause of the noted disturbance.

Depression Marsh Community within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

Native plant species found within this plant community included maidencane (*Panicum hemitomon*), Southeastern sunflower (*Helianthus agrestis*), blue maidencane, American cupscale (*Sacciolepis striata*), pickerelweed (*Pontederia cordata*), alligator flag (*Thalia geniculata*), swamp fern , sawgrass (*Cladium jamaicense*), narrowfruit horned beaksedge (*Rhyncospera inundata*), southern beaksedge (*Rhyncospora microcarpa*), pale meadowbeauty (*Rhexia mariana*), bulltongue arrowhead (*Sagittaria lancifolia*), musky mint, Virginia buttonweed (*Diodea virginiana*), common buttonbush (*Cephalanthus occidentalis*), lemon bacopa (*Bacopa caroliniana*), spikerushes (*Eleocharis* spp.), American white waterlily (*Nymphaea odorata*), broomsedge bluestem (*Andropogon virginicus*), sand cordgrass (*Spartina bakeri*), redtop panicum (*Panicum rigidulum*), and corkwood (*Stillingia aquatica*). The nuisance and invasive exotic plant species observed in this community include torpedo grass, dog fennel, caesarweed , Southern crabgrass (*Digitaria ciliaris*), tropical soda apple (*Solanum viarum*), alligator weed (*Alternanthera philoxeroides*), Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), Peruvian primrosewillow (*Ludwigia peruviana*), and valamuerto (*Senna pendula var. glabrata*).

In Florida, these marshes are influenced by their subtropical location, fluctuating water levels, frequency and intensity of fire, organic matter accumulation and hard water

(Kushlan 1990). These factors, combined with the dominant species found within a marsh, dictate the category within which the marsh is placed. Six major categories of freshwater marshes are recognized in Florida. The marshes in the Pepper Ranch Preserve are generally within the "flag marsh" category. These marshes usually have a moderate (flooded 6 to 9 months) hydroperiod, a moderate (about once every ten years) fire frequency and moderate to high (usually less than one meter deep to over a meter deep) accumulation of organic material (Kushlan 1990).

2.3.3 Wetlands: Slough

Sloughs are generally abundant throughout Florida and at Pepper Ranch Preserve this community comprises 10.25% of the preserve. It is located almost entirely in the western portion of the preserve, and most of this community extends onto the adjacent CREW land.

According to the FNAI Guide to the Natural Communities of Florida (1990), sloughs are characterized as broad shallow channels, inundated with flowing water except during extreme droughts. They are the deepest drainageways within strand swamps and swale systems. The vegetation structure of sloughs is variable but at Pepper Ranch Preserve it is characterized, in general, by Carolina willow (*Salix caroliniana*), which is dominate, Carolina (pop) ash (*Fraxinus caroliniana*). Sawgrass, bog hemp (*Boehmeria cylindrica*) and climbing hempweed (*Mikania scandens*) were some of the herbaceous species observed in the understory.

Slough Community within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

The canopies formed in these sloughs, especially in south Florida, are ideal moist, warm habitats for rare and endangered tropical epiphytes. Many Caribbean species that occur in this community are virtually never encountered in other Florida habitats. Pond apple branches are often heavily loaded with epiphytic orchids, bromeliads, and ferns. Typical animals include ribbon snake, cottonmouth, opossum, gray squirrel, black bear, raccoon, mink, otter, Florida panther, and white-tailed deer (FNAI 1990).

Sloughs often occur over the lowest part of linear depressions in the underlying limestone

bedrock. The peat soils found in sloughs can be destroyed by catastrophic fires that often occur during droughts. The typical hydroperiod in this community is at least 250 days per year. Sloughs are often found in association with cypress swamps and may also occur in floodplain swamps and basin swamps (FNAI 1990).

Sloughs are extremely vulnerable to hydrologic disturbance and must have a reliable, quality water source to persist. The lack of invasive plant species observed in this community at Pepper Ranch Preserve is indicative of a high-quality system.

2.3.4 Wetlands: Bottomland Forest

This community at the Pepper Ranch Preserve appears in association with Lake Trafford along the southern perimeter of the preserve, and with the large slough occurring on the western portion of the preserve. This natural community covers 9.87% of the preserve.

Bottomland forest is characterized as a low-lying, closed-canopy forest of tall, straight trees with either a dense shrubby understory and little ground cover, or an open understory and ground cover of ferns, herbs, and grasses (FNAI 1990). At Pepper Ranch Preserve the latter is most often observed, with red maple (*Acer rubrum*) as the dominate canopy tree, some buttonbush in the midcanopy and sawgrass, alligator flag, swamp fern, and cinnamon fern (*Osmunda cinnamomea*) in the understory.

Bottomland Forest Community
within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

The canopy of these forests is dense and closed, except during winter in areas where deciduous trees predominate, as in Pepper Ranch Preserve. The air movement and light penetration are thus generally low, making the humidity high and relatively constant. Because of these characteristics, bottomland forests rarely burn. This is also a very stable community that requires a hundred years or more to mature. Nearly all bottomland forests in Florida have been logged, which often leaves long-lasting scars from soil disturbance (FNAI 1990).

2.3.5 Uplands: Mesic Flatwoods

The pine flatwoods community comprises approximately 8.97% of the Pepper Ranch Preserve. This plant community is located predominately in the central and eastern portions of the preserve. Pine flatwoods are one of the most wide-ranging terrestrial plant communities in Florida and consequently one of the most influenced by anthropogenic activities (Abrahamson & Hartnett 1990). Fire strongly influences the community structure and composition of this community. The term pine flatwoods is a general categorization of areas that are dominated by various species of pine (*Pinus* spp.) trees. Pine flatwoods may be found in mesic flatlands where the landscape is made up of flat, moderately well drained sandy substrates with a mixture of organic material, often with an underlying hard pan layer. An open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs characterize natural, mesic flatwoods that have been burned regularly (FNAI 1990).

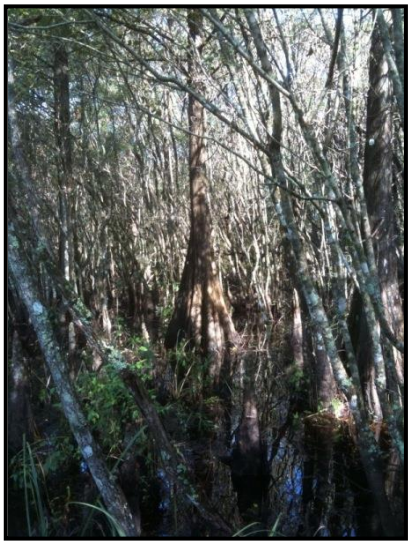
Mesic Flatwoods Community within Pepper Ranch Preserve
Photo by Steven W. Woodmansee

The U.S. Department of Agriculture (USDA) NRCS classification system refers to these areas as South Florida flatwoods. South Florida flatwoods are typically savannas, a type of plant community intermediate between forest and grassland. Mesic pine flatwoods are also called mesic flatwoods, pine savanna, cabbage palm savanna, and pine barrens. The flatwoods at Pepper Ranch are characterized by a south Florida slash pine dominate canopy with some live oaks, wax myrtle and saw palmetto (*Serenoa repens*) in the subcanopy, and a myriad of herbs and forbs forming the ground cover, such as: swamp fern, grape vine (*Vitis rotundifolia*), American beautyberry (*Callicarpa americana*), tall elephant's foot (*Elephantopus elatus*), greenbrier (*Smilax* sp.), caesarweed, and tick-trefoil (*Desmodium* sp.).

Mesic flatwoods provide essential forested habitat for a variety of wildlife species including Neotropical migratory birds, wide-ranging large carnivores, mid-sized carnivores, ground-nesting vertebrates, tree-cavity dependent species, tree-nesting species and non-aquatic plant life. "At the current rate of habitat conversion, the mesic pine flatwoods, once the most abundant upland habitat in South Florida, is in danger of becoming one of the rarest habitats in South Florida" (USFWS 1999*c*).

2.3.6 Other Natural Communities

All other natural communities (strand swamp, dry prairie, wet flatwoods, prairie hammock, and wet prairie) at the Pepper Ranch Preserve collectively cover less than 9% of the preserve.



Strand Swamp Community within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

Strand swamp is most commonly known as cypress swamp and it is strictly found in the western portion of Pepper Ranch Preserve in association with the slough natural community. The typical vegetation found in this community at Pepper Ranch Preserve includes: cypress (*Taxodium ascendens*) in the canopy, Carolina (pop) ash in the midcanopy, and the understory is mainly open water with some alligator flag, pickerelweed, and sawgrass.

The dry prairie community at Pepper Ranch Preserve is located in the extreme southwest and eastern portions of the preserve. Portions of this community exhibit no canopy, but where a canopy is present it is at less than 10% coverage and is made up of south Florida slash pine and cabbage palms. The midcanopy appears to have been cleared at one time and now consists mainly of saw palmetto and wax myrtle. The understory is dominated by bahiagrass (*Paspalum notatum*), and other grasses and herbs present including: blue maidencane, torpedo grass, knotroot foxtail (*Setaria parviflora*), big carpetgrass (*Axonopus furcatus*), chocolate weed, tall elephant's foot, tick-trefoil, musky mint, netted pawpaw (*Asimina reticulata*), slender goldenrod, wire grass (*Aristida stricta*), and a variety of sedges. The disturbed portions of this community located in the eastern part of the preserve exhibit less native plant diversity, which has been replaced by cogongrass (*Imperata cylindrica*), smutgrass (*Sporobolus indicus*), Peruvian primrose willow, Caesar's weed, and Brazilian pepper. The disturbance to the portions of this community located in the southwestern part of the preserve appears to be due to a cleared canopy. The invasive plants in these areas have been treated several times since acquisition, however a significant seed source exists. Ongoing maintenance is being conducted on an annual or bi-annual basis.

Dry Prairie Community within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

The wet flatwoods of Pepper Ranch Preserve are exclusively found in the western portion of the preserve and they exhibit cypress, south Florida slash pine and cabbage palms in the canopy, little to no midcanopy and an understory similar to the adjacent strand swamp community.

Wet Flatwoods Community within
Pepper Ranch Preserve
Photo by Steven W. Woodmansee

The prairie hammocks at Pepper Ranch Preserve are an upland community comprised of predominately live oaks and cabbage palms in the canopy and a midcanopy and understory similar to the upland mixed forest as described above.

Prairie Hammock Community
within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

There are only four small areas of wet prairie at Pepper Ranch Preserve located in the southwestern portion of the preserve and they exhibit the following plant species: blue maidencane, sand cordgrass, corkwood, broomsedge bluestem, haspan flatsedge (*Cyperus haspan*), spadeleaf (*Centella asiatica*), cypress witchgrass (*Dichanthelium ensifolium var. unciphyllum*), southern umbrellasedge (*Fuirena scirpoidea*), maidencane, narrowfruit horned beaksedge, narrowleaf blue-eyed grass (*Sisyrinchium angustifolium*). Portions of this community also have the invasive exotic torpedo grass, up to 50% coverage, and the remaining portions are free of invasive exotic vegetation. These invasive plant areas have been treated several times since acquisition, however a significant seed source exists. Ongoing maintenance is being conducted on an annual or bi-annual basis.

Wet Prairie Community
within Pepper Ranch Preserve
Photo by Johnson Engineering, Inc.

2.3.7 Altered Communities

The most common community at Pepper Ranch Preserve is the improved pastures, which is an altered community; they comprise 26.57% of the preserve. The majority of the pastures exhibit upland grass and forbs species dominated by bahiagrass with a mixture of the following species: limpograss (*Hemarthria altissima*), ragweed (*Ambrosia artemisiifolia*), dogfennel, smutgrass, bushy bluestem (*Andropogon glomeratus var. hirsutior*), tick-trefoil, capeweed, creeping woodsorrel (*Oxalis corniculata*), rabbitbells (*Crotalaria rotundifolia*), flatsedges, torpedo grass, purple thistle (*Cirsium horridulum*), knotroot foxtail, big carpetgrass, woodland false buttonweed (*Spermacoce assurgens*), and crabgrass. Most of the pastures at Pepper Ranch Preserve are rimmed with large Brazilian pepper trees associated with ditch/berm and fence lines. In the far western portion of the preserve there is a hydric pasture that exhibits more wetland species than the other pastures and the underlying soils are hydric soils. There is a midcanopy in the hydric pasture of pop ash, Brazilian pepper, and Carolina willow. The herbaceous layer consists of southeastern sunflower, torpedo grass, bushy bluestem, spadeleaf, Virginia buttonweed, blue mistflower (*Conoclinium coelestinum*), musky mint, and southern beaksedge.

Improved Pastures within Pepper Ranch Preserve
Photo taken by Johnson Engineering, Inc.

Three oil fields are located adjacent to the hydric pasture at Pepper Ranch Preserve, two of which are currently in operation. An elevated, graded shell road traverses the preserve and provides access to the oil fields in the western portion of the preserve. There are also numerous primitive roads and trails that provide access to the pastures and to the lodge; the latter is located in the southeastern portion of the preserve. Ditches are typically associated with the roads, trails, oil fields and pastures of the preserve. A few borrow ponds are scattered throughout the preserve, usually located within pastures to provide water for the cattle. These borrow ponds typically have spoil piles, some of which are covered with Brazilian pepper.

There are only a few areas where exotics have formed a monoculture. The largest of these areas is located at the southern end of a large depression marsh in the north portion of the preserve where there is a hydric Brazilian pepper monoculture (4.26 acres). In the southeastern portion of the preserve there were two small pockets of mature suckering Australian pines (*Casuarina glauca*) totaling 1.15 acres. These areas have been treated several times since acquisition, however a significant seed source exists. Ongoing maintenance is being conducted on an annual or bi-annual basis.

2.4 Native Plant and Animal Species

The Pepper Ranch Preserve is composed of several upland and wetland natural communities as well as altered communities such as the dominant feature, the improved pastures. This section discusses the flora and fauna observed within these communities and the next section (2.5) discusses all listed species in greater detail.

2.4.1 Plant Species

To date, 416 plant species have been recorded at the preserve (Appendix 4). A comprehensive plant survey was conducted in September 2009 by botanist Steven W. Woodmansee of Pro Native Consulting. An additional survey of Pepper Ranch Preserve was conducted in May of 2010 to capture species in bloom that might have been missed during the fall survey. Of these 416 species, 334 (80%) are native to Florida and 82 are non-native (20%). Of the 82 non-native species, 32 are listed on Florida Exotic Pest Plant Council's (FLEPPC) 2017 List of Invasive Plant Species (24 Category I and 8 Category II).

2.4.2 Animal Species

When this original plan was written, there were limited surveys conducted specifically for the occurrence of animal species (in contrast to plants) and the lack of on-site staffing, little was recorded for actual occurrences of animals at the Pepper Ranch Preserve. Occurrences of fauna at the preserve were based on direct visual and aural observations made by staff, Johnson Engineering ecologists, and Pro Native Consulting biologist 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 and anecdotal information from persons with knowledge of the site. Since acquisition, numerous wildlife cameras have been deployed throughout the preserve and frog and bird surveys have been conducted to give us a more complete list. Table 5 provides a comprehensive list of animals, both native and non-native, recorded on the Pepper Ranch Preserve thus far.

Table 5: Faunal Species Observed at Pepper Ranch Preserve

Common Name	Scientific Name	Protection Status
American Bittern	*Botaurus lentiginosus*	
American Kestrel	*Falco sparverius*	
American Redstart	*Setophaga ruticilla*	
American Robin	*Turdus migratorius*	
Anhinga	*Anhinga anhinga*	
Audubon's Crested Caracara	*Polyborus plancus audubonii*	T (FWC, USFWS)
Bald Eagle	*Haliaeetus leucocephalus*	Delisted (USFWS & FWC)
Barred Owl	*Strix varia*	
Belted Kingfisher	*Megaceryle alcyon*	
Black Vulture	*Coragyps atratus*	
Blue-gray Gnatcatcher	*Polioptula caerulea*	

Table 5: Faunal Species Observed at Pepper Ranch Preserve (continued)		
Common Name	**Scientific Name**	**Protection Status**
Blue Jay	*Cyanocitta cristata*	
Brown Thrasher	*Toxostoma rufum*	
Carolina Wren	*Thryothorus ludovicianus*	
Cattle Egret	*Bubulcus ibis*	
Common Bobwhite	*Colinus virginianus*	
Common Grackle	*Quiscalus quiscula*	
Common Moorhen	*Gallinula chloropus*	
Downy Woodpecker	*Picoides pubescens*	
Eastern Meadowlark	*Sturnella magna*	
Florida Sandhill Crane	*Grus canadensis pratensis*	T (FWC)
Black-Bellied Whistling Duck	*Dendrocygna autumnalis*	
Gray Catbird	*Dumetella carolinensis*	
Great Blue Heron	*Ardea herodias*	
Great Crested Flycatcher	*Myiarchus crinitus*	
Great Egret	*Ardea alba*	
Green Heron	*Butorides virescens*	
Limpkin	*Aramus guarauna*	
Little Blue Heron	*Egretta caerulea*	T(FWC)
Loggerhead Shrike	*Lanius ludovicianus*	
Mourning Dove	*Zenaida macroura*	
Northern Cardinal	*Cardinalis cardinalis*	
Northern Mockingbird	*Mimus polyglottos*	
Northern Parula	*Parula americana*	
Osprey	*Pandion haliaetus*	
Pileated Woodpecker	*Dryocopus pileatus*	
Pine Warbler	*Dendroica pinus*	
Red-bellied Woodpecker	*Melanerpes carolinus*	
Red-shouldered Hawk	*Buteo lineatus*	
Red-winged Blackbird	*Agelaius phoeniceus*	
Roseate Spoonbill	*Ajaia ajaja*	T (FWC)
Snowy Egret	*Egretta thula*	
Swallow-tailed Kite	*Elanoides forficatus*	
Tree Swallow	*Tachycineta bicolor*	
Tricolored Heron	*Egretta tricolor*	T(FWC)
Turkey Vulture	*Cathartes aura*	
White-eyed Vireo	*Vireo griseus*	
White Ibis	*Eudocimus albus*	
Wild Turkey	*Meleagris gallopavo*	
Wood Stork	*Mycteria americana*	T(FWC), T (USFWS)
Yellow-crowned Night-Heron	*Nyctanassa violacea*	
Yellow-rumped Warbler	*Dendroica coronata*	

Table 5: Faunal Species Observed at Pepper Ranch Preserve (continued)		
Common Name	**Scientific Name**	**Protection Status**
Armadillo	*Dasypus novemcinctus*	
Big Cypress Fox Squirrel	*Sciurus niger avicennia*	T (FWC) –not observed by staff
Bobcat	*Lynx rufus*	
Coyote	*Canis latrans*	
Eastern Cottontail Rabbit	*Sylvilagus floridanus*	
Feral Hog*	*Sus scrofa*	
Florida Black Bear	*Ursus americanus floridanus*	
Florida Panther	*Puma concolor coryi*	E (FWC); E (USFWS)
Grey fox	*Urocyon cinereoargenteus*	
Grey Squirrel	*Sciurus carolinensis*	
Opossum	*Didelphis virginiana*	
Raccoon	*Procyon lotor*	
River otter	*Lontra canadensis*	
Round-tailed Muskrat	*Neofiber alleni*	
White-tailed Deer	*Odocoileus virginianus*	
American Alligator	*Alligator mississippiensis*	T (FWC); T (USFWS)[1]
Black Racer	*Coluber constrictor priapus*	
Brown Anole*	*Anolis sagrei*	
Brown watersnake	*Nerodia taxispilota*	
Coral Snake	*Micrurus fulvius*	
Cottonmouth	*Agkistrodon piscivorus*	
Diamondback Rattlesnake	***Crotalus adamanteus***	
Florida Box Turtle	*Terrapene carolina bauri*	
Florida Softshell	*Apalone ferox*	
Gopher Tortoise	*Gopherus polyphemus*	T (FWC)
Green Anole	*Anolis carolinensis*	
Pigmy Rattlesnake	*Sistrurus miliarius*	
Snapping Turtle	*Chelydra serpentina*	
Three-striped Mud Turtle	*Kinosternon bauri*	
Yellow Rat Snake	*Elaphe obsoleta quadrivittata*	
Cane Toad*	*Rhinella marina*	
Cuban Tree Frog*	*Osteopilus septentrionalis*	
Eastern Narrow-mouthed Toad	*Gastrophryne carolinensis*	
Greenhouse Frog*	*Eleutherodactylus planirostris*	
Southern Toad	*Anaxyrus terrestris*	
Green Treefrog	*Hyla cinerea*	
Oak Toad	*Anaxyrus quercicus*	
Pig Frog	*Lithobates grylio*	

Southern Cricket Frog	*Acris gryllus*	
Southern Leopard Frog	*Lithobates sphenocephalus*	
Squirrel Treefrog	*Hyla squirella*	

List of Abbreviations:
FWC = Florida Fish and Wildlife Conservation Commission
USFWS = United States Fish and Wildlife Service
E = Endangered
T = Threatened
*- Invasive Exotic Species

The Florida Breeding Bird Atlas (FWC 2003) lists 49 avian species that have been recorded as confirmed, probable, or possible breeding in the vicinity of the site (Table 6). The Breeding Bird Atlas documents breeding distributions of all bird species in Florida between 1986 and 1991. Due to the size and diversity of natural communities found at Pepper Ranch Preserve, it is likely several of these species may breed at the preserve.

Pepper Ranch Preserve is adjacent to the 5,000-acre Corkscrew Marsh, a freshwater wetland system home to the most historically productive wood stork nesting colony in the nation. The wetland components of Pepper Ranch Preserve provide vital foraging habitat for nesting woodstorks and successfully fledged chicks who utilize the preserve throughout the nesting season and beyond. In addition to contributing to wood stork nesting success in the area, Pepper Ranch Preserve is a priority nesting area for migratory swallow-tailed kites who utilize the property from February-August. In cooperation with FWC CREW WEA biologists, Conservation Collier staff conduct nest search and nest monitoring surveys of swallow-tailed kites on the preserve from February-June. FWC CREW biologists monitored 3 nests on the ranch during the 2016 nesting season, 6 nests in 2017, and 15 nests in 2018 in cooperation with Conservation Collier staff.

Pepper Ranch Preserve wetland habitats provide nesting habitat to the Florida sandhill cranes, a species designated as state-threatened by FWC. In the spring of 2018, 5 nesting pairs were noted utilizing the property's freshwater marsh habitats to nest and feed their young.

Other wildlife species that have not yet been recorded undoubtedly occur at the Pepper Ranch Preserve. Pepper Ranch is a keystone portion of the Corkscrew Regional Ecosystem Watershed and provides vital connectivity and dispersal corridors for wildlife traveling between CREW, Corkscrew, Camp Keis, Panther Refuge, and Big Cypress.

Table 6: Breeding Bird Species Recorded in the Corkscrew and Immokalee Quadrangles Encompassing the Pepper Ranch Preserve			
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Green Heron	*Butorides virescens*	Red-cockaded Woodpecker	*Picoides borealis*
Yellow-crowned Night-Heron	*Nyctanassa violacea*	Northern Flicker	*Colaptes auratus*
Wood Duck	*Aix sponsa*	Pileated Woodpecker	*Dryocopus pileatus*
Mottled Duck	*Anas fulvigula*	Great Crested Flycatcher	*Myiarchus crinitus*
Swallow-tailed Kite	*Elanoides forficatus*	Loggerhead Shrike	*Lanius ludovicianus*
Red-shouldered Hawk	*Buteo lineatus*	White-eyed Vireo	*Vireo griseus*
Northern Bobwhite	*Colinus virginianus*	Blue Jay	*Cyanocitta cristata*
King Rail	*Rallus elegans*	Fish Crow	*Corvus ossifragus*
Common Moorhen	*Gallinula chloropus*	Purple Martin	*Progne subis*
Limpkin	*Aramus guarauna*	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Killdeer	*Charadrius vociferus*	Tufted Titmouse	*Baeolophis bicolor*
Mourning Dove	*Zenaida macroura*	Carolina Wren	*Thryothorus ludovicianus*
Common Ground-Dove	*Columbina passerina*	Blue-gray Gnatcatcher	*Polioptilia caerulea*
*Rose-ringed Parakeet	*Psittacula krameri*	Northern Mockingbird	*Mimus polyglottos*
Yellow-billed Cuckoo	*Coccyzus americanus*	Brown Thrasher	*Toxostoma rufum*
Barn Owl	*Tyto alba*	Northern Parula	*Parula americana*
Eastern Screech-Owl	*Megascops asio*	Pine Warbler	*Dendroica pinus*
Great Horned Owl	*Bubo virginianus*	Prairie Warbler	*Dendroica discolor*
Barred Owl	*Strix varia*	Common Yellowthroat	*Geothlypis trichas*
Common Nighthawk	*Chordeiles minor*	Eastern Towhee	*Pipilo erythrophthalmus*
Chuck-will's-widow	*Caprimulgus carolinensis*	Northern Cardinal	*Cardinalis cardinalis*
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Red-winged Blackbird	*Agelaius phoeniceus*
Red-bellied Woodpecker	*Melanerpes carolinus*	Eastern Meadowlark	*Sturnella magna*
Downy Woodpecker	*Picoides pubescens*	Common Grackle	*Quiscalus quiscula*
**** = non-native species***		Boat-tailed Grackle	*Quiscalus major*

2.5 Listed Species

Official lists of rare and endangered species are produced at the federal level by the USFWS and the National Marine Fisheries Service (NMFS) and at the State level by the Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Department of Agriculture and Consumer Services (FDACS). FNAI produces a list of rare and endangered species and maintains a database of occurrences of these species in Florida. The Institute for Regional Conservation (IRC) also ranks native plant species by conservation status in the 10-county area of South Florida. The following subsections (2.5.1 and 2.5.2) discuss the listed, rare and protected plant and animal species found within the Pepper Ranch Preserve in detail. 2.5.1 Listed Plant Species

The Florida State Statute titled "Preservation of Native Flora of Florida" (Statute 581.185) provides the following definitions:

- Endangered plants mean species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be

endangered or threatened pursuant to the federal Endangered Species Act of 1973, as amended, Pub. L. No. 93-205 (87 Stat. 884).

- Threatened plants mean species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.
- Commercially exploited plants mean species native to the state, which are subject to being removed in significant numbers from native habitats in the state and sold or transported for sale.

There are fourteen (14) plant species at Pepper Ranch Preserve that are listed by the FDACS, three (3) as endangered, eight (8) as threatened, and 3 as commercially exploited (Table 7). One species, *Tillandsia x smalliana* is listed in Table 7 because it is a hybrid between two endangered species but is not itself listed by the FDACS. A brief description of the species listed in Table 7 and their status is included in the following paragraphs.

Two (2) additional plant species found at Pepper Ranch Preserve are designated as critically imperiled in South Florida (SF1) by the Institute for Regional Conservation (IRC). IRC is a not-for-profit organization dedicated to the protection, restoration, and long-term management of biodiversity on a regional basis, and to the prevention of regional extinctions of rare plants, animals, and natural communities. This designation refers to the extreme rarity (five or fewer occurrences, or fewer than 1,000 individuals) of a species, or its extreme vulnerability to extinction due to some natural or human factor.

Table 7: Listed Plant Species Detected at the Pepper Ranch Preserve

Common Name	Scientific Name	Status
Cardinal airplant	*Tillandsia fasciculata var. densispica*	E
Giant airplant	*Tillandsia utriculata*	E
Meadow jointvetch	*Aeschynomene pratensis*	E
Catesby's Lily	*Lilium catesbaei*	T
Everglades palm	*Acoelorraphe wrightii*	T
Leatherleaf airplant	*Tillandsia variabilis*	T
Long strap fern	*Campyloneurum phyllitidis*	T
Needleroot airplant orchid	*Harrisella porrecta*	T
Northern needleleaf	*Tillandsia balbisiana*	T
Simpson's stopper	*Myrcianthes fragrans*	T
Twisted airplant	*Tillandsia flexuosa*	T
Florida butterfly orchid	*Encyclia tampensis*	CE
Royal fern	*Osmunda regalis var. spectabilis*	CE
Cinnamon fern	*Osmunda cinnamomea*	CE
Oak mistletoe	*Phoradendron leucarpum*	SF1
Quillwort arrowhead	*Sagittaria isoetiformis*	SF1
Reddish wild pine (native hybrid)	*Tillandsia* x *smalliana*	

E: Endangered, **T:** Threatened, **CE:** Commercially Exploited

SF1: Critically imperiled in South Florida (as designated by IRC)

Five (5) of the fourteen listed plant species found on the Pepper Ranch Preserve are classified as bromeliads. Bromeliads are members of the pineapple family (Bromeliaceae). While some of these species may be found growing terrestrially, most

native bromeliads found in Florida are found growing attached to tree trunks and branches and may therefore be referred to as epiphytes (a plant that lives upon other plants; from Greek "epi" = upon "phyte" = plant). The leaves and/or roots of these airplants (depending on the species) absorb the water and nutrients they need from the air and from the rain that falls through the canopy of the tree on which they are found. Since epiphytes use their roots only to anchor themselves to another plant, they are considered non-parasitic.

Even though the 5 listed bromeliad species found on the Pepper Ranch Preserve are fairly common in the state, they are listed due to illegal collecting and the destruction of the habitats in which they are found. Additionally, infestation by the introduced Mexican bromeliad weevil (*Metamasius callizona*) has been implicated in the decline of many airplant populations around the state. Currently, there are no control measures in place for the Mexican bromeliad weevil however, close research and monitoring is taking place.

Cardinal Airplant (*Tillandsia fasciculata*), is also known as common wild pine and stiff-leaved wild pine. *T. fasciculata* is listed as an endangered plant by the State of Florida and has been recorded in 24 counties throughout Florida (Wunderlin & Hansen 2008). This epiphyte was frequently found in South Florida before the introduction of the Mexican bromeliad weevil. Today, it may be found in hammocks, cypress swamps and pinelands.

Like most of the other bromeliads in Florida, this species is often referred to as a "tank" bromeliad because the leaf axils and central stems form a "tank" or reservoir at the base of the plant. These reservoirs capture and hold water, dead and decaying plant matter (leaves, seeds, twigs, etc.), and dead and drowning non-aquatic insects; these trapped items provide nutrients for the plant (Larson et al. 2006).

Giant airplant (*Tillandsia utriculata*) also known as the giant wild pine, 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.

Meadow jointvetch (*Aeschynomene pratensis*), is endemic to Florida, meaning it occurs nowhere else in the world. It is a State endangered species that has been recorded in only four (4) southern Florida counties (Wunderlin and Hansen 2008).

Reddish wild pine (*Tillandsia* x *smalliana*), is a hybrid orchid derived from the crossing of two State endangered native orchids *T. balbisiana* and *T. fasciculata var. densispica*; it is not itself listed by FDACS. This species has been recorded in only seven (7) southern Florida counties (Wunderlin and Hansen 2008).

Catesby's Lily (*Lilium catesbaei*) is an herb endemic to the U.S. southeastern coastal plain and is listed as a threatened species in the State of Florida. It is found nearly throughout Florida and has been recorded in 50 counties (Wunderlin and Hansen 2008). In Collier County, it has only been recorded at Wet Woods Preserve, Railhead Scrub Preserve, Big Cypress National Preserve, Collier Seminole State Park, Florida Panther National Wildlife Refuge, Picayune Strand State Forest, and Pepper Ranch Preserve. Johnson Engineering found it on the preserve on October 8, 2009 in the mesic flatwoods

located in the southeastern portion of management unit 8 (see management unit map in Appendix 5).

Everglades palm (*Acoelorraphe wrightii*) is a State threatened species that has been recorded in only three (3) southern Florida counties (Wunderlin and Hansen 2008). This salt-tolerant palm is at the northern limit of its range in southern Florida. It was once common here but many plants were taken for the nursery trade (Bush and Morton 1969).

Leatherleaf airplant (*Tillandsia variabilis*) is a State threatened species that has been recorded in ten (10) southern Florida counties (Wunderlin and Hansen 2008). Like other airplants described in this plan, leatherleaf airplant is typically found in hammocks and cypress swamps.

Long strap fern (*Campyloneurum phyllitidis*) is a State threatened species that is epiphytic in hammocks and swamps and can sometimes grow on rocks or on walls in limestone sinkholes where it is reduced in size (eflora – flora of NA).

Needleroot airplant orchid (***Harrisella porrecta***) is widespread in the central and southern counties of Florida and is considered a threatened species. This airplant's flowering period is between August and November. Other common names are the jingle bell orchid or the leafless orchid (Brown 2002).

Northern needleleaf (*Tillandsia balbisiana*) also known as reflexed wild pine, is an epiphytic, "tank" bromeliad and is listed as a threatened plant by the State of Florida. Wunderlin and Hansen reported this species in 22 counties throughout Florida as of 2008 (Wunderlin and Hansen 2008). Reflexed wild pine is an occasional species in South Florida and is usually found in scrub, pinelands, strand swamps, hammocks, mangrove swamps and on shell ridges/mounds.

Simpson's stopper (*Myrcianthes fragran*) is a State threatened species found in hammocks. The red flaking bark of this tree can confuse its identification with the invasive exotic guava (*Psidium guajava*).

Twisted airplant (*Tillandsia flexuosa*), a State threatened species, is less common in Florida than the other *Tillandsia* species listed in this plan, but still frequent, especially in coastal ecosystems. It has been recorded in ten (10) southern Florida counties (Wunderlin and Hansen 2008).

Florida butterfly orchid (***Encyclia tampensis*)** is locally abundant in central and southern counties of Florida; it is commercially exploited. They grow on a wide variety of trees including live oak, red maple, bald cypress (*Taxodium distichum*), pop ash and pond apple. They normally flower in June or July but may also flower at other times of the year (Brown 2002).

Royal fern (*Osmunda regalis* var. *spectabilis*) is not in danger of being extirpated in Florida because of habitat loss, habitat fragmentation or attack by an exotic, invasive pest, but because of commercial exploitation. According to Nelson (2000), the fibers from the stem of royal fern have been used as a growing medium to grow orchids as well as to make ropes and nets. Additionally, this species is believed to have medicinal

benefits; other parts of the plant may have been used to treat wounds and broken bones, relieve sprains and to help alleviate coughs and diarrhea. In Florida, this species is found in hydric areas such as wet flatwoods, cypress swamps, floodplains, stream banks and bogs.

Cinnamon fern (*Osmunda cinnamomea*) is widespread in swamps, wet woods and wet meadows throughout North and South America (Cobb et al. 2005). Its status as Commercially Exploited as listed by the FDACS makes it illegal to collect it in the wild but it is commercially available for native landscaping.

Oak mistletoe (*Phoradendron leucarpum*)
Oak mistletoe is a parasitic evergreen subshrub and despite its name it can be found growing on other broadleaf trees such as red maple (*Acre rubrum*). This plant is not listed by the State of Florida but has been recognized by IRC as a critically imperiled species for South Florida. This is a temperate species at the southern end of its range, and it is possible it has always been uncommon in South Florida (Gann et al. 2002).

Quillwort arrowhead (*Sagittaria isoetiformis*)
This plant is not listed by the State of Florida but has been recognized by IRC as a critically imperiled species for South Florida. As with oak mistletoe, this is also a temperate species at the southern end of its range, and it is possible it has always been uncommon in South Florida (Gann et al. 2002).

2.5.2 Listed Animal Species

Table 5 in section 2.4.2 indicates which of the wildlife species documented for Pepper Ranch Preserve are protected by the USFWS (2009) and FWC (2009). Listed wildlife species that have been observed at Pepper Ranch Preserve to date include: Audubon's Crested Caracara, Bald Eagle, Florida Sandhill Crane, Limpkin, Little Blue Heron, Roseate Spoonbill, Tricolored Heron, Snowy Egret, White Ibis, Wood Stork, Big Cypress Fox Squirrel, Florida Black Bear, Florida Panther, American Alligator and Gopher Tortoise. The following is a brief description of the conservation status for those species occurring at the preserve that are currently listed as threatened or endangered by the State or federal government.

Audubon's Crested Caracara (*Polyborus plancus audubonii*)
This State and federally threatened species nests predominately in cabbage palms where it will lay 2-3 eggs in late winter. Agricultural development for improved pastures and citrus groves, as well as indiscriminant killing has contributed to the caracara's decline in Florida. It was officially listed on the federal list of threatened species in August 1987 (Kale and Maehr 1990).

Southern Bald Eagle (*Haliaeetus leucocephalus leucocephalus)*
On June 29, 2007, the bald eagle was officially delisted and removed from the federal Endangered Species List in the lower 48 states. However, according to the USFWS Division of Migratory Bird Management, this bird of prey will continue to be protected by the Bald and Golden Eagle Protection Act, the Lacey Act and the Migratory Bird Treaty Act.

Florida Sandhill Crane (*Grus canadensis pratensis*)
Sandhill cranes occur in pastures, open prairies and freshwater wetlands in peninsular Florida from the Everglades to the Okefenokee Swamp. They build large nests in thick patches of vegetation in freshwater wetlands where they will typically lay two eggs. Nesting lasts from January through June (Kale and Maehr 1990). They are listed as a threatened species in the State of Florida.

Wood Stork (*Mycteria americana*)
This bird species was firstsighted on the preserve by staff in 2008, and on multiple occasions since then, is listed as endangered by both FWC and USFWS. Also known as the wood ibis or flint head, this species is one of the largest wading birds found in Florida and the only stork in the United States. The wood stork is a tactile feeder and may be found in fresh, brackish, and saltwater ecosystems. Because of its dependence on naturally functioning hydrologic systems, the National Audubon Society refers to this wading bird as the "barometer of the Everglades". For this reason, the wood stork is an excellent environmental indicator of wetland health (Mazziotti 2002).

Big Cypress Fox Squirrel (*Sciurus niger avicennia*)
Also known as the mangrove fox squirrel, the FWC lists Big Cypress Fox Squirrel as threatened in Florida. This species was first observed at Pepper Ranch Preserve by Wilson Miller in 2005 during a listed species survey however, none have been observed by staff since acquisition in 2009. While the species is widespread in eastern and central North America, the subspecies is endemic to southwestern Florida – specifically in the Immokalee Rise, Big Cypress Swamp, and Devil's Garden area in Collier County. Some areas of this range have become vacated, while many other suitable areas are being altered or becoming isolated through development. The subspecies uses most types of forest occurring in its range. However, dense interiors of mixed cypress-hardwood strands seem to be avoided by Big Cypress fox squirrels due to dense populations of gray squirrels (*Sciurus carolinensis*) occupying these areas. Big Cypress fox squirrels have been reported in cypress swamp, pine flatwoods, tropical hammock, hardwood hammock, mangrove swamp, and suburban habitats including golf courses and residential areas in native vegetation. Big Cypress fox squirrel densities appear to be quite low, and on this basis the subspecies can be considered inherently rare (Humphrey & Jodice 1992).

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 Pepper Ranch Preserve, on neighboring properties and on Pepper Road, by staff and neighbors. 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).

Florida Panther (*Puma concolor coryi)*
This large cat is a year-round resident of undeveloped lands in South Florida including the Pepper Ranch Preserve. It is listed as endangered by both FWC and USFWS. Panthers prefer hardwood hammocks and pine forests with numerous saw palmettos for resting, raising kittens, and stalking prey. Panthers are losing their habitat in South

Florida and males require a large range. Increased development and traffic are another reason why this species is listed as endangered. Telemetry data from FWC demonstrates Florida panther frequently use the adjacent CREW lands and have used the Pepper Ranch Preserve on a few occasions (current Florida panther telemetry data obtained from FWC staff by Johnson Engineering, Inc. on 09/28/09). In their third revision to the Florida Panther Recovery Plan the USFWS (2008) states that there are three priority zones identified as important for panther habitat conservation: (1) Primary Zone – lands essential to the long-term viability and persistence of the panther in the wild; (2) Secondary Zone - lands contiguous with the Primary Zone, currently used by few panthers, but which could accommodate expansion of the panther population south of the Caloosahatchee River; and (3) Dispersal Zone - the area which may facilitate future panther expansion north of the Caloosahatchee River. The Pepper Ranch Preserve is entirely within the Primary Zone for the Florida panther. Wildlife cameras have been installed throughout the preserve and have taken hundreds of photos of panther on the preserve since 2010. In 2016 and 2018, panther kitten photos were captured on the cameras.

Panther kitten photo taken on boardwalk in December 2016

Panther photo taken by wildlife camera on the preserve in January 2016

American Alligator (*Alligator mississippiensis*)

The American alligator is listed as threatened by FWC and USFWS for its similarity in appearance with the endangered American Crocodile. Alligators are seen throughout the preserve on a regular basis and they are quite numerous in Lake Trafford that borders the Preserve to the south.

Gopher Tortoise (*Gopherus polyphemus*)

This medium-sized, native land turtle is listed by the State as a threatened species. Gopher tortoises are typically found in dry, upland habitats including scrub, xeric oak hammock, sandhills and dry pine flatwoods. Burrows are created for protection from weather, fire, and predators; they also provide refugia for more than 300 other species of animals. Active burrows may exist in the pine flatwoods communities at Pepper Ranch Preserve.

2.6 Invasive, Non-native and Problem Species

In an ecological context, an invasive species is one that is aggressive in growth and expansion of range and tends to dominate others; its establishment and dominance can cause widespread harm to an ecological system by altering a plant community's species composition, susceptibility to fire and hydrology. Non-indigenous species (i.e., non-native or exotic species) are those that have been introduced purposefully or accidentally

to an area outside their normal range. The characteristics of some of these species (high rate of growth/reproduction, no natural predators, easily dispersed, able to out-compete native species) make them invasive. Some indigenous species (a species whose natural range included Florida at the time of European contact circa 1500 AD or a species that has naturally expanded or changed its range to include Florida) may also become invasive. Invasions by native and non-native species often follow an alteration to ecosystem function, disruption of the food web, large-scale fragmentation of an ecosystem and/or disturbance (e.g., clearing, fire, drought, etc.) of an area. While some native species may become invasive, the establishment and dominance of non-native species is of particular concern. The exotic plant and animal species documented within the preserve and those that have a potential to occur within the preserve are discussed in the following sections.

2.6.1 Invasive and Problem Plant Species

FLEPPC maintains a list of exotic plants that have been documented to (1) have adverse effects on Florida's biodiversity and plant communities, (2) cause habitat loss due to infestations and (3) impact endangered species via habitat loss and alteration. To date, 82 non-indigenous or non-native plant species have been detected within Pepper Ranch Preserve (Table 8), accounting for 20% of the plant species recorded there. Of the 82 exotic species, 32 are listed by FLEPPC (23 Category I and nine Category II). FLEPPC defines Category I plants as those that alter native plant communities by displacing native species, change community structures or ecological functions, or hybridize with natives. Category II plants 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 rather on the documented ecological damage caused by these plants (FLEPPC 2009).

Table 8: Non-Indigenous and Invasive Plant Species at Pepper Ranch Preserve

Scientific Name	Common Names	FLEPPC Category
Abrus precatorius	ROSARY PEA; BLACKEYED SUSAN	I
Ageratum conyzoides	TROPICAL WHITEWEED	
Albizia lebbeck	WOMAN'S TONGUE	I
Alternanthera philoxeroides	ALLIGATORWEED	II
Alysicarpus ovalifolius	FALSE MONEYWORT; ALYCE CLOVER	
Alysicarpus vaginalis	WHITE MONEYWORT	
Amaranthus spinosus	SPINY AMARANTH	
Asclepias curassavica	SCARLET MILKWEED	
Blechum pyramidatum	BROWNE'S BLECHUM	II
Casuarina glauca	GRAY SHEOAK; SUCKERING AUSTRALIAN-PINE	I
Citrus x aurantium	SOUR ORANGE; GRAPEFRUIT; SWEET ORANGE	
Citrus x jambhiri	ROUGH LEMON	
Commelina diffusa	COMMON DAYFLOWER	
Crotalaria pallida var. obovata	SMOOTH RATTLEBOX	
Cuphea carthagenensis	COLOMBIAN WAXWEED	
Cynodon dactylon	BERMUDAGRASS	
Cyperus rotundus	NUTGRASS	
Desmodium triflorum	THREEFLOWER TICK-TREFOIL	
Eichhornia crassipes	COMMON WATER-HYACINTH	I
Eleusine indica	INDIAN GOOSEGRASS	
Emilia fosbergii	FLORIDA TASSELFLOWER	

Table 8: Non-Indigenous and Invasive Plant Species at Pepper Ranch Preserve		
Scientific Name	**Common Names**	**FLEPPC Category**
Eragrostis atrovirens	THALIA LOVEGRASS	
Eragrostis ciliaris	GOPHERTAIL LOVEGRASS	
Eugenia uniflora	SURINAM CHERRY	I
Eulophia graminea	(no common name)	
Ficus microcarpa	INDIAN LAUREL	I
Hedychium coronarium	BUTTERFLY GINGER	
Hemarthria altissima	LIMPOGRASS	II
Hydrilla verticillata	WATERTHYME, HYDRILLA	I
Hymenachne amplexicaulis	TROMPETILLA, WEST INDIAN MARSH GRASS	I
Hyptis verticillata	JOHN CHARLES	
Imperata cylindrical	COGONGRASS	I
Indigofera hirsute	HAIRY INDIGO	
Kigelia pinnata	SAUSAGE TREE	
Lantana camara	LANTANA, SHRUBVERBENA	I
Leucaena leucocephala	WHITE LEADTREE	II
Ludwigia peruviana	PERUVIAN PRIMROSEWILLOW	I
Lygodium microphyllum	SMALL-LEAF CLIMBING FERN	I
Macroptilium lathyroides	WILD BUSHBEAN	
Mangifera indica	MANGO	
Medicago lupulina	BLACK MEDIC	
Melaleuca quinquenervia	PUNKTREE	I
Melinis repens	ROSE NATALGRASS	I
Momordica charantia	BALSAMPEAR	II
Murdannia nudiflora	NAKEDSTEM DEWFLOWER	
Murdannia spirata var. parviflora	ASIATIC DEWFLOWER	
Nephrolepis multiflora	ASIAN SWORD FERN	I
Oldenlandia corymbosa	FLATTOP MILLE GRAINES	
Panicum maximum	GUINEAGRASS	II
Panicum repens	TORPEDO GRASS	I
Paspalum notatum	BAHIAGRASS	
Paspalum urvillei	VASEYGRASS	
Pennisetum polystachion	WEST INDIAN PENNISETUM; MISSIONGRASS	II
Phoenix roebellini	PYGMY DATE PALM	
Pistia stratiotes	WATER-LETTUCE	I
Pouzolzia zeylanica	POUZOLZ'S BUSH	
Pseudelephantopus spicatus	DOG'S-TONGUE	
Pseudogynox chenopodioides	MEXICAN FLAMEVINE	
Psidium cattleianum	STRAWBERRY GUAVA	I
Psidium guajava	GUAVA	I
Pteris vittata	CHINESE LADDER BRAKE	II
Richardia grandiflora	LARGEFLOWER MEXICAN CLOVER	
Sacciolepis indica	INDIAN CUPSCALE	
Salvinia minima	WATER SPANGLES	
Schinus terebinthifolia	BRAZILIAN PEPPER	I
Senna alata	CANDLESTICK PLANT	
Senna obtusifolia	COFFEEWEED; SICKLEPOD	
Senna pendula var. glabrata	VALAMUERTO	I
Solanum diphyllum	TWOLEAF NIGHTSHADE	II
Solanum viarum	TROPICAL SODA APPLE	I
Spermacoce verticillata	SHRUBBY FALSE BUTTONWEED	
Sphagneticola trilobata	CREEPING OXEYE, WEDELIA	II
Sporobolus indicus var. pyramidalis	WEST INDIAN DROPSEED, SMUTGRASS	I
Syzygium cumini	JAVA PLUM	I
Thelypteris dentate	DOWNY MAIDEN FERN; DOWNY SHIELD	

	FERN	
Thunbergia grandiflora	SKYVINE	
Tradescantia zebrine	WANDERING-JEW; INCHPLANT	
Trifolium repens	WHITE CLOVER	
Triumfetta semitriloba	SACRAMENTO BURRBARK	
Urena lobata	CAESARWEED	I
Urochloa distachya	TROPICAL SIGNALGRASS	
Verbena brasiliensis	BRAZILIAN VERVAIN	

As of the February 2009 acquisition of the Pepper Ranch Preserve by the Conservation Collier program, the most problematic non-indigenous or exotic, invasive plant species were torpedo grass, Brazilian pepper and cogon grass. To date, exotic plant treatments have taken place on approximately 1,750 acres of the preserve, the remainder of the preserve is open wetland and pasture. The control/removal of invasive, exotic species is discussed in detail in section 4 of this document.

2.6.2 Invasive and Other Potential Problem Animal Species

Although Florida does not have an official exotic, invasive animal species list, at least 400 exotic fish and wildlife animal species have been reported in Florida, and approximately 125 species are established.

Two non-indigenous, invasive animal species have been documented on the preserve: the brown anole (*Anolis sagrei*), the feral pig (*Sus scrofa*), and the cane toad has been heard calling near Lake Trafford (*Rinella marina).* One potentially problematic species is the coyote (*Canus latrans*). Based on the natural communities found within the preserve, proximity to residential areas and geographic location, several more species (native and non-native) have the potential to impact Pepper Ranch Preserve to varying degrees and may yet be observed on site during future visits and wildlife surveys. Brief descriptions of documented, invasive, or potentially problematic species are provided in the following paragraphs.

Brown Anole (*Anolis sagrei*): documented within the Pepper Ranch Preserve

Also known as the Cuban anole, the brown anole is native to Cuba, the Bahamas, and neighboring islands (Schwartz & Henderson 1991). Like other anoles from the islands, this species is a small, tropical, diurnal, arboreal, territorial, and insectivorous lizard (Campbell 2001). The brown anole was first documented in the Florida Keys in the late 1800s (Lee 1985) and has since spread throughout Florida, into Georgia and into two other southeastern states (Campbell 1996). It feeds on a wide variety of insects, amphipods, and isopods. Brown anoles also prey on other small vertebrates including the hatchlings of the native green anole (*A. carolinensiis;* Campbell 2000). Campbell (2000) showed that, in the absence of the exotic brown anoles, native green anoles occupy perches from ground to the canopy of vegetation. However, in the presence of the exotic anole, native anoles move higher in trees, occupying only the trunk and crown of trees. Dietary overlap is high between both species, but the overall effects of the brown anole on the green anole are still undetermined.

Cane Toad (*Rhinella marina*): documented within the Pepper Ranch Preserve

The cane toad is an invasive exotic species in south Florida. It is tropical species native to the Amazon basin in South America, and its range extends through Central America to

extreme southern Texas along the Rio Grande River. They were used as a control agent for insects that damage sugarcane and consequently, are one of the most introduced amphibian species in the world. In 1936, an attempt was made to introduce this species into Palm Beach County, FL. This attempt failed as did two subsequent efforts. Ironically, in 1955, an accidental release by an importer at the Miami International Airport in Miami-Dade County, FL proved successful. Many of this species' characteristics enable it to do well in south Florida. Beetles, bees, ants, winged termites, crickets and bugs are a large part of the diet of the adult marine toad. Additionally, they consume arthropods, mollusks, small vertebrates, plant matter, pet food, carrion, household scraps, marine snails, smaller toads and native frogs, small snakes, and even small mammals. Marine toads are prolific breeders and females can lay tens of thousands of eggs in a single breeding season. They prefer forested areas with semi-permanent water nearby (Churchill 2003). The cane toad looks very similar to the native, southern toad, but there are some distinct differences. The most obvious difference is adult body size (length of body not counting the legs). Adult marine toads can reach lengths of 6 -9 inches while the native southern toads only reach a length of 3.6 inches. Like other true toads, both possess poisonous, parotid glands. The ***parotid glands*** of the cane toad are angled downward behind their head to their shoulders. The southern toad has a kidney-shaped parotid gland behind each eye positioned close to the spine. The southern toad also possesses ***cranial crests*** that start between the eyes and often end in big knobs. While the parotid glands of all toads contain bufotoxins (poisonous, milky fluids exuded as a defense mechanism), the chemicals released by the exotic, cane toad are much more harmful to wildlife, pets and people (Brandt & Mazziotti 2005). Adjoining residents of the preserve should be encouraged to keep pet food and water containers indoors or empty at night. Dogs are not allowed on the preserve unless they are service dogs. Owners of service dogs should be warned that they could be present.

Feral pig *(Sus scrofa):* documented within the Pepper Ranch Preserve

Hogs were first brought to Florida in the mid 1500's to provision settlements of early explorers. Their high rate of reproduction and their ability to adapt to Florida's natural areas has led them to populate every county in the state. Today, Florida is second only to Texas in its feral hog population (Giuliano & Tanner 2005*a*; 2005*b*). While feral pigs are able to survive in a variety of habitats, they prefer large forested areas interspersed with marshes, hammocks, ponds, and drainages; cover in the form of dense brush; and limited human disturbance (Giuliano & Tanner 2005*b*). Dense cover is used as bedding areas and provides protection from predators and hunters. Feral pigs are omnivorous, opportunistic feeders consuming grasses, forbs, and woody plant stems, roots, tubers, leaves, seeds, fruits, fungi and a variety of animals including worms, insects, crustaceans, mollusks, fish, small birds, mammals, reptiles, amphibians and carrion. Their propensity for digging for foods below the surface of the ground (rooting) destabilizes the soil surface, resulting in erosion and exotic plant establishment. Additionally, this behavior uproots or weakens native vegetation (Giuliano & Tanner 2005*a*; 2005*b*). Due to the natural communities that are found within the preserve, this species has the potential to thrive within the boundaries. As these animals are highly visible outside of natural plant communities, adjoining residents of the preserve may be useful in the early detection of this nuisance animal. Several large families of feral pigs have been observed on the preserve since its acquisition. The feral hog population on Pepper Ranch is managed through the Pepper Ranch Preserve Adult/Youth Hunt Program.

Coyote (*Canis latrans*): documented within the Pepper Ranch Preserve
Coyotes may have potential to become a problematic species. Coyotes were introduced in very small numbers to Florida during the 1920's for sport hunting with domestic dogs. This introduction did not lead to the establishment of coyote populations in Florida. Concurrently, these canids expanded their range eastward across the United States and Canada as a result of nonspecific needs in habitat and food, decreased competition from other predators, large litter sizes and anthropogenic changes to the landscape. Since many species naturally expand or change their home ranges in response to climate and resource availability. The coyote may be considered naturalized or native to Florida based on fossil records and natural range expansion (FWC 2007). This crepuscular (active mostly at dawn and dusk) species is elusive and may travel individually or in groups of two or three (Coates et al. 1998). Coyotes commonly enlarge burrows made by other animals such as armadillos or gopher tortoises to use as dens or use dense vegetation for cover. Coyotes will kill smaller predators (e.g., foxes, opossums, etc.) and will help control rodents, which can be beneficial to turkey, quail, ducks and other ground nesting birds. Because their food habits are diverse, coyotes are unlikely to significantly affect the population of any single species. Coyotes are not reported to interact with bobcats and do not appear to influence bobcat home range size. Coyotes may prove beneficial in controlling potential problem species such as feral cats and hogs (Thornton, Sunquist, and Main 2004). Coyotes may attack calves (FWC 1999-2010), however this is relatively uncommon in Florida.

3.0 Previous Conditions of the Preserve; Current Use of the Preserve and Adjacent Land Uses

3.1 Previous Land Uses of the Preserve

The earliest aerial photographs obtained of the preserve were taken in 1940, 1953 and 1963 (Figures 8, 9, and 10). Digital images were downloaded from the U.S. Department of Interior USGS historic aerial photo web page (USDI 2004) and the Florida Department of State Aerial Photography of Florida web page (FDOS 2006) and georeferenced in ArcGIS 9, ArcMap Version 9.3. Aerial photographs (1975 – 2009) from the Collier County Property Appraiser web page were also reviewed.

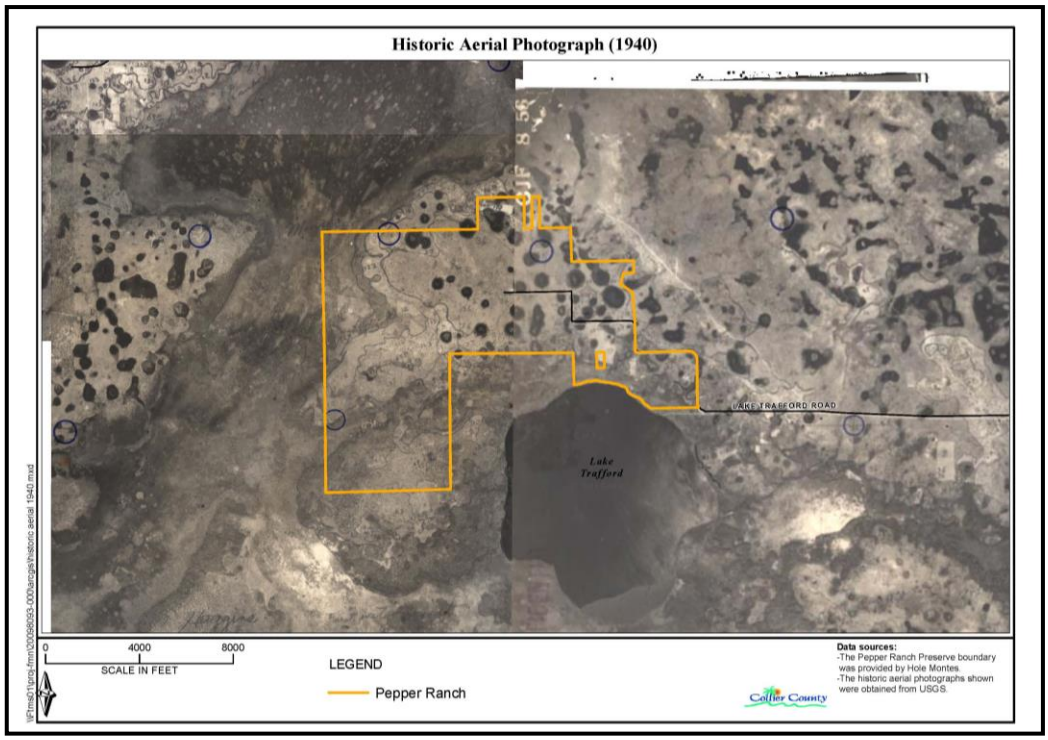


Figure 8: 1940 Aerial View of Pepper Ranch Preserve

Review of the historic aerial photographs revealed Lake Trafford Road and Pepper Road (both inside and along the edge of the preserve) existed in 1940. In 1940, the majority of the preserve was natural with the exception of one agricultural field in the southeast portion of the preserve in Section 26, Township 46 South, Range 28 East (identified as Folio Nos. 00052680009 and 00052640007 on the Collier County Property Appraiser web site) and one agricultural field in the northernmost central extent of the preserve in Section 22, Township 46 South, Range 28 East (identified as Folio No. 00052360002 on the Collier County Property Appraiser web site). Two areas cleared for homesteads appear on the 1940 aerial photograph in the southeastern extent of the preserve, one of which is the area surrounding the current caretaker house located at the main preserve entrance on the south side of Pepper Road. A trail from the homestead to Lake Trafford is evident on the 1940 aerial photograph. The other homestead appears on the 1940 aerial photograph east of the current caretaker house near Pepper Road along the northeast boundary of Section 35.

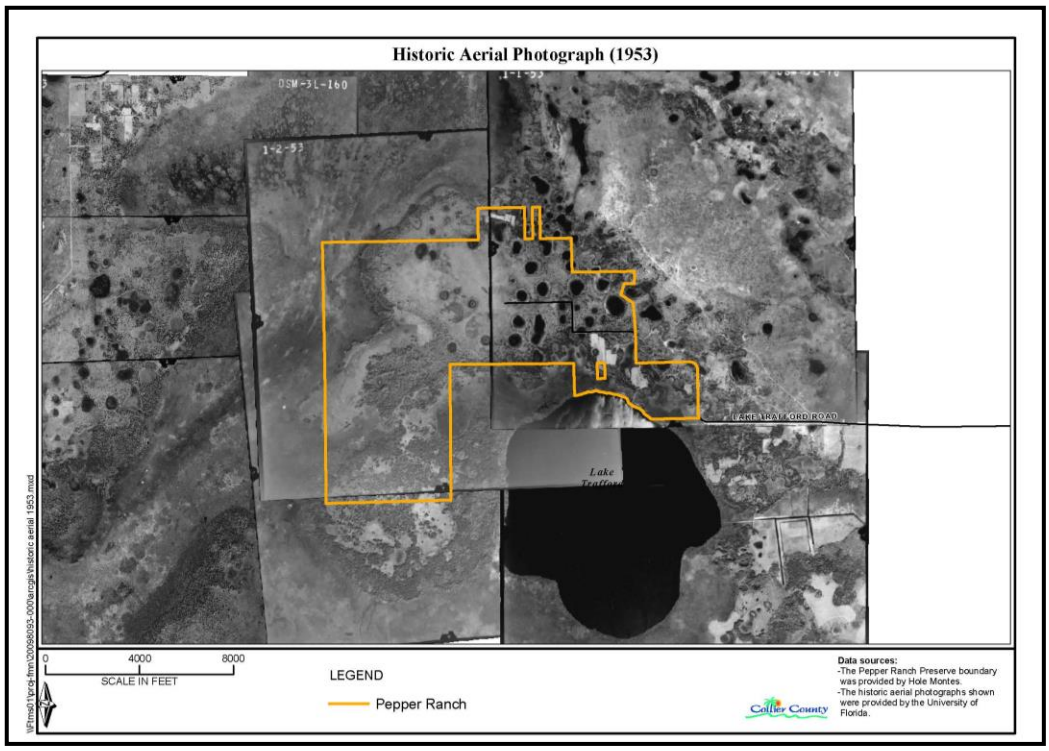


Figure 9: 1953 Aerial View of Pepper Ranch Preserve

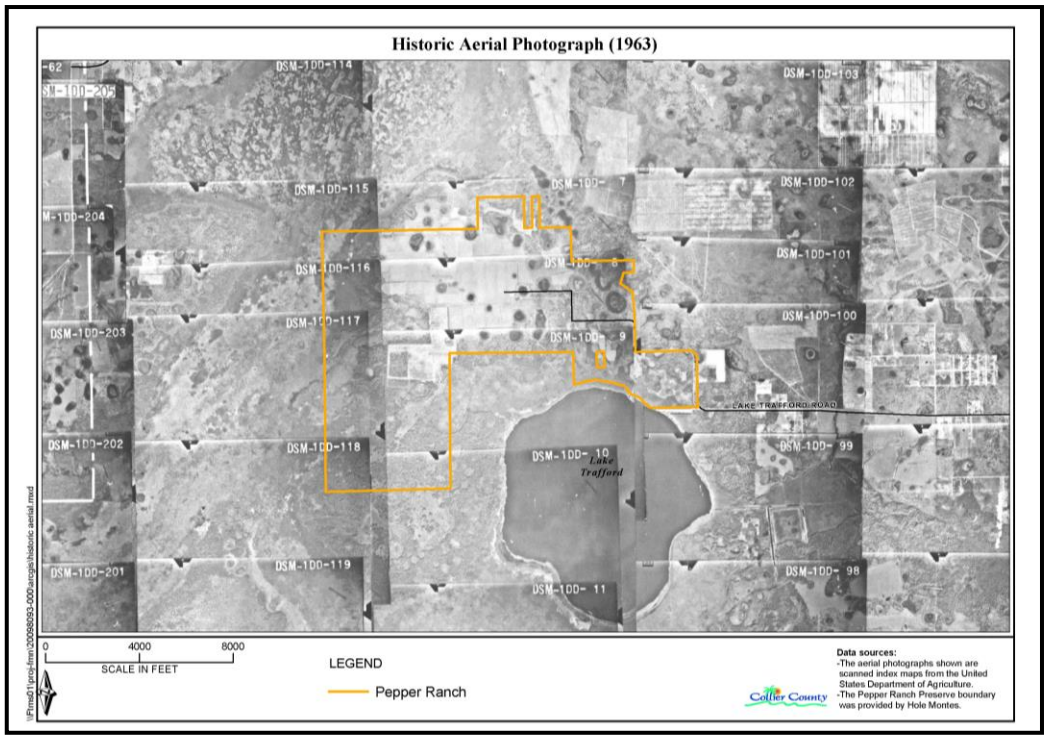


Figure 10: 1963 Aerial View of Pepper Ranch Preserve

Between 1940 and 1953, no further development was evident in the preserve. Between 1953 and 1963, the majority of the site agricultural fields and associated ditches were created. Between 1963 and 1975, a crescent shaped agricultural field was added at the central western extent of the site agricultural fields. Between 1975 and 1980, the east-west portion of Trafford Oaks Road was constructed, dividing the marsh and forested wetlands through which it was constructed.

Prior to 1995, the only additional development in the preserve included the construction of three oil fields adjacent to the hydric improved pasture at the central western extent of the preserve and the construction of two agricultural fields in the most eastern extent of the preserve (in the northeast corner of Section 35). Two of the three oil fields are currently active. The two agricultural fields have been fallow since approximately 2006 and are currently overgrown with shrubs (i.e. Brazilian pepper, wax myrtle, etc.).

3.2 Previous Land Uses of Adjoining Properties

Based on review of the 1940 aerial photograph, the lands that adjoin the preserve were natural. In 1953, canals were excavated from Lake Trafford and agricultural fields were constructed around them. Natural plant communities were converted to agricultural fields on lands southeast of Lake Trafford and south of Lake Trafford Road east of the preserve. Adjoining lands west and southwest of the preserve, the majority of which are now part of the major wetland slough on CREW lands, remained undeveloped.

By 1963, agricultural fields and residential properties (±2.5 or ±5.0 acre properties north and south of Lake Trafford Road) were constructed to the east between the preserve and the town of Immokalee. By 1975, a large agricultural field was constructed northeast of the preserve. The wetland slough (currently on CREW lands) and natural communities immediately north and south of the preserve remained undeveloped. Between 1980 and 1985 Trafford Oaks Road was extended from its western terminus to the south. Estate-

sized residential properties along the south extension of Trafford Oaks Road were developed with homes and borrow ponds. These properties adjoin the southwestern extent (Section 33) of the preserve. By 1985, agricultural development surrounding Lake Trafford had increased, however, the major wetland slough to the west and northwest of the Lake and the wetland slough south of the Lake remained undeveloped. Throughout the 1990s and early 2000s, residential development continued along Lake Trafford Road east of the preserve and agricultural uses remained on lands northeast of the preserve.

In 1990, SFWMD purchased the lands that encompass the major wetland slough located west and northwest of the preserve. These lands are referred to as the Corkscrew Regional Ecosystem Watershed or CREW. Through its adjacency to CREW project lands, the preserve is connected to several thousands of acres of preserved land in southeast Lee County and Northwest Collier County, including diverse systems located in Corkscrew Swamp Sanctuary, Panther Island Mitigation Bank, other CREW lands, the Southwest Florida Regional Airport 7,000-acre mitigation site and Conservation Collier's ±367-acre Caracara Prairie Preserve.

3.3 Current Land Uses of the Preserve

Currently, there is a cattle lease with Lake Trafford Ranch, LLLP and a mineral rights lease with Newport Oil on the Pepper Ranch Preserve (appendix 6). The current cattle lease started in May 2014 and encompasses 2,012.10 acres of the preserve. The lease is for a five year period with option to renew for two additional terms of one year. It brings in revenue for the program each year. If the current cattle lease is not renewed, the County will publicize a request for proposal (RFP) to the public to ensure that the current lease is replaced, in order to ensure a fair process for bidding on cattle leases The oil drilling lease covers the two quarter sections in which the oil wells exist (southwest quarter of Section 28 and northwest quarter of Section 33, both in Township 46 South, Range 28 East). The rights reserve all minerals below 250 feet. In addition, staff will consider inviting beekeepers by publicizing a request for proposal (RFP) as a permitted use on the Preserve.

Previously, Conservation Collier staff has held two public outreach events per year at the preserve. The initial outreach event was held on May 9, 2009. The guided hikes offered to the public during the initial outreach event were completely filled. The second public outreach event was held November 21, 2009. Over 300 people attended the event and participated in the guided hikes and van tours of the preserve as well as the historical presentation about Pepper Ranch. Since then staff has partnered with the Immokalee One-by-one foundation to hold an Earth Day Festival in 2016 and 2017. This event was a huge success and brought hundreds of people from the town of Immokalee to the preserve. As evident from the public outreach events, there is strong public interest in Pepper Ranch Preserve.

The preserve will be open every Friday and non-hunt or holiday Saturdays and Sundays from November through the end of June. When open, the public will also be allowed to obtain a daily permit that will allow them to gain access to all areas of the preserve that are open for public access. Public use of the preserve must be consistent with the preserve management goals and is discussed in section 4 of this document.

3.4 Current Land Uses of Adjoining Properties

The Pepper Ranch Preserve is bordered on its west and northwest boundaries by the CREW project lands. These are lands purchased by the SFWMD under the Save our Rivers program. Adjacent to the west are CREW project lands known as the CREW Marsh; to the north are SFWMD lands, agricultural lands and orange groves; to the east are SFWMD and residential lands (town of Immokalee); and to the south are Lake Trafford, estate-sized residential properties (Trafford Oaks), and agricultural and undeveloped lands owned by Baron Collier Investments, Ltd.

Directly south of CREW project lands and connected to them are private conservation lands owned by the National Audubon Society (Corkscrew Swamp), more conservation lands owned by the SFWMD (Bird Rookery Swamp) and various private mitigation lands, all together encompassing 60,000 acres, of which over 42,000 acres is currently held in conservation. The SFWMD makes certain capital improvements to its lands such

as fencing, access roads/trails, and may provide basic public facilities on lands. Additionally, habitat management such as exotic plant species removal and prescribed burning may be conducted. Florida Statutes (F.S. 373.59) also require the SFWMD to develop appropriate public use.

The organization most frequently associated with CREW project lands is the CREW Land and Water Trust, Inc. (CREW TR), a nonprofit environmental education organization established in 1989 to coordinate the land acquisition, land management, and public use in the 60,000-acre CREW project area. The CREW TR does not own the land but operates in partnership with the SFWMD.

Approximately 180 acres of conservation land exists along the central eastern boundary of the Pepper Ranch Preserve. A 625-acre impoundment that serves as a dredge disposal site for nutrient-laden muck from the bottom of Lake Trafford is located east of the conservation land. The Lake Trafford hydraulic dredging restoration project is being conducted by SFWMD in cooperation with the Florida Department of Environmental Protection (FDEP) and through the cooperative efforts of various local organizations and state and federal agencies. Phase I of the restoration project, completed in 2006, removed over three million cubic yards of muck from the deeper portions of the lake. Phase II and III removed several million additional cubic yards of muck from the lake. The project was completed in in November 2010.

Eight sections of land owned by Turner Grove Citrus LTD Partnership located to the northeast of the ranch, and extending into Lee County, currently have citrus groves on them.

3.5 Cultural, Historical and Archeological Resource Protection

The Pepper Ranch Preserve is within an area of historical and archaeological probability. Before conducting any development near Lake Trafford, County staff ordered a Phase I Reconnaissance Cultural Resource Survey which was conducted in November 2010 by the Archaeological and Historical Conservancy, Inc. The survey was conducted in the area surrounding the lodge/visitor center. Prehistoric and historic archaeological sites were found, and the lodge/visitor center building was deemed historical. Recovered cultural materials included artifacts and faunal bone. Prehistoric remains included three sand tempered pottery sherds. One test hole uncovered a prehistoric midden site that included a component of historic refuse. Additional historical and archaeological sites are most likely present on the property. Before conducting any additional development, the County will obtain Archaeological Surveys within the area(s) to be developed. When possible, the County will refrain from building in areas identified as potential archaeological sites. If development is unavoidable in areas identified as potential archaeological sites, the County will develop improvements under the guidance of an archaeologist. In addition, the County will notify the Division of Historical Resources immediately if further evidence is discovered to suggest any archaeological or historic resources are present in areas that were not identified in the Phase I. If such resources are identified on-site, 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, F.S., specifically Sections 267.061 2 (a) and (b).

The visitor center is now considered a historical structure in Collier County. This designation was granted by the County's Historical/Archeological Preservation Board. Retaining this structure and the designation may provide benefits to Conservation Collier in terms of obtaining future grant funds for restoration.

3.6 Major Accomplishments since Acquisition

Collier County purchased the Pepper Ranch Preserve in February of 2009. The table below lists the accomplishments since acquisition of the property.

Table 9: Major Accomplishments During Previous Years

Accomplishment	Year(s)
Exotic vegetation treatment in North Stewardship Sending Area (SSA) (50 acres)	2009
Cattle Vat Cleanup	2009
Removal of Old Structures	2009
Creation of a New Trail by the Lodge	2009
Two Public Outreach Events	2009
First Youth Hog Hunt Held	2010
Public Hog and Small Game Hunts Began	2010
Initial Exotic vegetation treatment and maintenance began	2009

4.0 Future Use of the Pepper Ranch Preserve including Management Issues, Goals and Objectives

This section describes the main management issues, goals and objectives for the Pepper Ranch 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 Pepper Ranch Preserve 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, exotic vegetation and trash, establishing site security, developing management partnerships and planning for public access. The interim plan for this site was officially approved in September 2009. The ordinance then requires a "Final" ten-year management plan be developed within two years. Subsequently, the property management plan must then be reviewed 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 must be approved by both the CCLAAC and the Collier County BCC.

4.1.1 Preserve Manager: Contact Information

The site manager for Pepper Ranch Preserve will be a designated Collier County Environmental Specialist who may be contacted through electronic mail: ConservationCollier@Colliergov.net.

4.2 Public Uses and Assessment of their Impacts

While visitor attendance increases every year, public uses will be consistent with the primary goals of conservation, preservation, restoration and maintenance of the resource. Details of public uses for the Pepper Ranch Preserve and an assessment of their potential impacts are provided in the following sections.

4.2.1 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 76-48 (available from www.municode.com), as amended.

The following are ***consistent*** uses for this particular site: hiking, nature photography, camping, horseback riding, bird watching and hunting. ***Inconsistent*** uses include off-road vehicle use (ORV), cell phone towers, shooting ranges, and the recreational use of drones.

There is one lease and a number of easements existing on the Pepper Ranch Preserve, as identified below (see Figure 11):

Lease:
A cattle lease held by Lake Trafford Ranch LLP for Two Thousand Twelve point One (2,012.1) acres of property, as described in Appendix 6, for the sole purpose of cattle grazing and incidental activities that are directly related to beef cattle production for a term of three (5) years, commencing on May 27, 2014, with two 1 year renewal options, with payments, terms and provisions as set forth in Cattle Lease, attached as an Exhibit to the Pepper Ranch Purchase Agreement. This lease brings in revenue for the property management. Staff also obtained a range management study from Natural Resources Conservation Service (NRCS) to further direct cattle lease operations at Pepper Ranch Preserve. The current lease and every lease thereafter should abide by the best management practices outlined in the current NRCS range management plan for the property.

Easements:

- Access Easement entered into on February 6, 2009, with Lake Trafford Ranch LLP for a 30' wide strip of land running along the main interior ranch road, following an overall east to west directional track, and leading from the main ranch gate to the oil wells situated along the western side of the ranch. Recorded in O.R. Book 4425 and Page 3302, Public records of Collier County. The grantee is responsible for maintenance of this easement.
- Access Easement entered into February 2, 2009 by Lake Trafford Ranch LLP in favor of Baron Collier Investments (BCI), Ltd., a Florida Limited partnership, over a 15' wide strip of land running over the same main interior access road as the above easement but before arriving at the oil wells, turning south to facilitate access to a parcel adjoining the southern boundary of the Pepper Ranch Preserve. Access is granted solely for purposes of ingress and egress to serve specific activities on the BCI lands, which are cattle grazing, ranching, hunting and forestry. Recorded in O.R. Book 4425, Page 3263, Public Records of Collier County. The grantee is responsible for maintenance of this easement.
- Stewardship Easement Agreement recorded in OR Book 4089, Page 3837, Public Records of Collier County.
- Drainage Easement for 40' along SE corner of property in Section 35, recorded in O.R. Book 49, Page 147, Public Records of Collier County.
- Access Easement in favor of Trafford Oaks for 60' as for portion of Trafford Lakes Road that traverses Pepper Ranch property, as recorded in O.R. Book 907, Page 1383, Public Records of Collier County.
- A Conservation Easement over portions of the property associated with panther and/or wetland mitigation will be granted to the South Florida Water Management District (SFWMD).

Conservation Collier staff will maintain an open line of communication with the oil well operators to develop operational protocol where needed and to ensure this operation continues in a safe and clean manner at the preserve. This level of coordination will also be extended to the cattle lease holder on land management activities at the preserve.
An apiary lease may be considered in the future for the preserve. This will be advertised for bid to the general public and will be approved by the BCC before implementation. A minimal amount of hives will be allowed to be placed on the property away from public use areas.

No other easements, concessions or leases exist on Pepper Ranch Preserve or are proposed for the future, unless they further conservation objectives, such as a conservation easement.

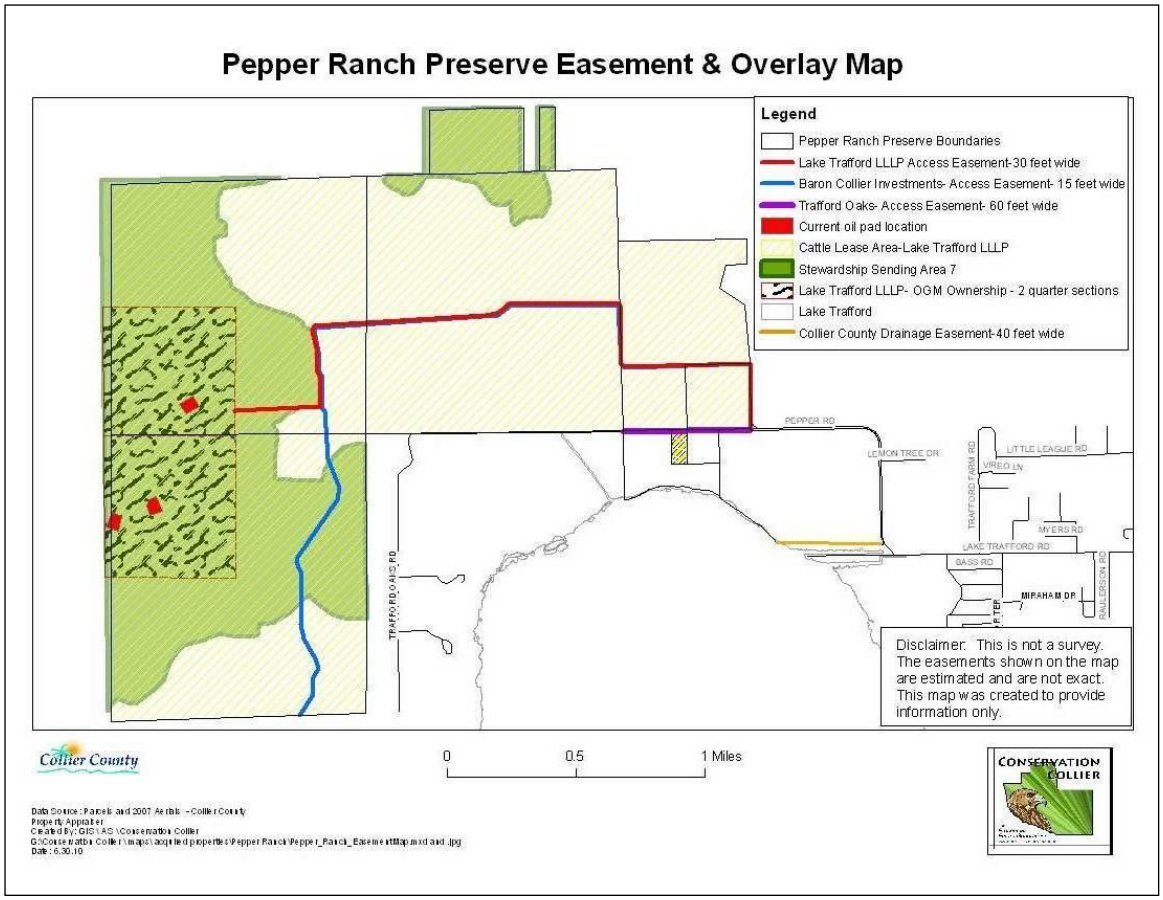


Figure 11. Pepper Ranch Preserve Easement and Overlay Map

4.3 Current and Future Desired Conditions

This section includes a description of the current and proposed future conditions for the site's natural areas. Management techniques to achieve these conditions are outlined in section 4.4.

After managers complete recommended management actions, Pepper Ranch Preserve will consist of upland mixed forest, strand swamp, slough, prairie hammock, pine flatwoods, dry prairie, freshwater marshes, bottomland forest, and wet prairie. These communities will have a similar structure and composition to those that existed before non-indigenous people settled the region and before the exclusion of fire. Through restoration efforts the site will be vegetated with appropriate native flora that will provide suitable cover for a variety of wildlife species.

4.4 Goals for the 10-year period 2010-2020

A set of goals and objectives for Pepper Ranch Preserve were developed in conjunction with the drafting of this Management Plan. The goals and objectives in this plan are tailored specifically for Pepper Ranch Preserve based on the purposes for which the lands were acquired, the condition of the resources present, and the management issues for the property. On-site managers should be familiar with this entire Management Plan. Goals and objectives from the Interim Management Plan for the Pepper Ranch Preserve were reviewed to determine whether they should be included in 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 staffing and funding sources. The following goals have been identified for Pepper Ranch Preserve:

Goal 1: Maintain high quality habitat with limited disturbance for the benefit of native flora and fauna

Goal 2: Develop a baseline monitoring report
Goal 3: Remove or control populations of invasive, exotic or problematic flora and fauna to restore and maintain natural habitats
Goal 4: Create a Prescribed Fire Plan
Goal 5: Restore native vegetation
Goal 6: Develop and monitor public use
Goal 7: Facilitate uses of the site for educational purposes
Goal 8: Provide a plan for security and disaster preparedness
Goal 9: Provide preliminary Panther Habitat Unit (PHU) calculations and a draft Monitoring Plan per USFWS requirements for an onsite Panther Conservation Bank

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

Action Item 1.1 Maintain the existing boundary fence and access gates on the Pepper Ranch Preserve as needed.
Currently, a fence is present along most of the Pepper Ranch Preserve boundary with the exception of the western boundary which this preserve shares with the adjacent CREW lands, also there is no fence along the southeastern boundary along the Lake Trafford shoreline. Under the existing cattle lease the lessee is responsible for the installation and maintenance of all fences on the preserve necessary for retaining cattle on the property. Firebreaks will be installed along fence lines that exist along upland areas. This will also allow for better access for fence line patrolling and maintenance.

Action Item 1.2 Install signs encouraging people to stay on public access trails situated on the preserve.
Signs will be posted along public access trails to remind visitors to remain on the trails for their safety and the protection of the natural resources of the preserve.

Action Item 1.3 Identify locations of rare and listed native plant species.
The location of these species has been identified using a global positioning system (GPS) device and mapped to allow staff to monitor them. All future sightings of such

plants will be GPS-located and mapped accordingly. Public trails will be constructed to avoid areas where rare and listed species exist. These locations will not be shared with the public to protect these rare plants.

Action Item 1.4 Enforce regulations prohibiting trash or dumping in or near the preserve.
Staff will monitor the preserve on a regular basis and if dumping occurs, enforcement actions will be sought through the County Sheriff's Department.

Action Item 1.5 Identify actual and potential locations of resident animal life and take steps such as locating visitor amenities away from animal nesting sites.
An inventory of sensitive areas, such as location of listed plant species and animal nesting sites, will be maintained based on existing knowledge and to be built upon with all future protected species surveys that are conducted at the preserve. During the development of public use facilities this inventory will be utilized to locate the amenities away from known sensitive areas.

Action Item 1.6 Avoid non-target damage to native plants and animals, especially rare species, during invasive, exotic plant treatments.
If the use of herbicides is appropriate during the treatment of invasive, exotic plant species, decisions on the types of herbicides utilized will be made on the best information available at the time of exotic removal. Staff has prohibited the use of herbicides containing Imazapyr (e.g., Arsenal) due to reports that these herbicides have potentially caused a great deal of non-target damage throughout the state. Licensed County or State contractors will be monitored closely to ensure the proper herbicide applications are being utilized while treating the site. In addition, close attention will be taken to identify listed species (Table 7) that may be attached to invasive trees being cut down or removed. Individuals of these species will be relocated prior to removal. Special attention will be given to avoid damage to native species in the vicinity of exotic removal activities.

Action Item 1.7 Note, research and provide input as to all site development occurring adjacent to Pepper Ranch Preserve to determine that the proper site development permits have been obtained and that the site development complies with the permits.
Activities on adjacent and neighboring properties may have an impact on the indigenous plant and animal life on the Pepper Ranch Preserve. As such, all existing local, state, and federal regulations should be strictly followed and enforced during any site development adjacent to the preserve. It shall be the responsibility of the developer to establish erosion control measures and vegetation protection measures (i.e., protective fencing or barriers). If any site developer working in areas adjacent to the preserve does not take the necessary control measures, construction shall be immediately halted until control measures are put into place and mitigation and/or remediation will be the sole responsibility of the developer.

GOAL 2: *DEVELOP A BASELINE MONITORING PROGRAM*

Action Item 2.1 Establish a long-term biological monitoring program and conduct additional wildlife surveys.

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. This section discusses information needs and long-term monitoring needs.

Pro Native Consulting has conducted a floristic inventory of the Pepper Ranch Preserve; these findings will comprise the baseline floristic data on which future actions will be based. The site should be inspected by Conservation Collier staff at least twice a year and thoroughly inventoried at regular intervals (ca. 5-10 years) to detect new invasions (by natives or exotics) and extirpations. Areas undergoing extreme restoration should be assessed more frequently. While some wildlife data has been collected, additional baseline data should 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 surveys, like plant surveys, should take place at regular intervals (ca. 5-10 years) to detect long-term trends.

White-tailed deer surveys have been conducted once a year at the preserve since 2011 and will continue annually to provide population trend data and to aid in the County's panther mitigation requirements as well as providing staff with the number of surplus animals that will be allowed to be taken in the Quality Wildlife Management Hunt Program. Spotlight surveys collect data including: number of deer observed, deer sighting location, and gender ratios.

Turkey camera trap population estimate surveys were conducted at the ranch in 2010 and 2011 following consultation with members of the FWC turkey program. These surveys were put on hold pending development of more reliable population estimation methods for turkey. Formal hog surveys are not conducted at the ranch.

Additionally, game species presence and distribution is monitored at the ranch throughout the year with the help of wildlife cameras. In addition to surveys and camera trap monitoring, opportunistic observations of wildlife sign are collected by staff, volunteers, visitors, and hunters to monitor game species presence.

Frog breeding call surveys started in May 2018 to determine which frog species are present on the preserve. The data collected during these surveys will help to set the foundation for our understanding of baseline species diversity and richness ahead of any hydrologic restoration efforts, monitor for species utilization of specific breeding ponds, monitor for the presence of exotic/invasive predatory species like Cuban treefrog and cane toad, and contribute important data to existing and ongoing frog monitoring networks throughout Southwest Florida. The number of frog species is a good indicator of a healthy wetland habitat. To date, 11 different species of frogs and toads have been recorded on the preserve (Table 5).

Photo points will be established throughout the preserve when the panther mitigation bank baseline survey requirements are set-up. The total number of photo stations installed will be dependent on future restoration plans and staffing levels. Locations of photo points will be recorded with a GPS unit and all photographs taken at these locations will be taken at a standard height and angle of view. During photo documentations, one photo will be taken in each of the cardinal directions (north, east, south and west) and a 360-degree panoramic photo will also be taken. Photos will be taken with a vegetation profile board to aid in the determination of what (if any) changes occur over time. These photos will help to monitor exotic removal efforts and native plant recruitment, as well as the result of other land management activities. If necessary, more photo points will be established to aid in management decisions.

GOAL 3: *REMOVE OR CONTROL POPULATIONS OF INVASIVE, EXOTIC OR PROBLEMATIC FLORA AND FAUNA TO RESTORE AND MAINTAIN NATURAL HABITATS*

Action Item 3.1 Prioritize the removal of invasive, exotic and/or problematic plant species.

Due to the size of Pepper Ranch Preserve, it will be helpful to the preserve manager to prioritize the exotic control efforts by area of the preserve. The preserve has been divided up into 3 management phases 1-3. A management unit map has been created (Appendix 5) In general, the management units will assist the preserve manager in prioritizing and allocating resources available for the management of Pepper Ranch Preserve.

Action Item 3.2 Acquire services of licensed and qualified contractor(s) for the removal of invasive, exotic and/or problematic plant species.

The following table (Table 10) describes recommended controls (Langeland & Stocker 2001; Langeland 2008) of the Category I, invasive, exotic plant species recorded to date on the Pepper Ranch Preserve. These recommended control methods may be altered by site managers dependent on new information and products available on the control of these species.

Table 10: Invasive, Exotic Plant Species Control Plan for the Pepper Ranch Preserve FLEPPC Category I species[1]

Scientific Name	Common Name	Recommended Control(s)[2]
Abrus precatorius	Rosary pea;	Treat base of vine with 10% Garlon 4. Site must be revisited several times to pull seedlings.
Albizia lebbeck	woman's tongue	Basal bark treatment with 10% Garlon 4. Cut stump treatments are also effective with 50% Garlon 3A or 10% Garlon 4. Small seedlings can be hand-pulled.
Casuarina glauca	gray sheoak; suckering australian-pine	Basal bark treatment with 10% Garlon 4 is very effective, as is a cut-stump treatment with 50% Garlon 3A or 10% Garlon 4. When basal bark treatment is used on trees greater than 1’

		diameter it may be necessary to slough off loose bark in the application area to prevent the bark from trapping the herbicide. Addition of 3% Stalker will increase consistency on older trees. Broadcut of 4-6 lb Velpar ULW may be used when appropriate.
Eugenia uniflora	Surinam cherry	For seedlings and small plants up to ½ inch diameter, use a basal bark treatment with 10% Garlon 4. This species takes a long time to die, and may require a subsequent herbicide application. For larger stems, use a cut-stump treatment with either 50% Garlon 3A or 10% Garlon 4. Seedlings should be hand pulled.
Ficus microcarpa	Indian laurel	Basal bark application of 10% Garlon 4 is effective.
Hymenachne amplexicaulis	trompetilla	Foliar treatment with 3-5% Rodeo.
Imerata cylindrical	cogongrass	3-4 qt. Roundup Pro or 0.5 qt. Fusulade per acre. For high volume, spot treatment use 3%-5% Roundup Pro. Herbicides should be used in combination with burning or tillage for optimum control. See IFAS publication SS-AGR-52 for additional information.
Ludwigia peruviana	Peruvian primrosewillow	Treatments can be basal bark, foliar and/or cut stump, depending on the size of the plant, with Renovate 3 in aquatic conditions or Garlon 4 in upland areas. Adjust percentage of chemical based on application method.
Lygodium microphyllum	small-leaf 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.
Melaleuca quinquenervia	Melaleuca, punktree, paper bark	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.

Table 10: Invasive, Exotic Plant Species Control Plan for the Pepper Ranch Preserve FLEPPC Category I species[1] (continued)		
Scientific Name	**Common Name**	**Recommended Control(s)[2]**
Melinis repens	rose natalgrass	Foliar application of 1-2% Roundup will provide control. Roundup (glyphosate) is a short-term solution, because regrowth from seed is rapid.[3]
Nephrolepis brownii	Asian sword fern	A foliar application of Roundup at 1.5% provides control. Follow-up applications are necessary.[4]
Panicum repens	torpedo grass	Foliar application of 0.75%-1.5% Rodeo and surfactant solution. Re-apply as necessary when plants re-grow to within 4-6 inches in height; or foliar application of 0.5% spot treatment.
Pistia stratiotes	water-lettuce	Foliar application with endothall, diquat , or rodeo
Psidium cattleianum	strawberry guava	Basal bark application of 10% Garlon 4.
Psidium guajava	Guava	Basal bark application of 10% Garlon 4.
Schinus terebinthifolia	Brazilian pepper	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.
Scleria lucustrus	Wright's nutrush	
Senna pendula var. glabrata	valamuerto	Foliar application, spray to wet with 1-2% Roundup Pro.[5]
Solanum diphyllum	Two-leafed nightshade	Foliar application of 1% Garlon 4 or 3% Roundup.
Solanum viarum	tropical soda apple	Foliar application of 1% Garlon 4 or 3% Roundup.
Syzygium cumini	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.

[1] FLEPPC 2009: Category I plants are those that alter native plant communities by displacing native species, change community structures or ecological functions, or hybridize with natives (FLEPPC 2009)
[2] All species except as cited otherwise
[3] (Stokes 2009)
[4](Langeland 2008)
[5](Langeland et al. 2003)

<u>Action Item 3.3</u> Monitor invasive, exotic or problematic animal species.
To date, three (3) introduced animal species have been documented on the Pepper Ranch Preserve, the brown anole, cane toad and the feral hog. Brown anoles and cane toads are too numerous to control at this point. Attempts to control the Feral hog population are discussed below in Action item 3.4.

Another potentially problematic species is the Coyote. Widespread control of coyotes has been found to be ineffective and is not ecologically or economically defensible. Individual coyotes may need to be removed from the preserve if they become a problem to the current cattle operation; that decision will be made on a case by case basis. The coyote can be legally hunted all year long with guns, dogs, live traps, or snares. A permit is required to use steel traps, to trap on another person's property, or to use a gun and light at night. Possessing or transporting a live coyote requires a Class II captive wildlife permit and the use of poison is prohibited.

<u>Action Item 3.4</u> Implement the Quality Wildlife Management Hunt Program to assist in Feral Hog Management (See Regulations in Appendix 7)
It is doubtful that the total eradication of this species at Pepper Ranch Preserve can be achieved, however, efforts will be made to reduce their population and limit the damage they cause to natural areas, native plants and animals. In late 2009, the Collier County BCC approved a contract with the USDA Wildlife Services for the control of feral hogs at the preserve, which was part of the property Interim Management Plan. As a result, fourteen hogs were trapped and euthanized in a short time. On January 12, 2010, Item 10D, the BCC voted to cancel the USDA contract due to public opposition and directed staff to develop a hunt program to attempt to control the hogs and to consider trapping at a later date if they cannot be controlled through normal hunting. As a result, the first Annual Youth Hunt was held at the preserve in April 2010, with the assistance of FWC, and 4 hogs were harvested as a result. The Pepper Ranch Quality Wildlife Management Hunt Program for this preserve was then developed and began on September 11, 2010. In 2010-2011, a total of two youth hunts and six public hunts were conducted. This program did provide some control of the hog population at Pepper Ranch, however only 8 total hogs were harvested during the first hunting season. Hunting alone may not properly manage the hog population and thus a monitoring program should be developed to assess the amount of hog damage to natural communities. Efforts will be made to request assistance from nearby colleges to conduct such studies. Additional control measures such as trapping may be necessary to protect the resource. Monitoring the hog population will be particularly important in the event that a wetlands mitigation bank is developed on Pepper Ranch Preserve; created/enhanced wetlands will be required to meet certain success criteria within a set timeframe and hog foraging behavior could severely impact creation/enhancement efforts. In areas where wetland restoration is to occur in the future, hog fencing may need to be installed around the restoration areas or potentially the entire perimeter of the preserve. This fencing would be paid for with mitigation funds. Hogs do however, provide a food source for the Florida Panther.

GOAL 4: *CREATE A PRESCRIBED FIRE MANAGEMENT PLAN*

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 damage and hazards from wildfires 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 in general, 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 Pepper Ranch Preserve.

Action Items 4.1: Create a Prescribed Fire Management Plan

Below is the prescribed fire management plan for Pepper Ranch 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 Pepper Ranch Preserve. Staff may coordinate this effort with other local qualified agencies for review and approval.

Objectives

The prescribed fire plan for the Pepper Ranch 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 Pepper Ranch 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 Pepper Ranch 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 size of the Pepper Ranch Preserve, in conjunction with habitat fragmentation by existing (oil fields, cattle grazing) and future uses (lodge, possible housing, camping areas and public use trails) of the preserve create a complex mosaic of fire dependent communities. This will be taken into consideration when subdividing the preserve into 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. The

division of burn units may change over time as the prescribed fire plan is implemented and on-the-ground logistics become more obvious. Fire breaks will consist of primitive roads, trails disked to bare mineral soil, wet lines or foam lines and/or natural vegetation breaks. When the Pepper Ranch Preserve burn plan is implemented, additional manmade barriers may be constructed as a result of the development of public use facilities.

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 mitigate by grading 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 Pepper Ranch Preserve will generally follow these guidelines (FNAI 1990):

- wet prairies – annual (1-2 year cycle) or frequent (3-7 year cycle);
- dry prairie – frequent (1-4 year cycle);
- mesic pine flatwoods – frequent (2-4 year cycle);
- hydric 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);
- cypress strand/dome swamp – occasional around the periphery (8-25 year cycle) and rare in the deepest peat towards the center of the strand/dome (26-100 year cycle);
- slough – occasional (8-25 year cycle) or rare (26-100 year cycle);
- prairie hammock – occasional or rare; if oak and palm dominated on drier sites tolerate occasional light ground fires, but more diverse hammocks rarely burn;
- 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. In cypress strands, fire is beneficial for the control of hardwoods and reduction of ground fuels near their outside edge. Conditions dry enough to burn soils in the center of strands, or muck fires, would most likely be damaging to trees within them. The burning of cypress strands will take place only when moist conditions allow for light surface fires in the outer portion of the dome and avoid muck fires. Fire will be excluded from strands under dryer conditions.

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.

Pile Burning

Burning of agricultural piles of vegetative debris may be conducted as needed. The piles must be placed in an open area such as a pasture and the piles must be placed at least 50 feet from a forested area or structure. A permit must be issued by the Florida Forest Service. When burning restrictions are in place, the piles may only be burned by a Certified Pile Burn Manager licensed by FFS. When no restrictions are in place, the piles may be burned by trained staff, contractor or by the acting cattle manager after a permit is issued. Persons conducting the burning must have a water source large enough to extinguish the fire and a front-end loader or other similar type of machine present before proceeding with burning.

Burn Schedule

Generally, prescribed burns within the Pepper Ranch 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 FFS 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 consider weather and fuel conditions including, but not limited to: wind, relative humidity, temperature, rainfall and soil moisture, airmass 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.

Action Item 4.2 Develop Burn Units
Burn units will need to be delineated for Pepper Ranch 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 will be 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 will go around all mature pine trees; they will be a maximum of 8-10 feet wide.

Action Item 4.3 Implement Memorandum of Understanding with Wildland Restoration International
On June 12, 2018 a Memorandum of Understanding with the Board of County Commissioners and Wildland Restoration International (WRI) was signed to allow Conservation Collier to work with this non-for-profit organization to assist the program with prescribed fire and other land management activities at no cost to the County. WRI has received a state wildlife grant to assist Counties and others with prescribed fire and other land management activities by providing personnel and equipment to conduct prescribed burning operations on public land holdings in addition to personnel resources to accomplish management tasks at no cost to the County.

WRI will participate in at least 2 scheduled burns per year and additional land management activities to include, but not limited to, debris removal, hardwood treatment, invasive treatment, invasive surveying, and native understory establishment. Prescribed burning operations conducted by WRI will also enhance burning skills of participating team members, mitigate the threat of wildfires and help

promote public understanding and acceptance of this important natural resource management tool.

WRI and Conservation Collier staff will develop a Prescribed Burning Operations Plan that includes but is not limited to a prioritized list of burn units, burn prescriptions for each unit, a proposed burning schedule and anticipated resource needs. The plan will be flexible in order to meet changing weather conditions, work priorities of the participating parties and unforeseen budgetary constraints.

Conservation Collier staff will assume all responsibilities for prescribed burns and other land management activities conducted on property for which it has management authority – as it currently does. This includes, but is not limited to, preparing burn prescriptions (including smoke screening plans), preparing the site for burning, obtaining the burn authorization and managing the burn. Burn prescriptions and burn unit maps will be provided to all participating personnel, local fire districts and the Division of Forestry personnel. Safety and operational briefings will be conducted prior to ignition. The County will have its own Certified Burn Manager in charge of the burn with WRI staff assisting and providing equipment.

GOAL 5: *RESTORE NATIVE VEGETATION AS NEEDED*

Action Item 5.1 Evaluate the feasibility of conducting a hydrological analysis of the preserve to better determine restoration needs.

During the fieldwork conducted by Johnson Engineering, Inc. in the fall of 2009 it was noted that many of the natural wetland natural communities at Pepper Ranch Preserve are disturbed; as described in section 2.3. This disturbance appears to be hydrologic in nature due to the lack of standing water observed in these wetland communities in comparison to the undisturbed wetlands, and by the relatively high number of upland and exotic/nuisance plant species observed in the disturbed wetlands. A hydrological analysis of the preserve would provide a baseline for the development of a hydrologic restoration plan for Pepper Ranch Preserve. The presence of invasive exotic vegetation can be related to a hydrologic disturbance. Identifying hydrologic disturbances and proposing remedial measures (i.e. ditch removal or ditch blocks) at the preserve would not only work towards the restoration of natural plant communities but also possibly help limit exotic plant invasions in those areas. The analysis could be taken a step further to incorporate water quality analysis especially as it pertains to water flows into Lake Trafford.

A hydrologic analysis of the preserve would generally involve the placement of surface and ground water level monitoring wells at strategic locations throughout the preserve, mapping ditches and canals on the preserve, reviewing historic aerial photography of the preserve and determining the historic sheet flow patterns on site. This monitoring will be funded with mitigation funds.

Surface and ground water level monitoring wells installed for the purpose of this hydrologic analysis could be left in place for long-term, on-going monitoring at Pepper Ranch Preserve. The data collected would help monitor the health of wetland

systems on site over time, as well as provide a baseline of wetland function that could help evaluate possible effects from proposed adjacent land use changes (i.e. if a mine was ever proposed adjacent to the preserve).

Action Item 5.2 Maintain a revised GIS map and description of FNAI natural communities and disturbed areas on the property.
Maintaining updated maps will help to guide restoration efforts.

Action Item 5.3 Plant native plant species in their appropriate habitats.
Periods following exotic removal and prescribed fire (or mechanical treatment) are essential to the recruitment of native plants. If native plant recruitment is not sufficient from the surrounding, intact seed source, efforts will be made to plant indigenous flora in appropriate habitats. Natural area restoration of Pepper Ranch Preserve should include only site-specific native plant material that has been determined to be non-problematic at the site and whenever possible, site-specific seed sources should be utilized. In addition, hardwoods that may invade the natural areas (mesic pine flatwood area) should not be planted.

GOAL 6: *MONITOR PUBLIC USE*

Action Item 6.1 Develop access and required facilities for intended public uses.
There are many opportunities for public use at the Pepper Ranch Preserve due to the size of the preserve, its proximity to the community of Immokalee and the diversity of natural communities present. In addition to general public uses at the preserve, there are also revenue-generating uses as presented above, cattle lease and oil fields, hunting, apiary lease, as well as mitigation uses that are already in place or are planned for the preserve, such as a panther conservation bank. Wetland mitigation was considered but was denied by the SFWMD and Army Corp. of Engineers. All of the different uses considered and requested by the public may not be compatible with one another and thus a compatibility matrix was devised to better illustrate when and where at Pepper Ranch Preserve the different uses can occur. This matrix is included in this plan as Appendix 8.

Until additional staffing and funding are available, the Pepper Ranch Preserve will only be open to the public on Friday, and non-hunt or holiday Saturdays and Sundays from November through June of each year. Daily Use Permits will be required by all visitors and will be issued before access can be granted. County staff will be stationed in the visitor's center to provide access and assistance to visitors. A temporary gate code for the electric gate will be given to visitors to access the northern access area when they check in with the Park Ranger. Visitors must also check out before they leave for the day. This will ensure that all visitors are accounted for at the end of each day Security cameras are also facing each preserve entrance to help monitor ingress and egress.

A new bathroom facility with showers was built in 2015 along with two new septic systems and a water treatment system.

The Collier County Parks and Recreation Program has been administering and

staffing the visitor center, campgrounds and pole barn rentals since 2014. Staff also developed a volunteer program for the Preserve with several master naturalists who have been assisting with guided public tours and other activities.

To avoid impacts to natural communities at Pepper Ranch, guidelines were developed for the allowable uses on all proposed trails and other amenities. Guidelines include instructions for users such as staying on trails to avoid altering the natural communities, and to take only pictures and leave only footprints. The trail systems at Pepper Ranch utilize existing trails and other impacted areas and were developed along the natural edge of natural communities where their construction had minimized disturbances, as well as avoided impacts to marshes and other wetland systems. Most of the trails are not ADA accessible; however, all new trails will be evaluated for vehicle class use for ADA access.

The implementation of the proposed public uses at Pepper Ranch Preserve remains dependent on funding, safety issues, site security and the availability of staff. The conceptual site plan (Figure 12) incorporates the following proposed components:

The South Public Access Area will be situated on the south side of Pepper Road with a parking area and trailhead that will lead to the lodge/visitor's center.

- ***The visitor center*** **–** Conservation Collier staff has renovated the existing visitor center for use as a visitor center. The lodge could also be rented for special events. Policies will need to be created though the Ordinance, Policy and Rules subcommittee in regard to special events, lodge rentals and ecotourism. Approved eco-tours need to be compatible with this management plan. Staff will research historical grants for future funding opportunities as needed.
- ***The lodge hiking trail*** **–** The lodge hiking trail is accessible from the south public entrance. It is made up of three loops that total approximately 0.9 miles, heading east from the trailhead/parking area, meandering through oak hammock, mesic flatwoods and dry prairie communities; there is a short segment of boardwalk crossing over a depressional marsh. Benches and interpretive signage exist at strategic locations along the trail.
- ***The boardwalk*** **–** The boardwalk (length = approximately 812' or less) was constructed at the south end of the south public access area trailhead/parking area and leads to a covered lake overlook platform.
- ***The lake overlook platform*** **–**A covered lake overlook platform was constructed at the terminus of the boardwalk and allows visitors to view Lake Trafford from a raised elevation. This was built on the existing raised shoreline and not directly over Lake Trafford. A local Boy Scout added a large bench to the overlook as part of an Eagle Scout Project in 2017. E
- ***Camping areas-*** A small camping area with 10 campsites was developed in the current eastern pasture area located between the entrance to the south public access area and the lodge. This is open to the public on Friday and Saturday nights when the preserve is open. This campground is accessible to tent campers with vehicles, but not RV's. An RV may only be allowed in this campground for use by a campground host or possibly under other special

circumstances. There is no water or electricity located at the individual campsites. Camping is limited to hunters only during hunt weekends.

- ***Officer's Trailer home or Campground host-*** An RV pad with full hook-up will be constructed and placed on a small improved area just south and west of the gate to the south public access area. A campground host would be allowed to bring in an RV and live there during the months that the preserve is open to the public in exchange for minor duties that would include looking over the campground, grounds upkeep, and possibly trail maintenance work. It would also be beneficial to have a County Sheriff's Department officer or FWCC officer reside there to keep watch over the property. The existing cottage that used to serve this purpose will be demolished due to the major cost of needed repairs and the high mold content.

Public Use

The amount of public use the preserve receives during open season is increasing every year. Several different user groups utilize the preserve for different recreational opportunities. The table and graph below provide a snapshot of the increase in visitor use and the breakdown of use by the different user groups.

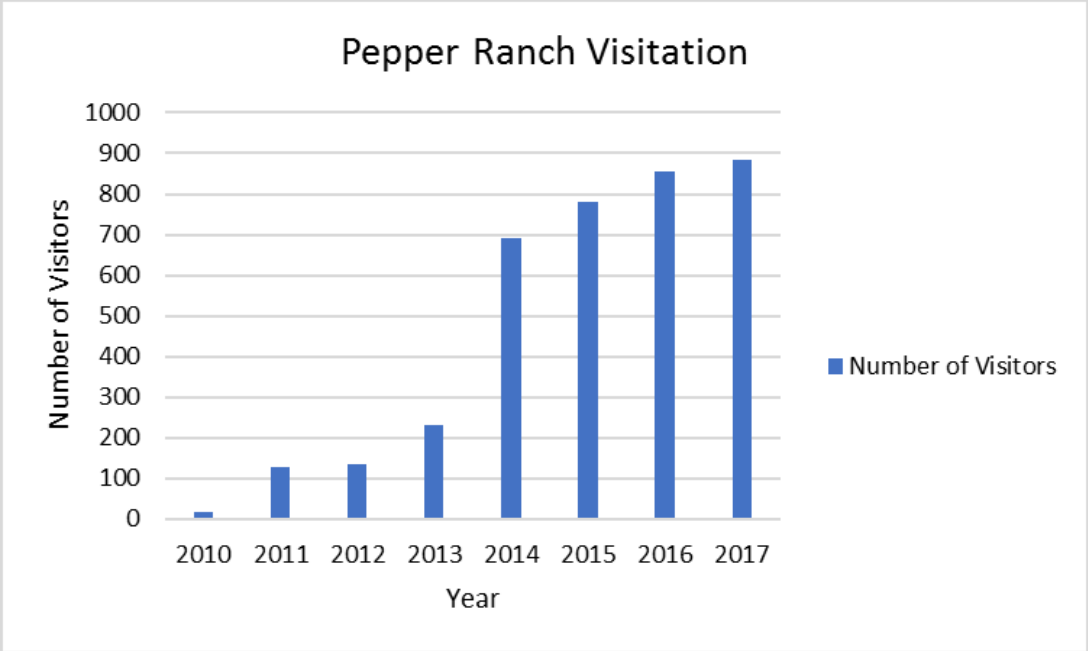


Figure 12. Total Pepper Ranch Preserve Visitation 2010 - 2017

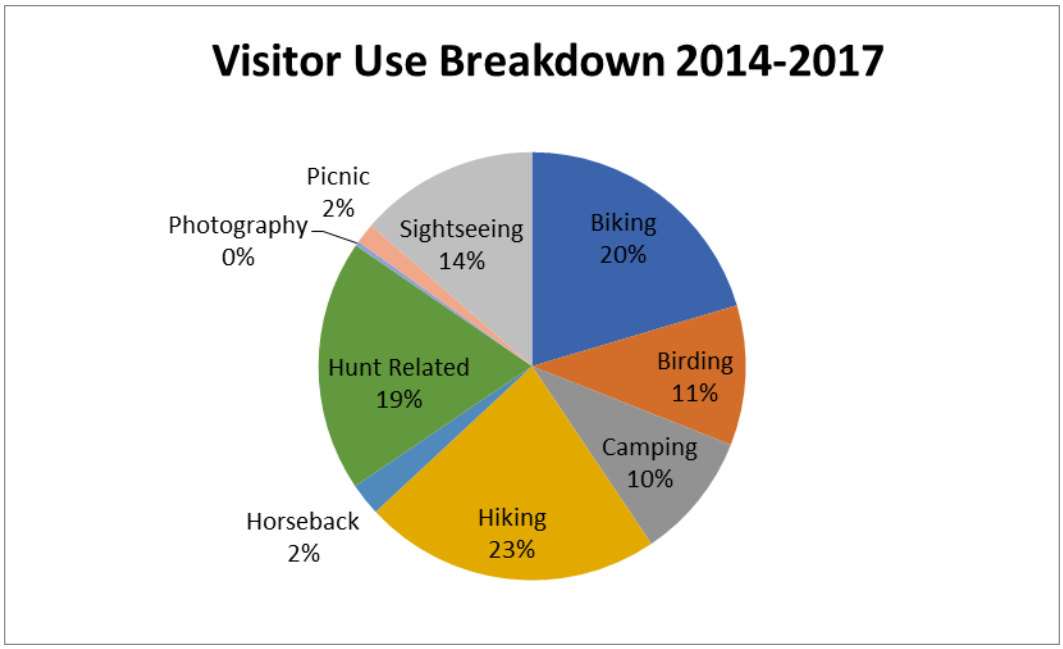


Figure 13. Pepper Ranch Preserve Visitor Use by Category 2014-2017

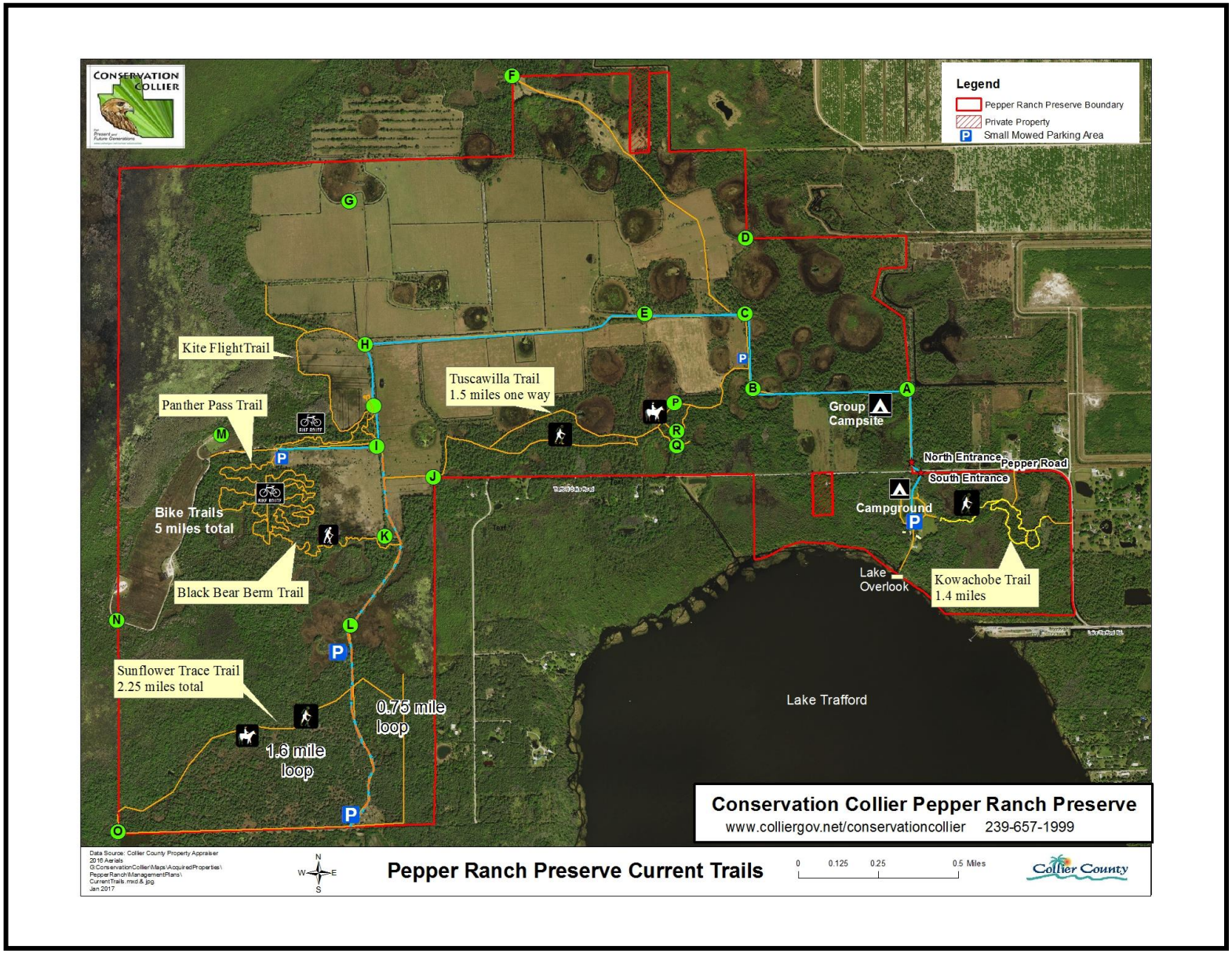


Figure 14: Current Trails as of August 2018

The North Public Access Area is accessible from the north gate off of Pepper Road and provides public access for a scenic drive, hiking trails, multi-use trails, mountain bike trails and primitive camping areas. This northern area is accessible after checking in at the lodge/visitor center. All trails that double as firebreaks will be maintained on a regular basis, new trail creation and maintenance may be dependent on the demand for use and available resources.

- ***The Scenic Drive***- the public is allowed to drive through the Preserve along the main access road after obtaining a free daily use permit and a temporary access code from the visitor center. This allows the public to view the majority of the preserve by vehicle and to view the wildlife and different ecosystems present. The driving tour is approximately 6.4 miles round trip and does not include the easement road that leads to the south property boundary. Visitors are required to check out at the visitor center before they depart. During wet conditions, the public will be asked to keep vehicles on the main roads during their tour and to drive at slow speed for safety. During normal dry conditions, they may park in the designated trailhead parking areas.

- ***Hiking trails –*** Hiking trails provide a view of live oak hammocks, mesic flatwoods, cypress sloughs, open prairie and depression marshes. Currently, there are five (6) different trail areas totaling approximately 14.5 miles which are all open to hikers. Hikers and trail runners can use all trails designated as multi-use, including horseback or mountain bike trails with caution. Hikers must yield to bikers and horseback riders. Many trails already exist as firebreaks. Benches and interpretive signage have been placed at strategic locations along the trails.

- ***Seasonal access hiking trail –*** A 1.0-mile loop would allow visitors to walk through some of the scenic wetland communities located in the western portion of the preserve during the dry season. It is located west of the scenic driving trail and will traverse through natural communities such as cypress strand and a red maple dominated bottomland forest. This trail will be limited to foot traffic to prevent damage to the sensitive wetland soils.

- ***Mulit-use Trails- (Hiking & Horseback riding)*** **–**Trails designated multi-use, accessible to horses and hikers, total 11.25 miles. This total includes the main access road and easement road. An area in the south central portion of the preserve will take riders though 3 miles of prairie, mesic flatwoods, oak hammock and marshes. It will also lead to the crossroads of the oil well road and the south easement road. Traveling south on this easement road will lead to the southwestern most multi-use trails which are approximately 2.5 miles in length. The third trail will lead from the main road near the cattle pens north to the primitive camping area in the north central area which will total 2.2 miles round trip. The public will be required to park cars and horse trailers at the visitor center and enter through the north entrance gate or at a designated

parking area at the trailheads. Equestrian use at Pepper Ranch Preserve may also require additional amenities such as watering and feeding areas. A small hand pump well may be installed in areas near riding trailheads. Riders are required to show documentation of a negative Coggin's test when they check in at the visitor's center. Existing trails and firebreaks will be used as horse-back riding trails and in general are approximately 8-10 feet wide. The majority of the multi-use will not be shared with mountain bikers for safety reasons, however both user groups may have to pass each other on occasion on the main access roads. Signs have been posted to use caution when approaching horses. When horse riders are checked in at the lodge, hikers and bikers will be notified to use caution and to stay on designated trails. All multi-use trails will be maintained by the County and with help from volunteer groups.

- **Mountain biking trails**- There are three main areas where mountain biking (off-road cycling) trails are existing or proposed to be created. They were planned as Phase 1-3. The total length of the proposed trails was approximately 13 miles in length, this includes the main access road, easement road and a small portion of the multi-use trails. These trails have been created in phases. The majority of the biking trails are very narrow in width and are kept separate from the horseback-riding trails. However, hikers and trail runners may share the mountain biking trails with caution. Two main areas are located in the western portion of the Preserve. The first main area, Phase I, is located in the west center, south of the main road that leads to the oil wells. This was the first completed phase of the biking trails. These trails have been named Panther Pass and Black Bear Berm. This area was formerly harvested of cabbage palms, as a result there were several existing trails that were used to create approximately 4.5 miles of winding single-track trail through the forested area. Phase 2, which has been named Kite flight is aa 5.5 mile partial perimeter trail that runs along the edges of the pastures and starts from the winding single-track area in the west central portion of the preserve, and continues north along the pastures to the northern property boundary. It will eventually turn east and will circle back down the multi-use trail past the cattle pens to the main road. It will then follow the main road back to the parking area Approximately, one-third of this trail has been created. USFWS is requiring that this trail continuation only be created along the edges of the forest and that no new trails are cut into the woods. They are requiring this as part of the future Florida Panther Conservation Easement.

- The third possible area or Phase 3, was planned to be created in the extreme southwest area, west of the easement road. This would have been a 2-mile winding single-track loop trail in the center of the existing Sunflower Trace horseback riding trail. This potential trail has been denied by the USFWS due to the future Panther Conservation Easement.

  Trails have been and will continue to be created according to the International Mountain Biking Standards (IMBA) and the majority of the trails will be

narrow single-track trails created and maintained by the use of hand tools such as a weed cutter and loppers etc. A local non-profit off-road cycling group called the Florida Mudcutters have been volunteering since 2012 and have created and maintained these trail systems. Helmets must be worn by bikers on these trails at all times. Trails are specifically marked. Special gates may be installed in the future to allow bikers to pass through cattle gates and small bridges/crossovers may need to be built over ditches in the cattle pastures. During rainy season portions of the trails may be closed due to wet conditions. Bikers may park at the main visitor center and ride to the trails or may also park in designated parking areas near the trailheads. The majority of the biking trails are maintained by the user group; however, County staff will determine at what level to assist based on available resources and will attempt to be present on work days to supervise new trail creation.

Action Item 6.2 Pepper Ranch Quality Wildlife Management Hunt Program

The preserve has been open to the public for hunting since September 2010. Hunting is limited to small game, hogs and turkey. Deer hunting was introduced in the Fall of 2011. The Preserve is closed on Saturday and Sunday during each hunt weekend. Currently, the hog hunts are limited to 10 hunters per weekend, while deer and turkey hunts are limited to 4 hunters per weekend. All hunters have designated hunting zones. The zone closest to the lake and the structures is limited to archery only (See Appendix 7). Several successful FWC youth hunts have been held each year for kids age 12-17 and at least two are planned to be held each year depending on the continued interest and volunteers. The number of public hunts and youth hunts that will be allowed each year may change when other public uses of the property increase and based on wildlife management determinations and public interest.

Action Item 6.3 Recreational Drone Use is Prohibited

The use of Unmanned Aerial Vehicles (UAV), for recreational use by the general public is prohibited within the preserve. Drones have been proven to cause stampedes with horses and cattle, they can interfere with prescribed burning and wildfire operations, and they also may infringe on the privacy and safety of preserve visitors.

Requests by search and rescue organizations, fire and law enforcement agencies, other governmental and first-response agencies for a scheduled operation of non-recreational UAV on the preserve must be directed through the Division's Administrative Offices. Approval may be given for the purposes of training or reconnaissance through the Division Director.

For all other non-recreational requests related to media, land management or research, a permit through Conservation Collier or it's designated agency or representative may be issued on a case by case basis. Each permit application will be signed by the Parks and Recreation Director and will be adequately evaluated as to the appropriateness of the requested activities and whether the use of a UAV will result in unacceptable impacts to the preserve and visitors. If a permit is issued, it will clearly identify the designated area(s) where the UAV may be operated within the park. The permit will also contain

the terms and conditions to ensure safe operation and will mitigate any unacceptable impact to the resources and the public. Users will specifically be advised not to fly them in the bald eagle nesting zone west of the main campground during nesting season, or near cattle or horseback riding areas. Coordination will need to be carried out if riders are on the property. County staff can only enforce drone use when they take off and land on our property. Drones that are flown over the preserve from other properties are under the jurisdiction of the Federal Aviation Administration (FAA). All permitted users should abide by the FAA applicable laws and regulations.

GOAL 7: *FACILITATE USES OF THE SITE FOR EDUCATIONAL PURPOSES*

Actions Item 7.1 Develop interpretive signage to educate preserve visitors.
On completed trail systems, site-specific signage, including directional signage, has been installed to educate visitors on plant identification and general ecosystem information. Additional smaller trail specific interpretive signs will be placed at the various trailheads.

Action Item 7.2 Provide maps and brochures for the public
Brochures and trail maps for the preserve outlining the native plant communities, wildlife present, and trail locations will be created by County staff and will be offered to visitors during the check in process. Trail maps may also be available at the specific trailheads. The preserve manager or park ranger will inspect these boxes monthly and will refill the brochures as necessary.

GOAL 8*: PROVIDE A PLAN FOR SECURITY AND DISASTER PREPAREDNESS*

Action Item 8.1 Discourage any unauthorized visitation to the preserve at night and identify the hours of operation.
A security light and sign designating park hours as sunrise to sunset has been installed at the entrances 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 and/or FWC currently patrol the area and site on a routine basis. An automatic gate or temporary keypad combination at the entrance allows nighttime access to the preserve to registered campers, law enforcement and staff only. Campers will be advised that the northern public use area is only available for access from dawn to dusk.

Action Item 8.2 Enforce regulations prohibiting trash and landscape debris dumping in or near the preserve.
Currently, illegal dumping is not occurring on or near the preserve. Monthly property inspections will be conducted to monitor for such activity. Staff will work with the Collier County Sheriff's Office if problems start to arise.

Action Item 8.3 Survey trees along the trail and the perimeter of the property for damage.

Staff will routinely monitor the trees along the walking and hiking trails to determine if diseased, weak, or damaged trees/limbs exist and if so remove them to reduce the risk of visitor injury. Due to the length of the proposed trails at Pepper Ranch Preserve this activity will likely require the assistance from volunteers and/or the Department of Corrections work crews, as feasible.

Action Item 8.4 Visit the preserve within 48 hours after a major storm event to assess damage.
Staff will take photos of damage and fill out appropriate Collier County Risk Management Department or FEMA forms. If damage is extensive, the entire preserve or the affected portions will be closed until public safety hazards are cleared.

Action Item 8.5 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 will be chipped and retained onsite to be used as mulch for the trails. The preserve will be closed temporarily until the potential hazards are eliminated.

Action Item 8.6 Public Safety Response
Visitors will be given the phone number to the visitor's center incase of emergency. If a visitor is lost or injured, staff will notify the CCSO and EMS. Staff will attempt to locate the visitor in distress by use of a 4x4 vehicle or UTV until additional help arrives. An AED (automatic electronic defibrillator) is installed in the visitor center to utilize until EMS arrives. A helicopter can land close to the visitor center and the mountain bike trailhead parking area if needed. Designated landing spots will be mapped and given to EMS for future use.

GOAL 9: *PROVIDE COUNTY PANTHER HABITAT UNIT (PHU) MITIGATION THROUGH AN ONSITE PANTHER CONSERVATION BANK*

A panther conservation bank on a portion of Pepper Ranch Preserve will create an inter-departmental partnership for Collier County. The mitigation or PHU's generated by the Pepper Ranch Preserve Conservation Bank will be utilized for offsetting the panther habitat impacts from Collier County transportation and other public works projects while providing the funding necessary to manage the preserve.

The information provided below in Action Items 9.1 and 9.2 is necessary for the creation of the Conservation Bank.

Action Item 9.1 Provide Panther Habitat Unit calculations for the area of Pepper Ranch Preserve Conservation Bank.
Table 11 provides PHU calculations for the Pepper Ranch Preserve Conservation Bank, which consists of lands that are outside of Stewardship Sending Area 7 (SSA

7). The calculations are based on baseline conditions at the preserve using September 2012 USFWS habitat suitability scores.

Table 11: Panther Habitat Unit Calculations excluding SSA 7 – Pre-Restoration

USFWS Habitat Type	FLUCFCS Code	FLUCFCS Description	Area (acres)	USFWS Assigned PHU Value	PHU's
Pine forest	411	Pine flatwoods	149.89	9.5	1,423.95
Hardwood-Pine	434	Oak, slash pine, cabbage palm	180.35	9.3	1,677.26
Cypress swamp	621	Cypress	0.72	9.2	6.64
Hardwood swamp	630	Wetland forested mix	23.81	9	214.31
	6151	Red maple swamp	76.47	9	688.26
	6152	Pop ash swamp	2.69	9	24.21
	6162	Pond apple depression	0.71	9	6.41
Shrub swamp/brush	631	Shrub wetland	4.38	5.5	24.07
Improved pasture	211	Improved pasture	549.67	5.2	2,858.28
Marsh/Wet Prairie	641	Freshwater marsh	29.55	4.7	138.90
	643	Wet prairie	2.10	4.7	9.85
Barren/Disturbed Lands	743	Spoil	1.24	3	3.72
	3109	Upland prairie, disturbed	3.73	3	11.19
	3209	Upland shrub, disturbed	3.56	3	10.69
	4119	Pine flatwoods, distrubed	40.80	3	122.39
	4349	Oak, slash pine, cabbage palm, disturbed	0.002	3	0.01
	6189	Willow/shrub wetland, distrubed	5.44	3	16.31
	6419	Freshwater marsh, disturbed	27.21	3	81.64
	8146	Primitive trail	1.51	3	4.53
	4119E1	Pine flatwoods, disturbed, exotics 5-24%	3.39	3	10.18
	4349E1	Oak, slash pine, cabbage palm, disturbed, exotics 5-24%	68.73	3	206.19
	6169E1	Pond apple, laurel oak, cabbage palm, disturbed, exotics 5-24%	0.83	3	2.49
	6319E1	Shrub wetland, disturbed, exotics 5-24%	4.72	3	14.17
	6419E1	Freshwater marsh, disturbed, exotics 5-24%	70.00	3	210.00
	4119E2	Pine flatwoods, disturbed, exotics 25-49%	1.24	3	3.71
	4349E2	Oak, slash pine, cabbage palm, disturbed, exotics 25-49%	8.86	3	26.57
	6319E2	Shrub wetland, disturbed, exotics 25-49%	0.09	3	0.26
	6419E2	Freshwater marsh, disturbed, exotics 25-49%	26.19	3	78.57
	6439E2	Wet prairie, disturbed, exotics 25-49%	7.50	3	22.50
	6419E3	Freshwater marsh, disturbed, exotics 50-74%	3.46	3	10.37
	743E4	Spoil, exotics 75-100%	8.16	3	24.47
	4119E4	Pine flatwoods, disturbed, exotics 75-100%	3.69	3	11.06

USFWS Habitat Type	FLUCFCS Code	FLUCFCS Description	Area (acres)	USFWS Assigned PHU Value	PHU's
Exotic/Nuisance Plants	422	Brazilian pepper, non-hydric	0.40	3	1.20
	6192	Brazilian pepper, hydric	0.84	3	2.53
	437	Australian pine	1.16	3	3.47
	428E1	Cabbage palm, exotics 5-24%	1.14	3	3.41
	428E3	Cabbage palm, exotics 50-74%	3.29	3	9.86
Urban	180	Campground	11.86	0	-
	700	Cattle Dipping Vat Remediation Area	1.02	0	-
	8145	Shell road, graded and drained	14.31	0	-
Water	512	Ditches	24.92	0	-
	512E4	Ditches, exotics 75-100%	0.66	0	-
	742	Borrow pond	0.78	0	-
Dry prairie with 14.5% exotic plant coverage	310E1	Upland prairie, exotics 5-24%	35.11	6.3 / 3	204.42
Dry prairie with 37% exotic plant coverage	310E2	Upland prairie, exotics 25-49%	4.01	6.3 / 3	20.36
Hardwood Forest with 14.5% exotic plant coverage	427E1	Oaks, exotics 5-24%	1.57	9 / 3	12.73
Hardwood Swamp with 14.5% exotic plant coverage	630E1	Wetland forested mix, exotics 5-24%	1.80	9 / 3	14.61
Shrub swamp/brush with 14.5% exotic plant coverage	631E1	Shrub wetland, exotics 5-24%	1.35	5.5 / 3	6.91
Marsh/Wet Prairie with 14.5% exotic plant coverage	641E1	Freshwater marsh, exotics 5-24%	83.40	4.7 / 3	371.43
Marsh/Wet Prairie with 37% exotic plant coverage	641E2	Freshwater marsh, exotics 25-49%	17.26	4.7 / 3	70.27
Marsh/Wet Prairie with 62% exotic plant coverage	641E3	Freshwater marsh, exotics 50-74%	1.27	4.7 / 3	4.62
TOTAL			**1,516.84**		**8,669.0**

To determine the amount of PHU's available for mitigation, the above calculations were performed based on site conditions pre-restoration. USFWS informed County staff that credit will only be given for restoration outside of the scope of this management plan. Control of invasive, exotic vegetation and prescribed fire will not result in additional PHU credits. The Pepper Ranch Preserve Conservation Bank, excluding SSA 7, will provide 8,669.0 PHUs.

<u>Action Item 9.2</u> Provide a Monitoring Plan per USFWS requirements for the Pepper Ranch Preserve Conservation Bank.

With the establishment of a panther conservation bank the USFWS requires a monitoring plan for the lands within the designated bank to ensure the bank continues to meet its success criteria in perpetuity. Below is the monitoring plan for the Pepper Ranch Preserve Conservation Bank.

Monitoring

Baseline monitoring will be completed by a consultant within 60 days of approval of the Bank by the Service and a baseline monitoring report will be forwarded to Service staff in Vero Beach within 45 days of the monitoring event. Time-zero monitoring will be completed within 60 days of the completion of initial prescribed fires. As with the baseline monitoring report, the time-zero monitoring report will be forwarded to Service staff in Vero Beach within 45 days of the monitoring event. Annual monitoring will begin 12 months following the time-zero monitoring event and continue for a total of five years. Annual monitoring reports will be forwarded to Service staff in Vero Beach prior to January 31 each year. If, at the end of five years of monitoring, the Bank has reached success criteria, monitoring will be conducted once every five years to ensure that success criteria are met in perpetuity. If success criteria are not met, annual monitoring will continue until they are achieved. A summary of the reporting schedule can be found in Table 15.

Table 12 : Monitoring and Reporting Schedule for Panther Conservation Bank

Report	Monitoring Implemented	Delivery
Baseline Monitoring	Within 60 Days of Approval	45 days
Time-Zero Monitoring	Within 60 Days of Initial Restoration	45 days
Annual Monitoring	Year 1 12 Months After Time-Zero Monitoring	45 days
Annual Monitoring	Year 2 1 Year from Previous Report	January 31
Annual Monitoring	Year 3 1 Year from Previous Report	January 31
Annual Monitoring	Year 4 1 Year from Previous Report	January 31
Annual Monitoring	Year 5 1 Year from Previous Report	January 31
Five-Year Monitoring (Year 10)	5 Years from Previous Report	January 31
Every 5 years thereafter	5 Years from Previous Report	January 31

In addition to the information outlined below, the monitoring report will include a general overview of the land management activities (i.e. prescribed burns, exotic vegetation maintenance, pasture restoration activities, etc.) conducted since the previous monitoring report and planned maintenance and management activities during the next period.

Vegetation Monitoring:
Permanent monitoring transects will be established during the baseline monitoring event and located throughout the site to include a thorough representation of the various habitats onsite. Three vegetative strata will be sampled along each transect and will be representative of habitat types throughout the site. These strata are: overstory [plants greater than four inches diameter breast height (DBH)], understory (plants greater than four inches DBH and greater than three feet in height), and ground cover (all non-woody plants and woody plants less than three feet in height). The overstory and understory vegetation will be sampled in 10 m2 plots and the ground cover vegetation will be sampled in 1m2 plots along each monitoring transect. Panoramic photographs will be taken at the beginning of each transect to provide physical documentation of the condition and appearance of the property as well as any changes taking place. The panoramic photographs will be included in each monitoring report. For the overstory and understory strata, the relative canopy closure for each species will be recorded. Average shrub height will be recorded for all species identified in the understory stratum. Percent coverage and average height for all saw palmetto will be recorded for plots located within habitats with saw palmetto. The percent cover of groundcover species and bare ground will be estimated for the herbaceous study plots along each transect. Exotic and nuisance vegetation coverage within the plots will be recorded. Survival rate evaluations will occur throughout the site to include a thorough representation of the various habitats onsite. There will be a maximum of 17 transects with a total of 51 sample plots.

Exotic and Nuisance Species Monitoring:
In addition to the permanent monitoring transects, existing disturbed areas, such as fence lines, fire breaks, and primitive roads / trails, will be surveyed annually, using the FWC protocol, by vehicle and meandering pedestrian transects to assess the site for the presence and percent coverage of exotic vegetation species. Following the annual exotic vegetation surveys, an exotic vegetation map will be prepared illustrating the locations of exotic and nuisance vegetation in need of corrective action. The map will be provided to the County contractor annually to ensure timely and effective treatment.

Wildlife Utilization:
Spotlight transect surveys will be utilized to census white-tailed deer due to the large acreage of open habitat within the Preserve, density of forested habitat, and the available roads and trails. For each transect the spotlighting visibility will be estimated once per season, before conducting the spotlight census. The spotlighting visibility will be calculated as the acreage of habitat perpendicular to each transect which can be surveyed for white-tailed deer. Visibility will be dependent on the density and height of vegetation and also the terrain. Two hundred yards will be the maximum distance from which visibility will be quantified and white-tailed deer will be censused. Visibility stations will be placed every 0.10 miles along and at the beginning and end of each transect. At each

visibility station a one-million candle power spotlight will be used to illuminate the habitat perpendicular to both sides of each transect. A Bushnell Laser Range Finder Sport 450 will be used to determine the distance, in yards, to the nearest obstruction which would deter viewing a deer on either side of each transect. The laser range finder will have an accuracy of +/- one yard. The spotlighting visibility per transect and cumulative spotlighting visibility will be calculated as the acreage of visibility.

Spotlight transect surveys will begin one-half hour after sunset. The deer spotlight census will follow the methodology described by Mitchell (1986). Six transects will be surveyed in order during each census and each transect will be surveyed without interruption until completed. All census data for each transect will be recorded on a separate data sheet. The data recorded will include: transect number, official sunset, date, time survey began, time survey ended, temperature, wind direction, average wind speed, percent cloud cover, name of personnel, number of bucks, number of does, number of fawns, and number of unknown deer.

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A minimum of four personnel will be utilized for each of the spotlighting censuses: one driver, one data recorder, and two spotlight observers. A four-wheel drive pickup truck will be utilized for each census and the spotlight observers will be stationed in the bed of the pickup. For each transect the vehicle will be driven at 5-10 mph and each spotlight observer will scan the habitat on their side of the vehicle with a one-million candle power spotlight. If a deer is observed the vehicle will briefly stop and the spotlight observer will use binoculars to identify the age and sex of each deer observed.

For each group of deer the spotlight observers will classify each deer as either buck, doe, fawn, or unidentified. A group will consist of one single deer by itself or more than one deer grouped together; and the grouping of deer will be subjective - meaning the spotlight observer will determine how deer in an area are grouped. Sex and age will be recorded for each deer only if all the deer in that group can be sexed and aged. If one deer in the group cannot be identified, then all the deer in the group will be classified as unidentified in order to reduce bias when estimating the total number of bucks, does, and fawns on the Preserve.

The annual wildlife monitoring reports will include the following information:

- Results of the annual spotlight survey.
- A brief description of work performed since the previous report (if applicable) along with a discussion of any modifications to the survey methodology.
- A list of all wildlife species observed during the survey.
- Direct evidence (i.e., tracks, scat, visual sightings, and rub trees) of panther prey species observed during each sampling period.
- Hunt harvest data (if applicable).

Regular and periodic observations of wildlife will be made during all monitoring events and other site visits by qualified ecologists. This will consist of recording evidence and signs of wildlife (i.e., direct sightings, vocalizations, burrows, nests, tracks, droppings, etc.). The number of white tailed deer, feral hog, and panther observations at the site will be recorded during each monitoring event and included in the annual reports.

4.5 Establish an Operational Plan for the Pepper Ranch Preserve

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

4.5.1 Maintenance

Initially, the primary maintenance activities for the preserve includes invasive exotic species control and trail maintenance and site security. Particularly important are the security measures to prevent trespassing and to maintain the signage and fencing (where installed) in good condition. Signs that effectively convey the desired message provide an opportunity for increasing environmental education and awareness. Significant maintenance activities will be necessary for the upkeep of all public facilities including but not limited to the trailheads/parking areas, visitor center, campgrounds, boardwalks, restrooms and interpretive signage.

4.5.2 Estimated Annual Costs and Funding Sources

Preliminary budget estimates for Pepper Ranch 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. Grants will be sought to supplement existing management funds particularly for the areas within SSA 7. Staff utilizes the Collier County Sheriff's Department weekend work programs and the Civil Citation program for certain labor projects and may also separately involve the County Scout programs and volunteers for trail maintenance and enhancement.

The budget in Table 13 represents the actual and unmet budgetary needs for managing the lands and resources of the preserve over ten years. The table shows the actual costs of land management activities, construction costs since acquisition and the estimated costs over the next 3 years. This budget was developed using data from Conservation Collier and other cooperating entities and is based on actual costs for land management activities, equipment purchases and maintenance, and for development of fixed capital facilities. The budget considers available funding and is consistent with the direction necessary to achieve the goals and objectives for Pepper Ranch Preserve.

In August of 2017, a thorough building assessment was conducted by engineers and building inspectors on all the structures on the property. It was determined that several structural issues need to be addressed to maintain the historical visitor center and pole barns. Maintenance on these structures has been budgeted for in the fical year 2017-18. However, after much deliberation, staff has decided that the cottage/caretaker's home will have to be demolished. It has had major structural issues since we purchased the property, and the cost to continue to mitigate these ongoing problems will be excessive. A concrete pad will be installed at the north end of the campground with a full hook-up to allow a campground host to reside there during the months that the preserve is open. Decisions will have to be made in the future on whether or not to also install a manufactured home on the property for an enforcement officer to live in.

Item	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Total
BROCHURES				$102	$600	$85		$85	$200	$200	$200	$ 1,472
BUILDING MAINTENANCE										$30,100		$30,100
CONSTRUCTION/IMPROVEMENTS	$6,578	$85,699		$3,445	$18,824	$115,752	$16,592	$1,365		$74,000		$322,255
CONSULTING/SURVEYS	$60,653	$11,287		$7,350		$2,400	$17,800	$15,840				$115,330
COUNTY DEPT. SERVICES	$12,229	$10,373	$1,979	$1,400		$797		$448	$500	$1,000	$1,000	$29,727
DEBRIS SERVICES	$4,770				$9,070							$13,840
EMERGENCY SERVICES					$1,267	$1,557	$600					$3,424
FIREBREAK MOWING TRAILS								$8,200	$8,000	$5,000	$5,000	$26,200
EXOTIC MAINTENANCE	$41,000	$255,627	$99,904	$67,800	$245,454	$182,128	$128,683	$137,034	$104,800	$105,000	$105,000	$1,472,430
FENCING				$3,550.00								$3,550.00
FIELD SUPPLIES & EQUIPMENT	$1,613	$50.59	$882	$361	$5,334	$967	$333					$9,540
LABOR SERVICES	$756	$2,431.50	$111,742	$3,600	$3,455	$1,500	$1,500.00	$1,000	$1,000	1,000	$1,000	$128,985
LANDSCAPING SERVICES	$9,678			$8,180	$1,273	$10,100	$7,500.00	$5,485	$500	5,000	$500	$48,216
LEASE/LEGAL					$616		$512.46		$500	$500	$500	$2,628
LICENSING & PERMITTING	$91,040		$30,688	$1,844		$1,467	$50.00		100	100	100	$125,388
MONITORING					$900							$900
MOWING (ALL)	$1,678	$34,990	$8,890	$5,640.00								$51,198
JANITORIAL				$428	$2,892		$44		$ 1,000	$1,000	$1,000	$6,364
OFFICE SUPPLIES	$1,599		$372	$460	$841	$58		$238	$200	$200	$200	$4,168
PEST ABATEMENT					$847			$625	$500	$500	$500	$2,972
PORT-A-POTTY	$965	$1,390	$2,750	$2,415	$500	$645.03	$460	$460	$500	$500	$500	$11,085
SIGNS	$417		$166	$464	$601			$362	$200	$200	$200	$2,610
TAXES		$163	$166	$192	$160	$164	$170	$176	$180	$184	$190	$1,745
UTILITIES (ALL)	$993	$1,400	$940	$2,010.00	$3,968	$5,236	$5,530	$6,163	$6,400	$6,400	$6,400	$45,441
VOLUNTEER RELATED						$214.57		$27	$100	$100	$100	$ 541.77
GRAND TOTAL:	$ 233,969	$ 403,411	$258,478	$109,240	$296,601	$323,071	$ 179,774	$ 177,508	$124,680	$230,984	$122,390	**$ 2,460,108**

Table 13. Estimated Annual Land Management Budget

*Actual numbers are included from FY 2009-10 through 2017-18. Numbers are estimated FY 2018-19 through 2019-2020.
*Labor Services: Fees associated with Check Station Attendant for Public Hunts
*Utilities: include electricity, water, garbage service and phone and internet

4.5.3 Potential for Contracting Restoration and Management Activities by Private Vendors

A significant number of management operations and restoration activities on the Pepper Ranch Preserve can be considered for outsourcing. Restoration and management activities that can be considered for outsourcing to private entities are listed in Table 14.

Table 14: Potential Contracting for Restoration and Management Activities

Activity	Approved	Conditional	Rejected
Prescribed fire and/ or mechanical treatment application	X		
Minor fireline installation	X		
Fireline, fence and trail maintenance	X		
Fence installation	X		
Plant and wildlife inventory and monitoring		X	
Listed species mapping and needs assessment		X	
Restore/enhance encroachment and ruderal areas		X	
Reduce exotic species	X		
Literature development and printing		X	
Interpretive signs development and installation		X	
Trail installation	X		
Parking Area construction	X		
Law enforcement and patrol	X		

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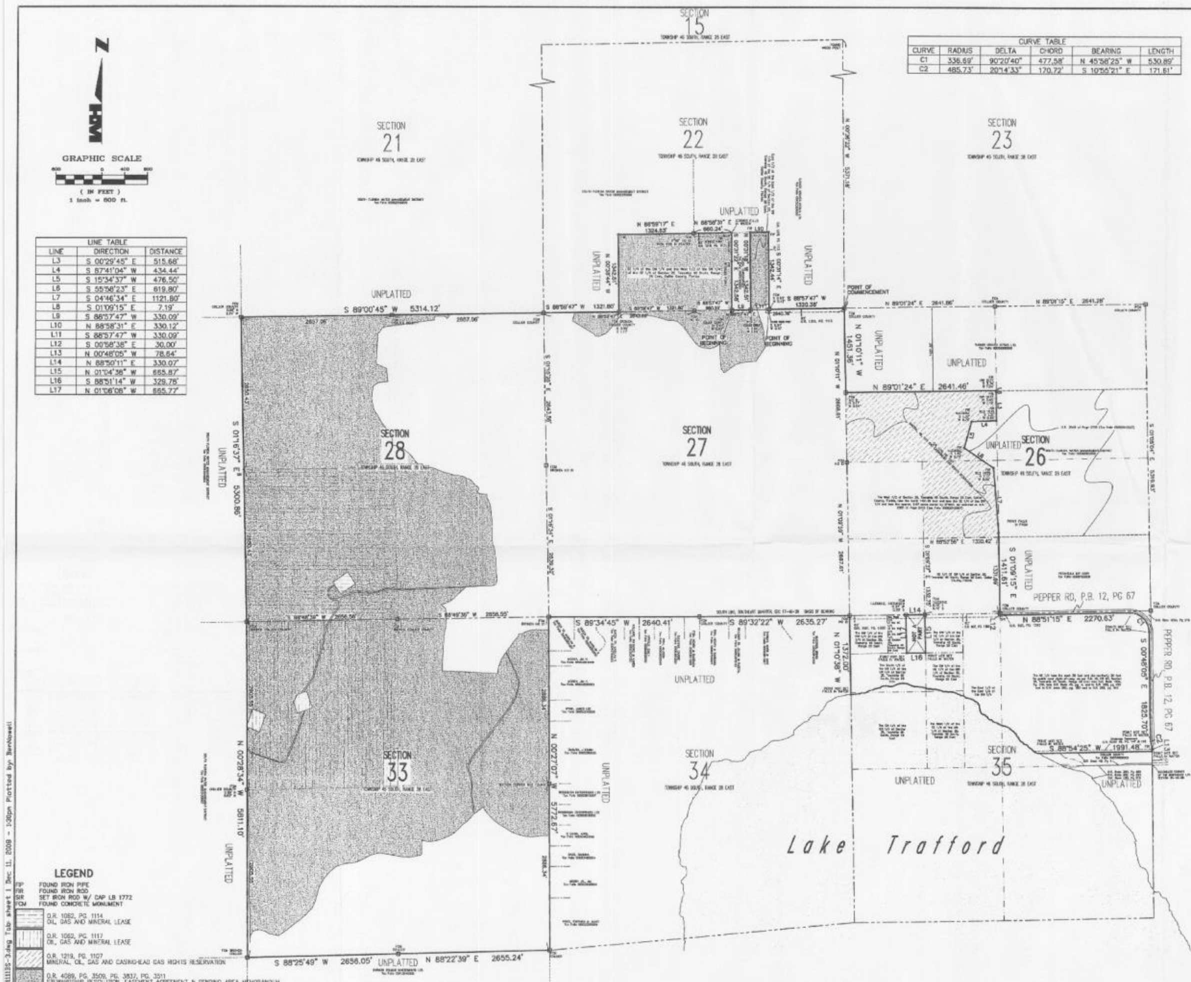
Appendix 1

Pepper Ranch Preserve Legal Description



CURVE TABLE					
CURVE	RADIUS	DELTA	CHORD	BEARING	LENGTH
C1	336.69'	90°20'40"	477.58'	N 45°58'25" W	530.89'
C2	485.73'	20°14'33"	170.72'	S 10°55'21" E	171.61'

GRAPHIC SCALE

(IN FEET)
1 inch = 800 ft.

LINE TABLE		
LINE	DIRECTION	DISTANCE
L3	S 00°29'45" E	515.68'
L4	S 87°41'04" W	434.44'
L5	S 15°34'37" W	476.50'
L6	S 55°58'23" E	619.80'
L7	S 04°46'34" E	1121.80'
L8	S 01°09'15" E	7.19'
L9	S 88°57'47" W	330.09'
L10	N 88°58'31" E	330.12'
L11	S 88°57'47" W	330.09'
L12	S 00°58'38" E	30.00'
L13	N 00°48'05" W	78.64'
L14	N 88°50'11" E	330.07'
L15	N 01°04'38" W	665.87'
L16	S 88°51'14" W	329.76'
L17	N 01°06'08" W	665.77'

PROPERTY DESCRIPTION:

THE EAST HALF OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST Q
TOWNSHIP 46 SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA.

AND

THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER AND THE WEST HALF OF THE SO
THE SOUTHEAST QUARTER OF SECTION 22, TOWNSHIP 46 SOUTH, RANGE 28 EAST, COLLIE

AND

THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 46 S
COLLIER COUNTY, FLORIDA

AND

ALL OF SECTION 28, TOWNSHIP 46 SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA;

AND

THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER O
46 SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA;

AND

THE WEST HALF OF SECTION 26, TOWNSHIP 46 SOUTH, RANGE 28 EAST, COLLIER COUNTY,
NORTH 1451.38 FEET THEREOF AND LESS THE SOUTHEAST QUARTER OF THE SOUTHWEST
SECTION 26, AND LESS THAT PARCEL OF LAND, AS DESCRIBED AND RECORDED IN O.R. B
2735 THROUGH 2737, OWNED BY SOUTH FLORIDA WATER MANAGEMENT DISTRICT WITH TA
00052640007;

AND

ALL OF SECTION 27, TOWNSHIP 46 SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA;

AND

ALL OF SECTION 33, TOWNSHIP 46 SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA;

AND

THE EAST HALF OF THE EAST HALF OF THE NORTHWEST QUARTER; AND THE NORTHEAST
EAST 30 FEET AND THE NORTHERLY 30 FEET FOR PUBLIC ROAD RIGHT-OF-WAY PER DED
RECORDED IN PLAT BOOK 12, PAGE 67 (KNOWN AS PEPPER ROAD), SECTION 35, TOWNSH
EAST, PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA, LESS 2.29 ACRES IN THE NORTHEA
IN DEED RECORDED IN O.R. BOOK 1834, PAGE 216; ALSO LESS THE REAL PROPERTY DES
DEED RECORDED IN O.R. BOOK 49, PAGE 4; AND IN O.R. BOOK 280, PAGE 480; AND IN O
283; AND IN O.R. BOOK 289, PAGE 910, ALL OF THE PUBLIC RECORDS OF COLLIER COUN

AND

THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER; AND THE WEST HALF OF THE S
THE NORTHWEST QUARTER; AND THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER
QUARTER; AND THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUA
NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER; AND T
NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SEC
SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA

NOTES:

THIS PROPERTY IS SUBJECT TO EASEMENTS, RESERVATIONS OR RESTRICTIONS OF RECORD.

IMPROVEMENTS ON OR ADJACENT TO PROPERTY HAVE NOT BEEN LOCATED OR SHOWN.

TOTAL PROPERTY ACREAGE: 2,511.90 ACRES, MORE OR LESS. ACREAGES FOR PARCELS W
BEEN CALCULATED TO THE SHORELINE OF LAKE TRAFFORD, AS DIGITIZED FROM AERIAL PH
6/13/03.

BEARINGS SHOWN HEREON REFER TO SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTIO
SOUTH, RANGE 28 EAST, COLLIER COUNTY, FLORIDA AS BEING S.89°32'22"W.

THE PARCEL OF LAND LOCATED WITHIN SECTION 22 TOWNSHIP 46 SOUTH, RANGE 28 EAST
UTILIZING THE EXISTING MONUMENTATION RECOVERED AND SHOWN ON THIS SURVEY. WE
RECOVER SEVERAL SECTION CORNERS WITHIN SECTIONS 21, 22, & 15 DUE TO SWAMPS AN
ALSO ATTEMPTED TO RECOVER THE NORTH LINE OF SECTION 23, AND WERE UNABLE TO R

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FL
SURVEYOR AND MAPPER.

EXCEPTIONS ACCORDING TO SCHEDULE B – SECTION 2 OF THE TITLE COMMITMENT ISSUED
GUARANTY COMPANY, HAVING COMMITMENT NUMBER 46813 WITH AN EFFECTIVE DATE OF
5:00 P.M. ARE AS FOLLOWS:

14. OFFICIAL RECORDS BOOK 907, PAGE 1383 IS LOCATED ON THIS PROPERTY AS SHOWN

15. OFFICIAL RECORDS BOOK 1219, PAGE 1113 IS LOCATED ON THIS PROPERTY AS SHOW

16. OFFICIAL RECORDS BOOK 4089, PAGE 3509 IS LOCATED ON THIS PROPERTY AS SHO

17. OFFICIAL RECORDS BOOK 4089, PAGE 3837 IS LOCATED ON THIS PROPERTY AS SHO

18. OFFICIAL RECORDS BOOK 4089, PAGE 3511 IS LOCATED ON THIS PROPERTY AS SHOW

19. RESTRICTIONS, CONDITIONS, RESERVATION, EASEMENTS AND OTHER MATTERS CONTAIN
PEPPER ROAD RIGHT-OF-WAY AS RECORDED IN PLAT BOOK 12, PAGE 67, IS NOT LOCATE

20. OFFICAL RECORDS BOOK 49, PAGE 147, IS LOCATED ON THIS PROPERTY AS SHOWN.

21. OFFICIAL RECORDS BOOK 157, PAGE 437 IS NOT LOCATED ON THIS PROPERTY.

22. OFFICIAL RECORDS BOOK 170, PAGE 731 EXPIRED APRIL 1974.

23. OFFICIAL RECORDS BOOK 1219, PAGE 1118 IS LOCATED ON THIS PROPERTY AS SHOW

24. OFFICIAL RECORDS BOOK 1219, PAGE 1107 IS LOCATED ON THIS PROPERTY AS SHOW

27. OFFICIAL RECORDS BOOK 1191, PAGE 1114 HAS ALL LANDS RELEASED BY OFFICIAL RE
PAGE 578.

28. OFFICIAL RECORDS BOOK 1062, PAGE 1114, WITH PARTIAL RELEASE OFFICIAL RECORDS
3580 IS LOCATED ON THIS PROPERTY AS SHOWN.

29. OFFICIAL RECORDS BOOK 1062, PAGE 1117, WITH PARTIAL RELEASE OFFICIAL RECORDS
3586 & OFFICIAL RECORDS BOOK 4394, PAGE 578 IS LOCATED ON THIS PROPERTY AS SH

CERTIFIED TO: STEWART TITLE
COLLIER BOUNTY BOARD OF COMMISSIONERS
LAKE TRAFFORD RANCH, LLLP

I HEREBY CERTIFY THAT THIS SKETCH OF THE HEREON DESCRIBED PROPERTY WAS SURVEY
ON 11/26/2008. I FURTHER CERTIFY THAT THIS SURVEY MEETS THE MINIMUM TECHNICAL S
SURVEYING IN THE STATE OF FLORIDA PURSUANT TO CHAPTER 61G17-6, F.A.C.

HOLE MONTES, INC.
CERTIFICATE OF AUTHORIZATION NUMBER LB 1772

BY [signature] P.S.M. #5628
THOMAS M. MURPHY STATE OF FLORIDA

LEGEND

FIP FOUND IRON PIPE
FIR FOUND IRON ROD
SIR SET IRON ROD W/ CAP LB 1772
FCM FOUND CONCRETE MONUMENT

O.R. 1062, PG. 1114 OIL, GAS AND MINERAL LEASE

O.R. 1062, PG. 1117 OIL, GAS AND MINERAL LEASE

O.R. 1219, PG. 1107 MINERAL, OIL, GAS AND CASINGHEAD GAS RIGHTS RESERVATION

O.R. 4089, PG. 3509, PG. 3837, PG. 3511 STEWARDSHIP RESOLUTION, EASEMENT AGREEMENT & SENDING AREA MEMORANDUM

FIELD BOOK 909/15-16, 938/48-49, 953/06, 953/77, 996/51		
LETTER	REVISIONS	DATE
D		
C	UPDATED WITH NEW TITLE COMMITMENT	12/04/08
B	ADDED O.R. 1219, PG. 1107 IN SEC 26	10/30/08
A	ADDED O.R. 907, PG. 1383 ALONG N LINE SEC 35	10/09/08

LAKE TRAFFORD RANCH (PEPPER RANCH)

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

PARTY CHIEF: AL Z	DATE: 11/08
DRAWN BY: BEN	DATE: 12/08
CHECKED BY: TMM	DATE: 12/08
VERTICAL SCALE: N/A	HORIZONTAL SCALE: 1"=800'

HOLE MONTES
ENGINEERS-PLANNERS-SURVEYORS

950 Encore Way
Naples, FL. 34110
Phone: (239) 254-2000
Florida Certificate of
Authorization No.1772

EXHIBIT "A" BOUNDARY SURVEY

Appendix 2
Florida Land Use, Cover and Forms Classification System Designations for Pepper Ranch Preserve – (2'x3' map)

(Same as map on page 22 only larger)

FLUCFCS Code	Description	Status	Acreage
1641	Oil field	N	5.63
211	Improved pasture	N	619.26
2111	Cattle pen	N	0.38
211H	Improved pasture, hydric	W	47.70
3109	Upland prairie, disturbed	N	3.73
310E1	Upland prairie, disturbed, exotics 5-24%	N	37.35
310E2	Upland prairie, disturbed, exotics 25-49%	N	4.01
3209	Upland shrub, disturbed	N	3.53
411	Pine flatwoods	N	149.95
4119	Pine flatwoods, disturbed	N	40.80
4119E1	Pine flatwoods, disturbed, exotics 5-24%	N	1.44
4119E2	Pine flatwoods, disturbed, exotics 25-49%	N	27.45
411E4	Pine flatwoods, exotics 75-100%	N	3.69
422	Brazilian pepper, non-hydric	N	1.15
427/428	Oak/Cabbage palm	N	11.22
427E1	Oak, exotics 5-24%	N	1.57
428E1	Cabbage palm, exotics 5-24%	N	3.82
428E3	Cabbage palm, exotics 50-74%	N	4.31
434	Oak, slash pine, cabbage palm	N	270.92
4349	Oak, slash pine, cabbage palm, disturbed	N	1.99
4349E1	Oak, slash pine, cabbage palm, disturbed, exotics 5-24%	N	11.90
434B	Oak, slash pine, cabbage palm, burned	N	34.65
434E1	Oak, slash pine, cabbage palm, exotics 5-24%	N	137.84
434E2	Oak, slash pine, cabbage palm, exotics 25-49%	N	8.86
437	Australian pine	N	1.15
512	Ditches	OSW	42.77
6151	Red maple swamp	W	76.75
6152	Pop ash swamp	W	8.23
6162	Pond apple depression	W	0.71
6169E1	Pond apple, laurel oak, cabbage palm, disturbed, exotics 5-24%	W	0.83
6189	Willow/shrub wetland, disturbed	W	5.44
6192	Brazilian pepper, hydric	W	4.26
621	Cypress	W	82.41
624	Cypress, pine, cabbage palm	W	2.51
624E1	Cypress, pine, cabbage palm, exotics 5-24%	W	41.15
630	Wetland forested mix	W	145.46
630E1	Wetland forested mix, exotics 5-24%	W	3.85
631	Shrub wetland	W	250.20
6319E1	Shrub wetland, disturbed, exotics 5-24%	W	12.26
6319E2	Shrub wetland, disturbed, exotics 25-49%	W	0.56
631E1	Shrub wetland, exotics 5-24%	W	1.35
641	Freshwater marsh	W	42.60
6419	Freshwater marsh, disturbed	W	44.83
6419E1	Freshwater marsh, disturbed, exotics 5-24%	W	62.71
6419E2	Freshwater marsh, disturbed, exotics 25-49%	W	26.19
6419E3	Freshwater marsh, disturbed, exotics 50-74%	W	5.92
6419E4	Freshwater marsh, disturbed, exotics 74-100%	W	0.47
641E1	Freshwater marsh, exotics 5-24%	W	135.72
641E2	Freshwater marsh, exotics 25-49%	W	26.37
641E3	Freshwater marsh, exotics 50-74%	W	1.27
643	Wet prairie	W	5.21
643E2	Wet prairie, disturbed, exotics 25-49%	W	7.50
643E1	Wet prairie, disturbed, exotics 5-24%	W	0.48
742	Borrow pond	OSW	1.43
743	Spoil	N	1.24
743E4	Spoil, exotics 75-100%	N	9.49
8145	Shell road, graded and drained	N	20.63
8146	Primitive trail	N	4.90
		Total	2510.01

\\ftms01\proj-fmm\20098093-000\largis\FLUCFCS Codes and Descriptions.xls

0 300 600 1200
SCALE IN FEET

Lake Trafford

LAKE TRAFFORD ROAD

REVISIONS		

NOTES
1. Wetland limits were determined through limited ground truthing and aerial photo interpretation.
2. Wetland limits have not been agency approved and are subject to change.
3. The aerial photograph shown was collected in February of 2007.

Pepper Ranch
Collier County, Florida

JOHNSON ENGINEERING
2122 JOHNSON STREET
P.O. BOX 1550
FORT MYERS, FLORIDA 33902-1550
PHONE (239) 334-0046
FAX (239) 334-3661
E.B. #642 & L.B. #642

FLUCFCS Map

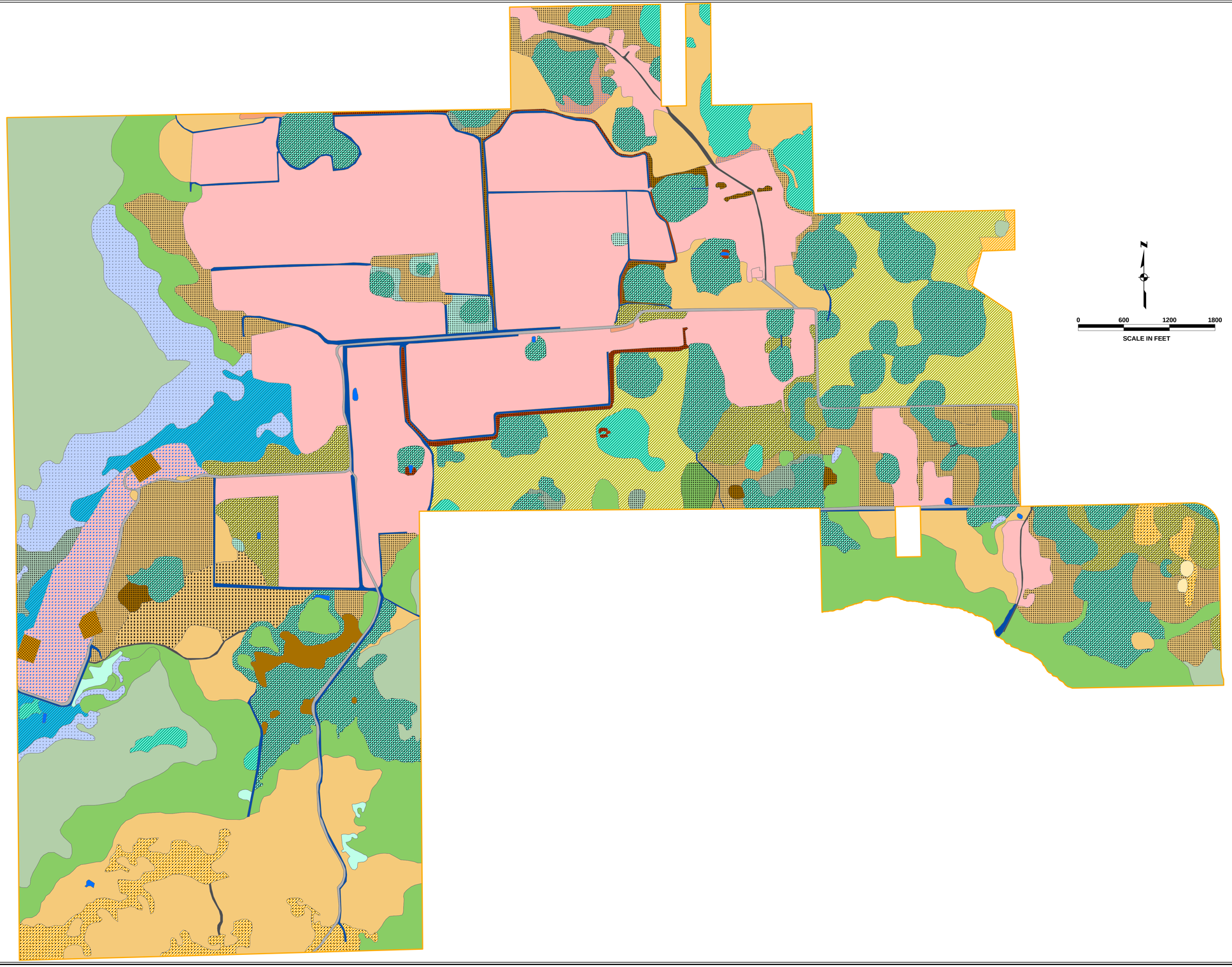
DATE	PROJECT	FILE NO.	SCALE	SHEET
Oct. 2009	20098093	--	As Shown	1

\\Ftms01\proj-fmm\20098093-000\arcgis\flucfcs 2x3.mxd

Appendix 3

Florida Natural Areas Inventory Designations for Pepper Ranch Preserve – (2'x3' map)

(Same map as on Page 24 only larger)



	FNAI Description	Classification	Area in acres
	Australian pine	AC	1.15
	Borrow pond	AC	1.43
	Bottomland forest	NPC	241.63
	Bottomland forest, disturbed	NPC	6.27
	Brazilian Pepper	AC	1.15
	Brazilian pepper, hydric	AC	4.26
	Depression marsh	NPC	42.60
	Depression marsh, disturbed	NPC	311.29
	Ditches	AC	35.15
	Dry prairie	NPC	3.53
	Dry prairie, disturbed	NPC	45.09
	Improved pasture	AC	619.64
	Improved pasture, hydric	AC	47.70
	Mesic flatwoods	NPC	149.95
	Mesic flatwoods, disturbed	NPC	73.34
	Oil field	AC	5.63
	Prairie Hammock	NPC	11.22
	Prairie Hammock, disturbed	NPC	9.74
	Primitive trail	AC	4.90
	Shell road, graded and drained	AC	20.63
	Slough	NPC	243.38
	Slough, disturbed	NPC	14.17
	Spoil	AC	1.24
	Spoil, exotics	AC	9.49
	Strand swamp	NPC	82.41
	Upland mixed forest	NPC	270.92
	Upland mixed forest, burned	NPC	34.65
	Upland mixed forest, disturbed	NPC	160.59
	Wet flatwoods	NPC	43.66
	Wet prairie	NPC	5.21
	Wet prairie, disturbed	NPC	7.99
	Total		2510.01

AC = **A**ltered **P**lant **C**ommunity
NPC = **N**atural **P**lant **C**ommunity

\\ftms01\proj-fmm\20098093-000\arcgis\FLUCFCS Codes and Descriptions.xls (fnai table)

0 600 1200 1800

SCALE IN FEET

0 600 1200 1800

SCALE IN FEET

Pepper Ranch FNAI Mapping

Collier County

Data sources:
-FNAI mapping was developed by Johnson Engineering, Inc.
-The Pepper Ranch Preserve boundary was provided by Hole Montes.

\\ftms01\proj-fmm\20098093-000\arcgis\FNAI_2x3.mxd

Appendix 4

Floristic Inventory of Pepper Ranch Preserve

Vascular Plants Of Pepper Ranch Conservation Area, Collier County, Florida

List created by Steven W. Woodmansee, Pro Native Consulting

List compiled in the field by: Steven W. Woodmansee with Bill Brammell & Anik Smith September 28-30, 2009, April 21-22, 2010

13-May-10

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
28-Sep	Dicot	FABACEAE	Abrus precatorius	ROSARY PEA; BLACKEYED SUSAN	11-100	A		I					x						
28-Sep	Dicot	SAPINDACEAE	Acer rubrum	RED MAPLE	1001 - 10,000	N			x					x	x	x			
28-Sep	Dicot	ASTERACEAE	Acmella oppositifolia var. repens	OPPOSITELEAF SPOTFLOWER	101-1000	N			x										
30-Sep	Dicot	ARECACEAE	Acoelorraphe wrightii	EVERGLADES PALM	1	CN & N?	T			x									
28-Sep	Pteridophyte	PTERIDACEAE	Acrostichum danaeifolium	GIANT LEATHER FERN	101-1000	N					x					x			
28-Sep	Dicot	FABACEAE	Aeschynomene americana	SHYLEAF	11-100	N				x									
28-Sep	Dicot	FABACEAE	Aeschynomene pratensis	MEADOW JOINTVETCH	101-1000	N	E					x							
29-Sep	Dicot	ASTERACEAE	Ageratum conyzoides	TROPICAL WHITEWEED	2-10	A										x			
30-Sep	Dicot	FABACEAE	Albizia lebbeck	WOMAN'S TONGUE	11-100	A		I	x		x								
28-Sep	Dicot	AMARANTHACEAE	Alternanthera philoxeroides	ALLIGATORWEED	10,001-100,000	A		II	x			x							CR
28-Sep	Dicot	FABACEAE	Alysicarpus ovalifolius	FALSE MONEYWORT; ALYCE CLOVER	11-100	A				x									
30-Sep	Dicot	FABACEAE	Alysicarpus vaginalis	WHITE MONEYWORT	11-100	A				x									
29-Sep	Dicot	AMARANTHACEAE	Amaranthus australis	SOUTHERN AMARANTH	11-100	N			x										
28-Sep	Dicot	AMARANTHACEAE	Amaranthus spinosus	SPINY AMARANTH	11-100	A				x									
28-Sep	Dicot	ASTERACEAE	Ambrosia artemisiifolia	COMMON RAGWEED	1001-10000	N				x	x								
28-Sep	Dicot	VITACEAE	Ampelopsis arborea	PEPPERVINE	10,001-100,000	N			x	x	x	x				x			
28-Sep	Monocot	POACEAE	Amphicarpum muhlenbergianum	BLUE MAIDENCANE	10,001-100,000	N							x						
28-Sep	Monocot	POACEAE	Andropogon glomeratus var. glaucopsis	PURPLE BLUESTEM	1001-10,000	N							X						
30-Sep	Monocot	POACEAE	Andropogon glomeratus var. hirsutior	BUSHY BLUESTEM	101-1000	N							X						
28-Sep	Monocot	POACEAE	Andropogon glomeratus var. pumilus	BUSHY BLUESTEM	1001-10,000	N			X	X	X								
29-Sep	Monocot	POACEAE	Andropogon ternarius	SPLITBEARD BLUESTEM	11-100	N							x						

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
28-Sep	Monocot	POACEAE	Andropogon virginicus	BROOMSEDGE BLUESTEM	10,001-100,000	N					x		x						
28-Sep	Dicot	ANNONACEAE	Annona glabra	POND APPLE	101-1000	N			x					x	x	x	x		
28-Sep	Dicot	FABACEAE	Apios americana	GROUNDNUT	11-100	N					x								
28-Sep	Monocot	POACEAE	Aristida patula	TALL THREEAWN	11-100	N					x								
29-Sep	Monocot	POACEAE	Aristida stricta var. beyrichiana	WIREGRASS	1001-10,000	N							x						
28-Sep	Dicot	APOCYNACEAE	Asclepias curassavica	Scarlet Milkweed	11-100	A				x									CR
30-Sep	Dicot	APOCYNACEAE	Asclepias pedicellata	SAVANNAH MILKWEED	2-10	N							x						
28-Sep	Dicot	ANNONACEAE	Asimina reticulata	NETTED PAWPAW	101-1000	N							x						
28-Sep	Monocot	POACEAE	Axonopus fissifolius	COMMON CARPETGRASS	1001-10,000	N				x	x								
28-Sep	Monocot	POACEAE	Axonopus furcatus	BIG CARPETGRASS	10,001-100,000	N			x	x	x		x						
28-Sep	Dicot	ASTERACEAE	Baccharis glomeruliflora	SILVERLING	10,001-100,000	N			x		x					x			
22-Apr	Dicot	ASTERACEAE	Baccharis halimifolia	GROUNDSEL TREE	101-1000	N				x									
28-Sep	Dicot	PLANTAGINACEAE	Bacopa caroliniana	LEMON BACOPA; BLUE WATERHYSSOP	11-100	N						x							
28-Sep	Dicot	PLANTAGINACEAE	Bacopa monnieri	HERB-OF-GRACE	1001 - 10,000	N					x			x		x			
28-Sep	Dicot	ASTERACEAE	Balduina angustifolia	COASTALPLAIN HONEYCOMBHEAD	11-100	N				x									
28-Sep	Dicot	RHAMNACEAE	Berchemia scandens	ALABAMA SUPPLEJACK; RATTAN VINE	1001-10,000	N				x	x		x	x			x		
28-Sep	Dicot	ASTERACEAE	Bidens alba	BEGGARTICKS; ROMERILLO	10,000-100,000	N				x	x								
28-Sep	Pteridophyte	BLECHNACEAE	Blechnum serrulatum	TOOTHED MIDSORUS FERN; SWAMP FERN	1001-10,000	N			x			x	x				x	x	
28-Sep	Dicot	ACANTHACEAE	Blechum pyramidatum	BROWNE'S BLECHUM	1001-10,000	A		II		x	x								
28-Sep	Dicot	URTICACEAE	Boehmeria cylindrica	FALSE NETTLE; BOG HEMP	1001-10,000	N								x	x	x			
29-Sep	Dicot	ASTERACEAE	Boltonia diffusa	SMALLHEAD DOLL'S DAISY	101-1000	N				x		x							
28-Sep	Dicot	OROBANCHACEAE	Buchnera americana	AMERICAN BLUEHEARTS	101-1000	N				x			x						
28-Sep	Dicot	LAMIACEAE	Callicarpa americana	AMERICAN BEAUTYBERRY	101-1000	N				x			x					x	
22-Apr	Monocot	COMMELINACEAE	Callisia ornata	FLORIDA SCRUB ROSELING	2-10	N							x						

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
21-Apr	Dicot	CAMPANULACEAE	Campanula floridana	FLORIDA BELLFLOWER	10,001 - 100,000	N			x										
29-Sep	Pteridophyte	POLYPODIACEAE	Campyloneurum phyllitidis	LONG STRAP FERN	2-10	N	T									x			
28-Sep	Monocot	CANNACEAE	Canna flaccida	BANDANNA-OF-THE-EVERGLADES	11-100	N					x	x							
21-Apr	Monocot	CYPERACEAE	Carex longii	LONG"S SEDGE	1,000,001-10,000,000	N			x				x						
29-Sep	Monocot	CYPERACEAE	Carex lupuliformis	FALSE HOP SEDGE	101-1000	N					x					x			
21-Apr	Monocot	CYPERACEAE	Carex vexans	FLORIDA HAMMOCK SEDGE	1001-10,000	N			x	x		x							
22-Apr	Dicot	LAURACEAE	Cassytha filiformis	LOVE VINE	2-10	N							x						
30-Sep	Dicot	CASUARINACEAE	Casuarina glauca	GRAY SHEOAK; SUCKERING AUSTRALIAN-PINE	11-100	A		I		x									
21-Apr	Dicot	CELTIDACEAE	Celtis laevigata	SUGARBERRY, HACKBERRY	2-10	N				x	x								
28-Sep	Dicot	ARALIACEAE	Centella asiatica	SPADELEAF	100,001-1,000,000	N					x	x							
28-Sep	Dicot	RUBIACEAE	Cephalanthus occidentalis	COMMON BUTTONBUSH	101-1000	N			x			x			x	x			
29-Sep	Dicot	CERATOPHYLLACEAE	Ceratophyllum demersum	COONTAIL	101-1000	N								x		x			
30-Sep	Dicot	FABACEAE	Chamaecrista fasciculata	PARTRIDGE PEA	101-1000	N				x			x						
28-Sep	Dicot	FABACEAE	Chamaecrista nictitans	SENSITIVE PEA	11-100	N							x						
28-Sep	Dicot	FABACEAE	Chamaecrista nictitans var. aspera	SENSITIVE PEA	1000-10,000	N					x		x						
30-Sep	Dicot	EUPHORBIACEAE	Chamaesyce blodgettii	LIMESTONE SANDMAT	101-1000	N				x									
28-Sep	Dicot	EUPHORBIACEAE	Chamaesyce hirta	PILLPOD SANDMAT	2-10	N				x									
28-Sep	Monocot	POACEAE	Chrysopogon pauciflorus	FLORIDA FALSE BEARDGRASS	11-100	N					x								
29-Sep	Dicot	APIACEAE	Cicuta maculata	SPOTTED WATER HEMLOCK	1001-10,000	N			x							x			
28-Sep	Dicot	ASTERACEAE	Cirsium horridulum	PURPLE THISTLE	101-1000	N					x								
28-Sep	Dicot	ASTERACEAE	Cirsium nuttallii	NUTTALL'S THISTLE	101-1000	N						x				x			
28-Sep	Dicot	VITACEAE	Cissus verticillata	SEASONVINE; POSSUM GRAPE	11-100	N					x					x			
29-Sep	Dicot	RUTACEAE	Citrus x aurantium	SOUR ORANGE; GRAPEFRUIT; SWEET ORANGE	11-100	CA & A												x	
30-Sep	Dicot	RUTACEAE	Citrus xjambhiri	ROUGH LEMON	2-10	CA & A					x, MH								CR
28-Sep	Monocot	CYPERACEAE	Cladium jamaicense	JAMAICA SWAMP SAWGRASS	101-1000	N			x		x			x		x			
22-Apr	Dicot	EUPHORBIACEAE	Cnidoscolus stimulosus	SPURGE NETTLE, TREAD-SOFTLY	2-10	N							x						

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
28-Sep	Monocot	COMMELINACEAE	Commelina diffusa	COMMON DAYFLOWER	100,001 - 1,000,000	A					x					x		x	
28-Sep	Dicot	ASTERACEAE	Conoclinium coelestinum	BLUE MISTFLOWER	1000-10,000	N				x	x								
28-Sep	Dicot	ASTERACEAE	Conyza canadensis	CANADIAN HORSEWEED	1000-10,000	N				x	x								
28-Sep	Dicot	ASTERACEAE	Coreopsis leavenworthii	LEAVENWORTH'S TICKSEED	101-1000	N				x	x								
28-Sep	Dicot	CORNACEAE	Cornus foemina	SWAMP DOGWOOD; STIFF DOGWOOD	101-1000	N			x							x			
28-Sep	Dicot	FABACEAE	Crotalaria pallida var. obovata	SMOOTH RATTLEBOX	1000-10,000	A				x									
28-Sep	Dicot	FABACEAE	Crotalaria rotundifolia	RABBITBELLS	101-1000	N							x						
28-Sep	Dicot	LYTHRACEAE	Cuphea carthagenensis	COLOMBIAN WAXWEED	10,000-100,000	A					x	x	x						
30-Sep	Dicot	CONVOLVULACEAE	Cuscuta pentagona	FIVEANGLED DODDER	11-100	N			x	x	x								
28-Sep	Dicot	APOCYNACEAE	Cynanchum scoparium	LEAFLESS SWALLOWWORT	11-100	N				x	x								
28-Sep	Monocot	POACEAE	Cynodon dactylon	BERMUDAGRASS	1,000,001 - 10,000,000	A				x									
28-Sep	Monocot	CYPERACEAE	Cyperus croceus	BALDWIN'S FLATSEDGE	1000-10,000	N					x		x						
28-Sep	Monocot	CYPERACEAE	Cyperus haspan	HASPAN FLATSEDGE	101-1000	N			x		x	x							
28-Sep	Monocot	CYPERACEAE	Cyperus ligularis	SWAMP FLATSEDGE	101-1000	N				x	x		x						
28-Sep	Monocot	CYPERACEAE	Cyperus polystachyos	MANYSPIKE FLATSEDGE	1001-10,000	N							x						
28-Sep	Monocot	CYPERACEAE	Cyperus retrorsus	PINEBARREN FLATSEDGE	1001-10,000	N					x		x						
28-Sep	Monocot	CYPERACEAE	Cyperus rotundus	NUTGRASS	1001-10,000	A			x	x									
21-Apr	Monocot	CYPERACEAE	Cyperus surinamensis	TROPICAL FLATSEDGE	101-1000	N						x							
28-Sep	Dicot	FABACEAE	Desmodium incanum	ZARZABACOA COMUN	10,000-100,000	N				x	x							x	
29-Sep	Dicot	FABACEAE	Desmodium paniculatum	PANICLED TICKTREFOIL	11-100	N							x					x	
28-Sep	Dicot	FABACEAE	Desmodium triflorum	THREEFLOWER TICKTREFOIL	10,000-100,000	A				x	x								
28-Sep	Monocot	POACEAE	Dichanthelium commutatum	VARIABLE WITCHGRASS	1000-10,000	N					x					x	x		
28-Sep	Monocot	POACEAE	Dichanthelium ensifolium var. unciphyllum	CYPRESS WITCHGRASS	101-1000	N					x								

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28-Sep	Monocot	POACEAE	Dichanthelium laxiflorum	OPENFLOWER WITCHGRASS	101-1000	N					x		x				x		
28-Sep	Monocot	POACEAE	Dichanthelium portoricense	HEMLOCK WITCHGRASS	10,000-100,000	N					x		x						
28-Sep	Monocot	POACEAE	Dichanthelium strigosum var. glabrescens	ROUGHHAIR WITCHGRASS	1001-10,000	N							x						
29-Sep	Dicot	CONVOLVULACEAE	Dichondra carolinensis	CAROLINA PONYSFOOT	101-1000	N					x								
28-Sep	Monocot	POACEAE	Digitaria ciliaris	SOUTHERN CRABGRASS	1001-10,000	N					x	x							
28-Sep	Dicot	RUBIACEAE	Diodia virginiana	VIRGINIA BUTTONWEED	1001-10,000	N			x	x		x		x		x			
28-Sep	Dicot	EBENACEAE	Diospyros virginiana	COMMON PERSIMMON	1001-10,000	N				x	x		x				x		
22-Apr	Dicot	CARYOPHYLLACEAE	Drymaria cordata	WEST INDIAN CHICKWEED	101-1000	N				x									
21-Apr	Dicot	ACANTHACEAE	Dyschoriste angusta	PINELAND TWINFLOWER	101-1000	N							x						
29-Sep	Monocot	POACEAE	Echinochloa muricata	ROUGH BARNYARDGRASS	101-1000	N										x			
21-Apr	Monocot	POACEAE	Echinochloa walteri	COAST COCKSPUR	2-10	N						x							
28-Sep	Dicot	ASTERACEAE	Eclipta prostrata	FALSE DAISY	1001-10,000	N						x				x			
21-Apr	Monocot	PONTEDERIACEAE	Eichhornia crassipes	COMMON WATER-HYACINTH	101-1000	A		I	x										
30-Sep	Monocot	CYPERACEAE	Eleocharis baldwinii	BALDWIN'S SPIKERUSH; ROADGRASS	1001-10,000	N						x	x						
28-Sep	Monocot	CYPERACEAE	Eleocharis geniculata	CANADA SPIKERUSH	10,000-100,000	N					x		x						
30-Sep	Monocot	CYPERACEAE	Eleocharis interstincta	KNOTTED SPIKERUSH	101-1000	N						x							
28-Sep	Dicot	ASTERACEAE	Elephantopus elatus	TALL ELEPHANTSFOOT	1001-10,000	N							x					x	
28-Sep	Monocot	POACEAE	Eleusine indica	INDIAN GOOSEGRASS	101-1000	A				x									
28-Sep	Dicot	ASTERACEAE	Emilia fosbergii	FLORIDA TASSELFLOWER	11-100	A				x	x								
29-Sep	Monocot	ORCHIDACEAE	Encyclia tampensis	FLORIDA BUTTERFLY ORCHID	11-100	N	CE							x					
28-Sep	Monocot	POACEAE	Eragrostis atrovirens	THALIA LOVEGRASS	101-1000	A					x								
29-Sep	Monocot	POACEAE	Eragrostis ciliaris	GOPHERTAIL LOVEGRASS	101-1000	A				x			x						
28-Sep	Monocot	POACEAE	Eragrostis elliottii	ELLIOTT'S LOVEGRASS	1001-10,000	N				x	x								
28-Sep	Dicot	ASTERACEAE	Erechtites hieraciifolius	AMERICAN BURNWEED; FIREWEED	1001-10,000	N					x		x						
28-Sep	Dicot	ASTERACEAE	Erigeron quercifolius	OAKLEAF FLEABANE	1001-10,000	N			x	x									
21-Apr	Dicot	ASTERACEAE	Erigeron vernus	EARLY WHITETOP FLEABANE	101-1000	N							x						

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29-Sep	Monocot	ERIOCAULACEAE	Eriocaulon compressum	FLATTENED PIPEWORT	101-1000	N							x			x			
28-Sep	Dicot	APIACEAE	Eryngium baldwinii	BALDWIN'S ERYNGO	101-1000	N					x		x						
28-Sep	Dicot	APIACEAE	Eryngium yuccifolium	BUTTON RATTLESNAKEMASTER; BUTTON ERYNGO	11-100	N			x										
29-Sep	Dicot	FABACEAE	Erythrina herbacea	CORALBEAN; CHEROKEE BEAN	11-100	N					x,MH								
29-Sep	Dicot	MYRTACEAE	Eugenia uniflora	SURINAM CHERRY	1	A		I										x	
28-Sep	Monocot	ORCHIDACEAE	Eulophia alta	WILD COCO	101-1000	N					x								
29-Sep	Monocot	ORCHIDACEAE	Eulophia graminea		0	A										x			CR
28-Sep	Dicot	ASTERACEAE	Eupatorium capillifolium	DOGFENNEL	10,000-100,000	N				x	x		x			x			
28-Sep	Dicot	ASTERACEAE	Eupatorium leptophyllum	FALSEFENNEL	11-100	N			x			x							
28-Sep	Dicot	ASTERACEAE	Eupatorium mikanioides	SEMAPHORE THOROUGHWORT	2-10	N					x								
21-Apr	Dicot	ASTERACEAE	Eupatorium mohrii	MOHR'S THOROUGHWORT	11-100	N							x						
30-Sep	Dicot	ASTERACEAE	Eupatorium rotundifolium	ROUNDLEAF THOROUGHWORT; FALSE HOREHOUND	11-100	N							x						
28-Sep	Monocot	POACEAE	Eustachys glauca	SALTMARSH FINGERGRASS	11-100	N					x								
28-Sep	Monocot	POACEAE	Eustachys petraea	PINEWOODS FINGERGRASS	1001-10,000	N			x	x	x								
28-Sep	Dicot	ASTERACEAE	Euthamia caroliniana	SLENDER FLATTOP GOLDENROD	101-1000	N					x		x						
28-Sep	Dicot	MORACEAE	Ficus aurea	STRANGLER FIG; GOLDEN FIG	101-1000	N			x	x	x					x			
30-Sep	Dicot	MORACEAE	Ficus microcarpa	INDIAN LAUREL	1	A		I		x									
28-Sep	Monocot	CYPERACEAE	Fimbristylis caroliniana	CAROLINA FIMBRY	101-1000	N					x								
30-Sep	Monocot	CYPERACEAE	Fimbristylis cymosa	HURRICANEGRASS	11-100	N				x									
28-Sep	Monocot	CYPERACEAE	Fimbristylis dichotoma	FORKED FIMBRY	11-100	N					x								
28-Sep	Monocot	CYPERACEAE	Fimbristylis spadicea	MARSH FIMBRY	101-1000	N					x		x						
29-Sep	Dicot	OLEACEAE	Fraxinus caroliniana	CAROLINA ASH; WATER ASH; POP ASH	101-1000	N						x		x		x			
30-Sep	Monocot	CYPERACEAE	Fuirena scirpoidea	SOUTHERN UMBRELLASEDGE	1001-10,000	N						x	x						
30-Sep	Dicot	FABACEAE	Galactia elliottii	ELLIOTT'S MILKPEA	101-1000	N							x						
30-Sep	Dicot	FABACEAE	Galactia regularis	EASTERN MILKPEA	101-1000	N							x						
28-Sep	Dicot	FABACEAE	Galactia volubilis	DOWNY MILKPEA	101-1000	N				x	x		x						
22-Apr	Dicot	RUBIACEAE	Galium tinctorium	STIFFMARSH BEDSTRAW	11-100	N			x							x			

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21-Apr	Dicot	ASTERACEAE	Gamochaeta falcata	NARROWLEAF PURPLE EVERLASTING	1001-10,000	N				x			x						
28-Sep	Dicot	ONAGRACEAE	Gaura angustifolia	SOUTHERN BEEBLOSSOM	101-1000	N				x									
21-Apr	Dicot	ERICACEAE	Gaylussacia dumosa	DWARF HUCKLEBERRY	2-10	N							x						
21-Apr	Dicot	GERANIACEAE	Geranium carolinianum	CAROLINA CRANESBILL	101-1000	N				x									CR
21-Apr	Dicot	VERONICACEAE	Gratiola ramosa	BRANCHED HEDGEHYSSOP	2-10	N						x							
28-Sep	Monocot	ORCHIDACEAE	Habenaria floribunda	TOOTHPETAL FALSE REINORCHID; MIGNONETTE ORCHID	101-1000	N					x		x					x	
21-Apr	Dicot	RUBIACEAE	Hamelia patens	FIREBUSH	2-10	N					x								
29-Sep	Monocot	ORCHIDACEAE	Harrisella porrecta	NEEDLEROOT AIRPLANT ORCHID; THREADROOT ORCHID	101-1000	N	T									x			
28-Sep	Monocot	ZINGIBERACEAE	Hedychium coronarium	BUTTERFLY GINGER	1	CA													CR
22-Apr	Dicot	ASTERACEAE	Helenium amarum	SPANISH DAISY, BITTERWEED	2-10	N				x									
21-Apr	Dicot	CISTACEAE	Helianthemum corymbosum	PINEBARREN FROSTWEED	11-100	N							x						
28-Sep	Dicot	ASTERACEAE	Helianthus agrestis	SOUTHEASTERN SUNFLOWER	1001-10,000	N			x	x	x	x				x			
28-Sep	Monocot	POACEAE	Hemarthria altissima	LIMPOGRASS	1,000,000-10,000,000	A		II	x	x									
22-Apr	Dicot	MALVACEAE	Hibiscus grandiflorus	SWAMP ROSEMALLOW	2-10	N			x										
30-Sep	Dicot	ASTERACEAE	Hieracium megacephalon	COASTALPLAIN HAWKWEED	101-1000	N							x						
30-Sep	Dicot	RUBIACEAE	Houstonia procumbens	INNOCENCE; ROUNDLEAF BLUET	11-100	N					x,MH		x						
21-Apr	Monocot	HYDROCHARITACEAE	Hydrilla verticillata	WATERTHYME, HYDRILLA	11-100	A		I				x							
28-Sep	Dicot	ARALIACEAE	Hydrocotyle umbellata	MANYFLOWER MARSHPENNYWORT	1,000,000-10,000,000	N				x	x								
28-Sep	Dicot	ARALIACEAE	Hydrocotyle verticillata	WHORLED MARSHPENNYWORT	1001-10,000	N			x		x	x				x			
28-Sep	Dicot	HYDROLEACEAE	Hydrolea corymbosa	SKYFLOWER	11-101	N					x								
28-Sep	Monocot	POACEAE	Hymenachne amplexicaulis	TROMPETILLA	1,000,000-10,000,000	A		I	x			x							
21-Apr	Dicot	CLUSIACEAE	Hypericum brachyphyllum	COASTALPLAIN ST. JOHN'S-WORT	11-100	N			x				x						
28-Sep	Dicot	CLUSIACEAE	Hypericum cistifolium	ROUNDPOD ST.JOHN'S-WORT	101-1000	N							x						
30-Sep	Dicot	CLUSIACEAE	Hypericum crux-andreae	ST.PETER'S-WORT	11-100	N							x						

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28-Sep	Dicot	CLUSIACEAE	Hypericum hypericoides	ST.ANDREW'S-CROSS	1001-10,000	N					x		x						
21-Apr	Dicot	CLUSIACEAE	Hypericum mutilum	DWARF ST. JOHN'S-WORT	11-100	N						x							
21-Apr	Dicot	CLUSIACEAE	Hypericum reductum	ATLANTIC ST. JOHN'S-WORT	2-10	N							x						
28-Sep	Dicot	CLUSIACEAE	Hypericum tetrapetalum	FOURPETAL ST.JOHN'S-WORT	1001-10,000	N							x						
22-Apr	Monocot	HYPOXIDACEAE	Hypoxis wrightii	BRISTLESEED YELLOW STARGRASS	1	N							x						
28-Sep	Dicot	LAMIACEAE	Hyptis alata	CLUSTERED BUSHMINT; MUSKY MINT	1001-10,000	N			x		x								
28-Sep	Dicot	LAMIACEAE	Hyptis verticillata	JOHN CHARLES	1001-10,000	A				x	x								
28-Sep	Dicot	AQUIFOLIACEAE	Ilex cassine	DAHOON	101-1000	N					x	x	x			x			
28-Sep	Dicot	AQUIFOLIACEAE	Ilex glabra	INKBERRY; GALLBERRY	101-1000	N							x						
28-Sep	Monocot	POACEAE	Imperata brasiliensis	BRAZILIAN SATINTAIL	101-1000	N				x	x								
28-Sep	Monocot	POACEAE	Imperata cylindrica	COGONGRASS	101-1000	A		I			x		x						
28-Sep	Dicot	FABACEAE	Indigofera hirsuta	HAIRY INDIGO	101-1000	A				x									
28-Sep	Dicot	CONVOLVULACEAE	Ipomoea cordatotriloba	TIEVINE	101-1000	N				x	x								
28-Sep	Dicot	CONVOLVULACEAE	Ipomoea indica	OCEANBLUE MORNING-GLORY	11-100	N					x					x			
28-Sep	Dicot	CONVOLVULACEAE	Ipomoea sagittata	SALTMARSH MORNING-GLORY	11-100	N			x		x								
28-Sep	Dicot	AMARANTHACEAE	Iresine diffusa	JUBA'S BUSH	1001-10,000	N					x					x			
21-Apr	Monocot	JUNCACEAE	Juncus marginatus	SHORE RUSH, GRASSLEAF RUSH	101-1000	N							x						
21-Apr	Monocot	JUNCACEAE	Juncus megacephalus	BIGHEAD RUSH	11-100	N			x				x						
30-Sep	Monocot	JUNCACEAE	Juncus scirpoides	NEEDLEPOD RUSH	11-100	N			x				x						
21-Apr	Dicot	ACANTHACEAE	Justicia angusta	PINELAND WATERWILLOW	11-100	N							x						
21-Apr	Dicot	BIGNONIACEAE	Kigelia pinnata	SAUSAGE TREE	2-10	A					x								CR
28-Sep	Dicot	MALVACEAE	Kosteletzkya pentacarpos	VIRGINIA SALTMARSH MALLOW	101-1000	N					x	x							
28-Sep	Monocot	HAEMODORACEAE	Lachnanthes caroliana	CAROLINA REDROOT	101-1000	N							x						
29-Sep	Monocot	ERIOCAULACEAE	Lachnocaulon anceps	WHITEHEAD BOGBUTTON	101-1000	N							x						
21-Apr	Dicot	VERBENACEAE	Lantana camara	LANTANA, SHRUBVERBENA	11-100	A		I		x			x						
21-Apr	Dicot	CISTACEAE	Lechea torreyi	PIEDMONT PINWEED	2-10	N				x			x						
28-Sep	Monocot	ARACEAE	Lemna obscura	LITTLE DUCKWEED	1,000,000-10,000,000	N			x			x		x		x			
21-Apr	Dicot	BRASSICACEAE	Lepidium virginicum	VIRGINIA PEPPERWEED	2-10	N				x									
30-Sep	Dicot	FABACEAE	Leucaena leucocephala	WHITE LEADTREE	2-10	A		II			x								

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8-Oct	Monocot	LILIACEAE	Lilium catesbaei	CATESBY'S LILY; PINE LILY	1	N	T						x						
21-Apr	Dicot	VERONICACEAE	Linaria canadensis	CANADA TOADFLAX	101-1000	N			x										
28-Sep	Dicot	PLANTAGINACEAE	Lindernia dubia var. anagallidea	YELLOWSEED FALSE PIMPERNEL	1001-10,000	N					x		x						
28-Sep	Dicot	PLANTAGINACEAE	Lindernia grandiflora	SAVANNAH FALSE PIMPERNEL	11-100	N					x								
28-Sep	Dicot	ONAGRACEAE	Ludwigia curtissii	CURTISS' PRIMROSEWILLOW	1001-10,000	N					x								
28-Sep	Dicot	ONAGRACEAE	Ludwigia maritima	SEASIDE PRIMROSEWILLOW	1001-10,000	N					x		x						
21-Apr	Dicot	ONAGRACEAE	Ludwigia microcarpa	SMALLFRUIT PRIMROSEWILLOW	101-1000	N					x								
28-Sep	Dicot	ONAGRACEAE	Ludwigia octovalvis	MEXICAN PRIMROSEWILLOW	1001-10,000	N			x	x	x		x						
28-Sep	Dicot	ONAGRACEAE	Ludwigia peruviana	PERUVIAN PRIMROSEWILLOW	1001-10,000	A		I	x			x	x						
28-Sep	Dicot	ONAGRACEAE	Ludwigia repens	CREEPING PRIMROSEWILLOW	1001-10,000	N					x								
30-Sep	Dicot	ASTERACEAE	Lygodesmia aphylla	ROSE-RUSH	11-100	N							x						
28-Sep	Pteridophyte	SCHIZAEACEAE	Lygodium microphyllum	SMALL-LEAF CLIMBING FERN	11-100	A		I			x		x						
28-Sep	Dicot	ERICACEAE	Lyonia fruticosa	COASTALPLAIN STAGGERBUSH	11-100	N							x						
21-Apr	Dicot	LYTHRACEAE	Lythrum alatum var. lanceolatum	LANCELEAF WINGED LOOSESTIFE	101-1000	N			x										
28-Sep	Dicot	FABACEAE	Macroptilium lathyroides	WILD BUSHBEAN	101-1000	A				x			x						
21-Apr	Dicot	ANACARDIACEAE	Mangifera indica	MANGO	2-10	A					x								
22-Apr	Dicot	FABACEAE	Medicago lupulina	BLACK MEDIC	101-1000	A				x									CR
30-Sep	Dicot	MYRTACEAE	Melaleuca quinquenervia	PUNKTREE	11-100	A		I	x				x						
28-Sep	Dicot	ASTERACEAE	Melanthera nivea	SNOW SQUARESTEM	101-1000	N					x								
28-Sep	Monocot	POACEAE	Melinis repens	ROSE NATALGRASS	11-100	A		I			x								
28-Sep	Dicot	MALVACEAE	Melochia corchorifolia	CHOCOLATEWEED	101-1000	N					x		x						
28-Sep	Dicot	CUCURBITACEAE	Melothria pendula	CREEPING CUCUMBER	101-1000	N					x					x			
30-Sep	Dicot	ASTERACEAE	Mikania cordifolia	FLORIDA KEYS HEMPVINE	11-100	N							x						
28-Sep	Dicot	ASTERACEAE	Mikania scandens	CLIMBING HEMPVINE	101-1000	N			x	x						x			
28-Sep	Dicot	CUCURBITACEAE	Momordica charantia	BALSAMPEAR	101-1000	A			x				x						
28-Sep	Dicot	MORACEAE	Morus rubra	RED MULBERRY	11-100	N					x								
28-Sep	Monocot	COMMELINACEAE	Murdannia nudiflora	NAKEDSTEM DEWFLOWER	1001-10,000	A				x	x		x						
28-Sep	Monocot	COMMELINACEAE	Murdannia spirata var. parviflora	ASIATIC DEWFLOWER	10,001-100,000	A				x	x		x						

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
30-Sep	Dicot	MYRTACEAE	Myrcianthes fragrans	TWINBERRY; SIMPSON'S STOPPER	2-10	N	T				x								
28-Sep	Dicot	MYRICACEAE	Myrica cerifera	SOUTHERN BAYBERRY; WAX MYRTLE	1001-10,000	N			x	x	x		x	x		x	x		
21-Apr	Monocot	HYDROCHARITACEAE	Najas guadalupensis	SOUTHERN WATERNYMPH	1001-10,000	N						x							
28-Sep	Pteridophyte	NEPHROLEPIDACEAE	Nephrolepis exaltata	SWORD FERN; WILD BOSTON FERN	101-1000	N					x					x			
28-Sep	Pteridophyte	NEPHROLEPIDACEAE	Nephrolepis multiflora	ASIAN SWORD FERN	101-1000	A		I			x		x	x					
28-Sep	Dicot	NYMPHAEACEAE	Nymphaea elegans	TROPICAL ROYALBLUE WATERLILY	101-1000	N			x			x		x		x			
28-Sep	Monocot	ORCHIDACEAE	Oeceoclades maculata	MONK ORCHID	1001-10,000	N					x					x		x	
28-Sep	Dicot	RUBIACEAE	Oldenlandia corymbosa	FLATTOP MILLE GRAINES	1001-10,000	A					x								
28-Sep	Dicot	RUBIACEAE	Oldenlandia uniflora	CLUSTERED MILLE GRAINES	1001-10,000	N					x		x				x		
28-Sep	Monocot	POACEAE	Oplismenus hirtellus	WOODSGRASS; BASKETGRASS	1001-10,000	N					x								
28-Sep	Pteridophyte	OSMUNDACEAE	Osmunda cinnamomea	CINNAMON FERN	11-100	N	CE						x						
29-Sep	Pteridophyte	OSMUNDACEAE	Osmunda regalis var. spectabilis	ROYAL FERN	11-100	N	CE									x	x		
28-Sep	Dicot	OXALIDACEAE	Oxalis corniculata	COMMON YELLOW WOODSORREL; CREEPING WOODSORREL	1001-10,000	N					x								
28-Sep	Dicot	APIACEAE	Oxypolis filiformis	WATER COWBANE	101-1000	N						x							
21-Apr	Dicot	ASTERACEAE	Packera glabella	BUTTERWEED	101-1000	N			x										
30-Sep	Monocot	POACEAE	Panicum hemitomon	MAIDENCANE	1001-10,000	N					x	x					x		
28-Sep	Monocot	POACEAE	Panicum hians	GAPING PANICUM	1001-10,000	N					x								
30-Sep	Monocot	POACEAE	Panicum maximum	GUINEAGRASS	11-100	A		II		x									
28-Sep	Monocot	POACEAE	Panicum repens	TORPEDO GRASS	1,000,000-10,000,000	A		I	x	x	x	x	x						
28-Sep	Monocot	POACEAE	Panicum rigidulum	REDTOP PANICUM	10,000-100,000	N					x		x			x	x		
30-Sep	Monocot	POACEAE	Panicum virgatum	SWITCHGRASS	101-1000	N							x						
29-Sep	Dicot	URTICACEAE	Parietaria floridana	FLORIDA PELLITORY	101-1000	N										x			

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28-Sep	Dicot	VITACEAE	Parthenocissus quinquefolia	VIRGINIA CREEPER; WOODBINE	1001-10,000	N					x		x			x			
28-Sep	Monocot	POACEAE	Paspalum conjugatum	SOUR PASPALUM; HILOGRASS	1001-10,000	N					x		x						
28-Sep	Monocot	POACEAE	Paspalum floridanum	FLORIDA PASPALUM	101-1000	N							x						
28-Sep	Monocot	POACEAE	Paspalum notatum	BAHIAGRASS	1,000,000-10,000,000	A				x			x						
28-Sep	Monocot	POACEAE	Paspalum repens	WATER PASPALUM	11-100	N								x		x			
28-Sep	Monocot	POACEAE	Paspalum setaceum	THIN PASPALUM	1001-10,000	N				x	x		x						
28-Sep	Monocot	POACEAE	Paspalum urvillei	VASEYGRASS	11-100	A				x									
28-Sep	Dicot	PASSIFLORACEAE	Passiflora suberosa	CORKYSTEM PASSIONFLOWER	1001-10,000	N					x								
28-Sep	Dicot	ASTERACEAE	Pectis glaucescens	SANDDUNE CINCHWEED	101-1000	N				x									
29-Sep	Dicot	ASTERACEAE	Pectis prostrata	SPREADING CINCHWEED	101-1000	N				x									
30-Sep	Monocot	POACEAE	Pennisetum polystachion	WEST INDIAN PENNISETUM; MISSIONGRASS	101-1000	A				x									
28-Sep	Dicot	LAURACEAE	Persea palustris	SWAMP BAY	101-1000	N					x		x	x		x	x		
28-Sep	Pteridophyte	POLYPODIACEAE	Phlebodium aureum	GOLDEN POLYPODY	1001-10,000	N				x	x		x			x	x	x	
28-Sep	Monocot	ARECACEAE	Phoenix roebellini	PYGMY DATE PALM	1	CA				x									CR
21-Apr	Dicot	VISCACEAE	Phoradendron leucarpum	OAK MISTLETOE	11-100	N								x					
28-Sep	Dicot	VERBENACEAE	Phyla nodiflora	TURKEY TANGLE FOGFRUIT; CAPEWEED	1001-10,000	N			x	x	x	x				x			
28-Sep	Dicot	PHYLLANTHACEAE	Phyllanthus caroliniensis subsp. saxicola	ROCK CAROLINA LEAFFLOWER	101-10,000	N					x								
29-Sep	Dicot	SOLANACEAE	Physalis pubescens	HUSK TOMATO	11-100	N										x			
28-Sep	Dicot	SOLANACEAE	Physalis walteri	WALTER'S GROUNDCHERRY	1001-10,000	N					x								
28-Sep	Dicot	PHYTOLACCACEAE	Phytolacca americana	AMERICAN POKEWEED	101-1000	N				x			x						
21-Apr	Dicot	LAMIACEAE	Piloblephis rigida	WILD PENNYROYAL	11-100	N							x						
28-Sep	Gymnosperm	PINACEAE	Pinus elliottii	SLASH PINE	1001-10,000	N				x	x		x					x	
28-Sep	Monocot	ARACEAE	Pistia stratiotes	WATER-LETTUCE	1001-10,000	A		I	x										
22-Apr	Dicot	ASTERACEAE	Pityopsis graminifolia	NARROLEAF SILKGRASS	11-100	N							x						
28-Sep	Pteridophyte	POLYPODIACEAE	Pleopeltis polypodioides var. michauxiana	RESURRECTION FERN	1001-10,000	N					x		x	x	x			x	

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28-Sep	Dicot	ASTERACEAE	Pluchea baccharis	ROSY CAMPHORWEED	101-1000	N					x								
21-Apr	Dicot	ASTERACEAE	Pluchea carolinensis	CURE-FOR-ALL	2-10	N					x								
29-Sep	Dicot	ASTERACEAE	Pluchea foetida	STINKING CAMPHORWEED	101-1000	N							x						
29-Sep	Dicot	ASTERACEAE	Pluchea odorata	SWEETSCENT	101-1000	N										x			
30-Sep	Dicot	POLYGALACEAE	Polygala lutea	ORANGE MILKWORT	11-100	N							x						
21-Apr	Dicot	POLYGALACEAE	Polygala nana	CANDYROOT	2-10	N							x						
21-Apr	Dicot	POLYGALACEAE	Polygala rugelii	YELLOW MILKWORT	101-1000	N							x						
28-Sep	Dicot	POLYGALACEAE	Polygala violacea	SHOWY MILKWORT	10,000-100,000	N				x	x		x						
29-Sep	Dicot	POLYGONACEAE	Polygonum glabrum	DENSEFLOWER KNOTWEED	101-1000	N			x							x			
28-Sep	Dicot	POLYGONACEAE	Polygonum punctatum	DOTTED SMARTWEED	100,000-1,000,000	N						x							
28-Sep	Dicot	TETRACHONDRACEAE	Polypremum procumbens	RUSTWEED; JUNIPERLEAF	10,000-100,000	N				x	x								
28-Sep	Monocot	PONTEDERIACEAE	Pontederia cordata	PICKERELWEED	1001-10,000	N			x			x		x		x			
28-Sep	Dicot	URTICACEAE	Pouzolzia zeylanica	POUZOLZ'S BUSH	101-1000	A				x								x	
22-Apr	Dicot	HALORAGACEAE	Proserpinaca palustris	MARSH MERMAIDWEED	101-1000	N										x			
21-Apr	Dicot	HALORAGACEAE	Proserpinaca pectinata	COMBLEAF MERMAIDWEED	101-1000	N			x										
30-Sep	Dicot	ASTERACEAE	Pseudelephantopus spicatus	DOG'S-TONGUE	11-100	A				x									
21-Apr	Dicot	ASTERACEAE	Pseudogynox chenopodioides	MEXICAN FLAMEVINE	11-100	A				x	x								CR
28-Sep	Dicot	MYRTACEAE	Psidium cattleianum	STRAWBERRY GUAVA	11-100	A		I					x					x	CR
28-Sep	Dicot	MYRTACEAE	Psidium guajava	GUAVA	101-1000	A		I		x	x							x	
21-Apr	Pteridophyte	PSILOTACEAE	Psilotum nudum	WHISK FERN	2-10	N					x								
28-Sep	Dicot	RUBIACEAE	Psychotria nervosa	WILD COFFEE	1001-10,000	N					x			x					
28-Sep	Dicot	RUBIACEAE	Psychotria sulzneri	SHORTLEAF WILD COFFEE	11-100	N					x								
29-Sep	Pteridophyte	DENNSTAEDTIACEAE	Pteridium aquilinum var. pseudocaudatum	TAILED BRACKEN	1001-10,000	N				x	x		x					x	
29-Sep	Pteridophyte	PTERIDACEAE	Pteris vittata	CHINESE LADDER BRAKE	101-1000	A		II		x									
28-Sep	Dicot	ASTERACEAE	Pterocaulon pycnostachyum	BLACKROOT	101-1000	N							x						
21-Apr	Dicot	APIACEAE	Ptilimnium capillaceum	MOCK BISHOPSWEED, HERBWILLIAM	101-1000	N			x										
28-Sep	Dicot	FAGACEAE	Quercus laurifolia	LAUREL OAK; DIAMOND OAK	1001-10,000	N			x	x	x		x				x	x	

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28-Sep	Dicot	FAGACEAE	Quercus minima	DWARF LIVE OAK	1001-10,000	N							x						
21-Apr	Dicot	FAGACEAE	Quercus myrtifolia	MYRTLE OAK	11-100	N							x						
30-Sep	Dicot	FAGACEAE	Quercus pumila	RUNNING OAK	101-1000	N							x						
28-Sep	Dicot	FAGACEAE	Quercus virginiana	LIVE OAK	1001-10,000	N				x	x		x					x	
28-Sep	Dicot	MYRSINACEAE	Rapanea punctata	MYRSINE; COLICWOOD	1001-10,000	N				x	x		x	x			x	x	
30-Sep	Dicot	MELASTOMATACEAE	Rhexia mariana	PALE MEADOWBEAUTY; MARYLAND MEADOWBEAUTY	11-100	N				x			x						
28-Sep	Dicot	ANACARDIACEAE	Rhus copallinum	WINGED SUMAC	1001-10,000	N							x						
28-Sep	Dicot	FABACEAE	Rhynchosia minima	LEAST SNOUTBEAN	11-100	N				x									
28-Sep	Monocot	CYPERACEAE	Rhynchospora colorata	STARRUSH WHITETOP	1001-10,000	N					x								
28-Sep	Monocot	CYPERACEAE	Rhynchospora corniculata	SHORTBRISTLE HORNED BEAKSEDGE	11-100	N								x					
28-Sep	Monocot	CYPERACEAE	Rhynchospora divergens	SPREADING BEAKSEDGE	1001-10,000	N					x								
28-Sep	Monocot	CYPERACEAE	Rhynchospora fascicularis	FASCICLED BEAKSEDGE	1001-10,000	N					x		x						
28-Sep	Monocot	CYPERACEAE	Rhynchospora inundata	NARROWFRUIT HORNED BEAKSEDGE	101-1000	N					x								
30-Sep	Monocot	CYPERACEAE	Rhynchospora microcarpa	SOUTHERN BEAKSEDGE	101-1000	N							x						
30-Sep	Monocot	CYPERACEAE	Rhynchospora odorata	FRAGRANT BEAKSEDGE	11-100	N				x									
29-Sep	Dicot	RUBIACEAE	Richardia grandiflora	LARGEFLOWER MEXICAN CLOVER	11-100	A				x									
28-Sep	Dicot	ROSACEAE	Rubus trivialis	SOUTHERN DEWBERRY	1001-10,000	N					x		x					x	
30-Sep	Dicot	ASTERACEAE	Rudbeckia hirta	BLACKEYED SUSAN	101-1000	N				x			x						
28-Sep	Dicot	ACANTHACEAE	Ruellia caroliniensis	CAROLINA WILD PETUNIA	11-100	N					x								
22-Apr	Dicot	POLYGONACEAE	Rumex verticillatus	SWAMP DOCK	101-1000	N			x						x				
28-Sep	Dicot	ARECACEAE	Sabal palmetto	CABBAGE PALM	10,001-100,000	N			x	x	x		x	x		x	x	x	
28-Sep	Monocot	POACEAE	Saccharum giganteum	SUGARCANE PLUMEGRASS	101-1000	N					x								
28-Sep	Monocot	POACEAE	Sacciolepis indica	INDIAN CUPSCALE	10,001-100,000	A						x	x						

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28-Sep	Monocot	POACEAE	Sacciolepis striata	AMERICAN CUPSCALE	1001-10,000	N					x	x							
21-Apr	Monocot	ALISMATACEAE	Sagittaria isoetiformis	QUILLWORT ARROWHEAD	11-101	N			x										
28-Sep	Dicot	ALISMATACEAE	Sagittaria lancifolia	BULLTONGUE ARROWHEAD	1001-10,000	N						x				x			
28-Sep	Dicot	SALICACEAE	Salix caroliniana	CAROLINA WILLOW; COASTALPLAIN WILLOW	1001-10,000	N			x			x		x		x			
30-Sep	Pteridophyte	SALVINIACEAE	Salvinia minima	WATER SPANGLES	101-1001	A						x							
28-Sep	Dicot	APOCYNACEAE	Sarcostemma clausum	WHITE TWINEVINE	10,0001-100,000	N			x		x	x		x		x			
28-Sep	Dicot	ANACARDIACEAE	Schinus terebinthifolia	BRAZILIAN PEPPER	10,001-100,000	A		I	x	x	x			x		x	x		
22-Apr	Monocot	CYPERACEAE	Scirpus tabernmontani	SOFTSTEM BULRUSH	101-1000	N										x			
30-Sep	Monocot	CYPERACEAE	Scleria ciliata	FRINGED NUTRUSH	11-100	N				x									
21-Apr	Monocot	CYPERACEAE	Scleria triglomerata	TALL NUTGRASS, WHIP NUTRUSH	11-100	N					x		x						
30-Sep	Monocot	CYPERACEAE	Scleria verticillata	LOW NUTRUSH	101-1000	N				x									
28-Sep	Dicot	PLANTAGINACEAE	Scoparia dulcis	SWEETBROOM; LICORICEWEED	101-1000	N					x								
28-Sep	Dicot	FABACEAE	Senna alata	CANDLESTICK PLANT	2-10	A					x								
28-Sep	Dicot	FABACEAE	Senna ligustrina	PRIVET WILD SENSITIVE PLANT	101-1000	N					x								
28-Sep	Dicot	FABACEAE	Senna obtusifolia	COFFEEWEED; SICKLEPOD	1001-10,000	A				x									
28-Sep	Dicot	FABACEAE	Senna pendula var. glabrata	VALAMUERTO	101-1000	A		I	x		x								
28-Sep	Dicot	ARECACEAE	Serenoa repens	SAW PALMETTO	1001-10,000	N				x	x		x					x	
30-Sep	Dicot	ASTERACEAE	Sericocarpus tortifolius	WHITETOP ASTER; DIXIE ASTER	11-100	N							x						
29-Sep	Dicot	FABACEAE	Sesbania herbacea	DANGLEPOD	101-1000	N				x	x								
29-Sep	Monocot	POACEAE	Setaria magna	GIANT BRISTLEGRASS	11-100	N										x			
28-Sep	Monocot	POACEAE	Setaria parviflora	YELLOW BRISTLEGRASS; KNOTROOT FOXTAIL	1001-10,000	N				x	x	x							
28-Sep	Dicot	MALVACEAE	Sida rhombifolia	CUBAN JUTE; INDIAN HEMP	1001-10,000	N				x									
28-Sep	Dicot	MALVACEAE	Sida ulmifolia	COMMON WIREWEED; COMMON FANPETALS	1001-10,000	N					x								
28-Sep	Dicot	SAPOTACEAE	Sideroxylon reclinatum	FLORIDA BULLY	101-1000	N					x					x			
21-Apr	Monocot	IRIDACEAE	Sisyrinchium angustifolium	NARROWLEAF BLUE-EYED GRASS	1001-10,000	N			x										

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28-Sep	Monocot	SMILACACEAE	Smilax auriculata	EARLEAF GREENBRIER	1001-10,000	N					x		x						
28-Sep	Monocot	SMILACACEAE	Smilax bona-nox	SAW GREENBRIER	1001-10,000	N				x	x								
29-Sep	Monocot	SMILACACEAE	Smilax laurifolia	LAUREL GREENBRIER; BAMBOO VINE	101-1000	N								x	x	x			
28-Sep	Monocot	SMILACACEAE	Smilax tamnoides	BRISTLY GREENBRIER; HOGBRIER	1001-10,000	N					x		x			x	x	x	
28-Sep	Dicot	SOLANACEAE	Solanum americanum	AMERICAN BLACK NIGHTSHADE	101-1000	N						x				x			
30-Sep	Dicot	SOLANACEAE	Solanum diphyllum	TWOLEAF NIGHTSHADE	11-100	A		II		x	x								CR
28-Sep	Dicot	SOLANACEAE	Solanum viarum	TROPICAL SODA APPLE	1001-10,000	A		I		x		x	x	x					
28-Sep	Dicot	ASTERACEAE	Solidago fistulosa	PINEBARREN GOLDENROD	1001-10,000	N							x						
28-Sep	Dicot	ASTERACEAE	Solidago leavenworthii	LEAVENWORTH'S GOLDENROD	1001-10,000	N					x								
29-Sep	Dicot	ASTERACEAE	Solidago sempervirens	SEASIDE GOLDENROD	101-1000	N					x								
28-Sep	Dicot	ASTERACEAE	Solidago tortifolia	TWISTEDLEAF GOLDENROD	1001-10,000	N					x		x						
30-Sep	Monocot	POACEAE	Sorghastrum secundum	LOPSIDED INDIANGRASS	11-100	N							x						
28-Sep	Dicot	RUBIACEAE	Spermacoce remota	WOODLAND FALSE BUTTONWEED	1001-10,000	N				x	x							x	
28-Sep	Dicot	RUBIACEAE	Spermacoce verticillata	SHRUBBY FALSE BUTTONWEED	1001-10,000	A				x	x								
30-Sep	Dicot	ASTERACEAE	Sphagneticola trilobata	CREEPING OXEYE	1001-10,000	A		II		x									
21-Apr	Monocot	ORCHIDACEAE	Spiranthes vernalis	SPRING LADIESTRESSES	101-1000	N							x						
28-Sep	Monocot	POACEAE	Sporobolus indicus var. pyramidalis	WEST INDIAN DROPSEED	10,000-100,000	A				x	x		x						
28-Sep	Monocot	POACEAE	Stenotaphrum secundatum	ST. AUGUSTINE GRASS	1001-10,000	N				x	x								
29-Sep	Dicot	ASTERACEAE	Symphyotrichum carolinianum	CLIMBING ASTER	101-1000	N					x			x		x			
28-Sep	Dicot	ASTERACEAE	Symphyotrichum elliottii	ELLIOTT'S ASTER	101-1000	N				x	x								
30-Sep	Dicot	ASTERACEAE	Symphyotrichum simmondsii	SIMMONDS' ASTER	101-1000	N							x						

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28-Sep	Dicot	ASTERACEAE	Symphyotrichum subulatum	ANNUAL SALTMARSH ASTER	101-1000	N				x									
21-Apr	Monocot	ERIOCAULACEAE	Syngonanthus flavidulus	YELLOW HATPINS	11-100	N							x						
30-Sep	Dicot	MYRTACEAE	Syzygium cumini	JAVA PLUM	11-100	A		I			x, MH								
28-Sep	Gymnosperm	CUPRESSACEAE	Taxodium ascendens	POND-CYPRESS	1001-10,000	N										x			
29-Sep	Dicot	LAMIACEAE	Teucrium canadense	WOOD SAGE; CANADIAN GERMANDER	101-1000	N					x								
28-Sep	Monocot	MARANTACEAE	Thalia geniculata	ALLIGATORFLAG; FIREFLAG	1001-10,000	N			x			x				x			
29-Sep	Pteridophyte	THELYPTERIDACEAE	Thelypteris dentata	DOWNY MAIDEN FERN; DOWNY SHIELD FERN	101-1000	A				x						x		x	
29-Sep	Pteridophyte	THELYPTERIDACEAE	Thelypteris interrupta	HOTTENTOT FERN; WILLDENOW'S FERN	101-1000	N					x					x			
29-Sep	Pteridophyte	THELYPTERIDACEAE	Thelypteris kunthii	WIDESPREAD MAIDEN FERN; SOUTHERN SHIELD FERN	11-100	N				x								x	
28-Sep	Pteridophyte	THELYPTERIDACEAE	Thelypteris palustris var. pubescens	MARSH FERN	1001-10,000	N					x			x		x			
29-Sep	Dicot	ACANTHACEAE	Thunbergia grandiflora	SKYVINE	11-100	A, CA				x	x								CR
28-Sep	Monocot	BROMELIACEAE	Tillandsia balbisiana	NORTHERN NEEDLELEAF	101-1000	N	T				x		x	x		x			
28-Sep	Monocot	BROMELIACEAE	Tillandsia fasciculata var. densispica	CARDINAL AIRPLANT; COMMON WILD PINE; STIFF-LEAVED WILD PINE	1001-10,000	N	E				x		x	x		x		x	
29-Sep	Monocot	BROMELIACEAE	Tillandsia flexuosa	TWISTED AIRPLANT; BANDED AIRPLANT	1	N	T				x								
28-Sep	Monocot	BROMELIACEAE	Tillandsia recurvata	BALLMOSS	101-1000	N					x		x	x			x	x	
28-Sep	Monocot	BROMELIACEAE	Tillandsia setacea	SOUTHERN NEEDLELEAF	101-1000	N			x		x		x	x		x		x	
28-Sep	Monocot	BROMELIACEAE	Tillandsia usneoides	SPANISH MOSS	1001-10,000	N			x		x		x	x		x	x	x	
28-Sep	Monocot	BROMELIACEAE	Tillandsia utriculata	GIANT AIRPLANT; GIANT WILD PINE	101-1000	N	E				x		x			x			
29-Sep	Monocot	BROMELIACEAE	Tillandsia variabilis	LEATHERLEAF AIRPLANT; SOFT-LEAVED WILD PINE	11-100	N	T								x				
29-Sep	Monocot	BROMELIACEAE	Tillandsia x smalliana	REDDISH WILD-PINE	11-100	N								x					
28-Sep	Dicot	ANACARDIACEAE	Toxicodendron radicans	EASTERN POISON IVY	1001-10,000	N				x	x		x			x	x		

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
30-Sep	Monocot	COMMELINACEAE	Tradescantia zebrina	WANDERING-JEW; INCHPLANT	101-1000	A				x									
30-Sep	Dicot	CELTIDACEAE	Trema micrantha	NETTLETREE	2-10	N					x								
21-Apr	Dicot	FABACEAE	Trifolium repens	WHITE CLOVER	11-100	A				x									CR
28-Sep	Monocot	POACEAE	Tripsacum dactyloides	EASTERN GAMAGRASS; FAKAHATCHEEGRASS	11-100	N			x		x								
29-Sep	Dicot	MALVACEAE	Triumfetta semitriloba	SACRAMENTO BURRBARK	2-10	A												x	
28-Sep	Monocot	TYPHACEAE	Typha domingensis	SOUTHERN CATTAIL	1001-10,000	N						x				x			
28-Sep	Dicot	MALVACEAE	Urena lobata	CAESARWEED	10,000-100,000	A		II		x	x	x	x					x	
30-Sep	Monocot	POACEAE	Urochloa distachya	TROPICAL SIGNALGRASS	101-1000	A				x									
29-Sep	Dicot	LENTIBULARIACEAE	Utricularia foliosa	LEAFY BLADDERWORT	101-1000	N						x				x			
30-Sep	Dicot	LENTIBULARIACEAE	Utricularia gibba	HUMPED BLADDERWORT	1001-10,000	N						x							
28-Sep	Dicot	ERICACEAE	Vaccinium myrsinites	SHINY BLUEBERRY	101-1000	N							x						
28-Sep	Dicot	VERBENACEAE	Verbena brasiliensis	BRAZILIAN VERVAIN	11-100	A			x	x									CR
21-Apr	Dicot	VERBENACEAE	Verbena scabra	SANDPAPER VERVAIN, HARSH VERVAIN	101-1000	N			x										
21-Apr	Dicot	FABACEAE	Vicia acutifolia	FOURLEAF VETCH	1001-10,000	N				x	x		x			x			
21-Apr	Dicot	VIOLACEAE	Viola lanceolata	BOG WHITE VIOLET	101-1000	N			x				x						
28-Sep	Dicot	VITACEAE	Vitis cinerea var. floridana	FLORIDA GRAPE	101-1000	N				x									
28-Sep	Dicot	VITACEAE	Vitis rotundifolia	MUSCADINE	1001-10,000	N					x		x				x	x	
28-Sep	Pteridophyte	VITTARIACEAE	Vittaria lineata	SHOESTRING FERN	101-1000	N				x	x						x	x	
28-Sep	Pteridophyte	BLECHNACEAE	Woodwardia virginica	VIRGINIA CHAIN FERN	1001-10,000	N						x	x						
28-Sep	Dicot	XIMENIACEAE	Ximenia americana	TALLOW WOOD; HOG PLUM	101-1000	N					x		x			x			
30-Sep	Monocot	XYRIDACEAE	Xyris caroliniana	CAROLINA YELLOWEYED GRASS	101-1000	N							x						
21-Apr	Monocot	XYRIDACEAE	Xyris elliottii	ELLIOTT'S YELLOWEYED GRASS	11-100	N							x						
28-Sep	Monocot	XYRIDACEAE	Xyris smalliana	SMALL'S YELLOWEYED GRASS	101-1000	N							x						
30-Sep	Monocot	AGAVACEAE	Yucca aloifolia	SPANISH BAYONET; ALOE YUCCA	1	CN													

Date	Group	Family	Scientific Name	Common_Name	Population Estimate	Native Status	State Status	EPPC Status	Disturbed Wetland	Disturbed Upland	Hammock Complex	Depression Marsh	Mesic Flatwoods	Pop Ash Swamp	Pond Apple Swamp	Strand Swamp	Hydric Hammock	"Oak Midden" (Mesic Hammock)	County Record?
State Status			Native Status																
T	Threatened		A = Not Native																
E	Endangered		CA = Cultivated Only, not native																
EPPC Status			N = Native to Florida																
I	Invasive		CN = Native to Florida, Cultivated only																
II	Potentially Invasive																		
Population Estimates are measured using a Log10 scale, they represent preliminary estimates only																			

9/28/2009. Wooodmansee, S.W. & W. Brammell, Personal observations of vascular plants at Pepper Ranch Preserve, Collier County, FL. Pro Native Consulting, Miami, FL & Johnson Engineering, Inc., Fort Myers, FL.

9/29/2009. Wooodmansee, S.W. & A. Smith, Personal observations of vascular plants at Pepper Ranch Preserve, Collier County, FL. Pro Native Consulting, Miami, FL & Johnson Engineering, Inc., Fort Myers, FL.

9/30/2009. Wooodmansee, S.W. & A. Smith, Personal observations of vascular plants at Pepper Ranch Preserve, Collier County, FL. Pro Native Consulting, Miami, FL & Johnson Engineering, Inc., Fort Myers, FL.

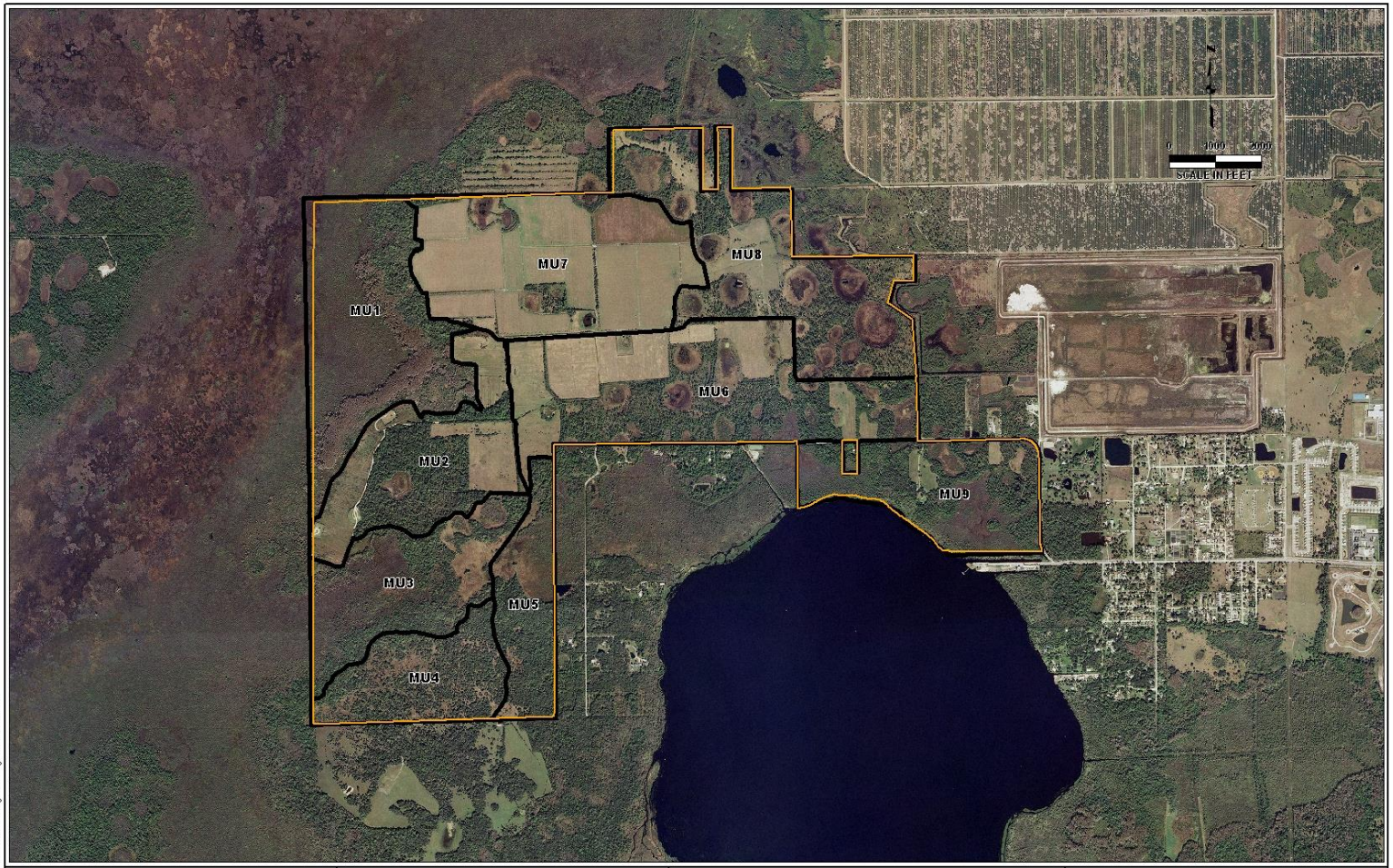
10/08/2009. A. Smith & C. Roberts, Personal observations of vascular plants at Pepper Ranch Preserve, Collier County, FL. Johnson Engineering, Inc., Fort Myers, FL.

5/21/2010. Wooodmansee, S.W. & A. Smith, Personal observations of vascular plants at Pepper Ranch Preserve, Collier County, FL. Pro Native Consulting, Miami, FL & Johnson Engineering, Inc., Fort Myers, FL.

5/22/2010. Wooodmansee, S.W. , Personal observations of vascular plants at Pepper Ranch Preserve, Collier County, FL. Pro Native Consulting, Miami, FL.

Appendix 5

Management Unit Map of Pepper Ranch Preserve



Pepper Ranch
Collier County, Florida

JOHNSON ENGINEERING
2122 JOHNSON STREET
P.O. BOX 1550
FORT MYERS, FLORIDA 33902-1550
PHONE (941) 334-0046
FAX (941) 334-3661
E.B. #642 & L.B. #642

Management Units Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Oct. 2009	20090093	-	As Shown	1

\\fmc01\proj-fmc\20090093-000\arcgis\management units.mxd

Appendix 6

Cattle Lease

11D

Cattle Lease

Lease # CC - 102

LEASE AGREEMENT

THIS LEASE AGREEMENT entered into this 27th day of May, 2014, between LAKE TRAFFORD RANCH, LLLP, a Florida limited liability limited partnership, by its undersigned General Partners, whose address is 719 Hickory Rd., Naples, Florida 34108, hereinafter referred to as "LESSEE", and COLLIER COUNTY, a political subdivision of the State of Florida, whose mailing address is 3299 Tamiami Trail East, Naples, Florida 34112, hereinafter referred to as "LESSOR".

WITNESSETH

In consideration of the mutual covenants contained herein, and other valuable consideration, the parties agree as follows:

ARTICLE 1. Demised Premises and Use

LESSOR hereby leases to LESSEE and LESSEE hereby leases from LESSOR Two Thousand Two Hundred ninety three (2,293) acres of property described in Exhibit "A," which is attached hereto and made a part of this Lease, hereinafter called the "Demised Premises," situated in the County of Collier and the State of Florida, for the sole purpose of cattle grazing and incidental activities that are directly related to beef cattle production.

All animal husbandry principles and practices applicable to the property and efficient use of grazing resources shall be followed at all times. The LESSEE shall be responsible for the establishment and implementation of sound grazing practices based on the best management guidelines of the U.S. Department of Agriculture's National Resources Conservation Service.

Consistent with its status as a tenant the LESSEE will have exclusive use and possession of the Demised Premises, however, the LESSOR may, as specified below: (i) alter its boundaries and/or (ii) make use of portions of it for hunting, public access, and other activities consistent with the Conservation Collier program, as described below in this Article 1 and in Article 16(e) and (f). LESSOR'S use shall not, however, interfere with LESSEE'S permitted use of the Demised Premises, nor cause LESSEE'S use, as permitted, nor expose LESSEE to liability to third parties based on the use that LESSOR is permitted to make of the Demises Premises.

This LEASE AGREEMENT may be amended from time-to-time in order to change the size of the Demised Premises as necessary to accomplish the goals, policies, and objectives of the Conservation Collier Implementation Ordinance (Ordinance 02-63, as amended). LESSOR'S representative (e.g., Real Estate Services Staff) shall advise LESSEE, in writing, of its intent to recommend that LESSOR amend this LEASE AGREEMENT. Any Such change shall only be effective not less than ninety (90) days after it is executed by the Board of County Commissioners.

ARTICLE 2. Term of Lease

LESSEE shall have and hold the Demised Premises for a term of five (5) years, commencing on the date LESSOR executes this Lease. LESSEE is granted the option, provided LESSEE is not in default of any of the terms of this Lease, to renew same for two (2) additional terms of one (1) year, under the same terms and conditions, except as to the rental amount, as provided herein, by giving written notice of LESSEE'S intention to do so to the LESSOR not less than thirty (30) days prior to the expiration of the leasehold estate hereby created. LESSOR reserves the right to deny LESSEE, in writing, of any renewal term.

Both LESSOR and LESSEE reserve the right to terminate this lease, without cause, by providing the other party with at least thirty (30) days written notice to the address set forth in ARTICLE 14 of this Lease.

LESSEE and LESSOR reserve the right to terminate this Lease, with cause, upon default by the other party as described in Article 12 and in Article 13, after any cure or grace period during the entire term of this Lease, by providing the other party with thirty (30) days written notice to the address set forth in ARTICLE 14 of this Lease

Upon termination of this Lease by either party, LESSEE will have ninety (90) days to make arrangements to remove the existing cattle, during which ninety (90) days the cattle must remain. LESSOR will remit to LESSEE any prepaid and unearned rent for any period that exceeds (60) days after such 90 days. During the ninety (90) day period that LESSEE remains in possession after termination, LESSEE shall continue to have said mowing obligations as described in Article 3 or may pay rent prorated at the amount described in Article 12, however, LESSEE shall not be liable for any interest thereon as described in said Article 12. Such mowing or rent obligations shall cease when LESSEE vacates the Demised Premises.

All notices shall be effective upon placement of the notice in an official depository of the United States Post Office, Registered or Certified Mail, Postage Prepaid.

ARTICLE 3. Rent

LESSEE hereby covenants and agrees to pay as rent the annual sum of Twenty-four Thousand Two Hundred Dollars and No Cents ($24,200.00) for grazing up to Two Hundred (200) Animal Units within the Demised Premises plus One Hundred Twenty-one Dollars and No Cents ($121.00) for each additional Animal Unit. Annual payment to the County shall be accompanied by a certification stating the number and age class of Animal Units being grazed on the land parcels. Said annual rent shall be paid in full upon thirty (30) days from the date in which this Lease is executed by the LESSOR. LESSEE will also be responsible for the payment of additional rent as provided for in ARTICLE 5 of this Lease.

In the event LESSEE elects to renew this Lease, as provided for in ARTICLE 2, the rent set forth in ARTICLE 3 shall be increased utilizing the method outlined in ARTICLE 4.

ARTICLE 4. Renewal Term Rent

In the event LESSEE elects to renew this Lease, as provided for in ARTICLE 2, the rent set forth in ARTICLE 3 shall be increased for each ensuing one (1) year renewal term by five (5) percent from the previous year, compounded.

ARTICLE 5. Modifications to Demised Premises

Prior to making any changes, alterations, additions or improvements to the Demised Premises, LESSEE will provide to LESSOR all proposals and plans for alterations, improvements, changes or additions to the Demised Premises for LESSOR'S written approval, specifying in writing the nature and extent of the desired alteration, improvement, change, or addition, along with the contemplated starting and completion time for such project. LESSOR, or its designee, will then have sixty (60) days within which to approve or deny in writing said request for changes, improvements, alterations or additions. LESSOR shall not unreasonably withhold its consent to required or appropriate alterations, improvements, changes or additions proposed by LESSEE. If after sixty (60) days there has been no response from LESSOR, or its designee, to said proposals or plans, then such silence shall be deemed as a denial to such request to LESSEE.

LESSEE covenants and agrees in connection with any maintenance, repair work, erection, construction, improvement, addition or alteration of any authorized modifications, additions or improvements to the Demised Premises, to observe and comply with all then and future applicable laws, ordinances, rules, regulations, and requirements of the United States of America, State of Florida, County of Collier, and any and all governmental agencies.

All alterations, improvements and additions to the Demised Premises shall at once, when made or installed, be deemed as attached to the freehold and to have become property of LESSOR. Prior to the termination of this Lease or any renewal term thereof, or within thirty (30) days thereafter, if LESSOR so directs, LESSEE shall promptly remove

the additions, improvements, alterations, fixtures and installations which were placed in, on, or upon the Demised Premises by LESSEE, and repair any damage occasioned to the Demised Premises by such removal; and in default thereof, LESSOR may complete said removals and repairs at LESSEE'S expense.

LESSEE covenants and agrees not to use, occupy, suffer or permit said Demised Premises or any part thereof to be used or occupied for any purpose contrary to law or the rules or regulations of any public authority.

ARTICLE 7. Access to Demised Premises

LESSOR, its duly authorized agents, representatives and employees, shall have the right to enter into and upon the Demised Premises or any part thereof at any time, without notice to the LESSEE, for the purpose of examining the same and making repairs, inspecting or curing a default or nuisance, or providing maintenance service therein, and for the purposes of inspection for compliance with the provisions of this Lease Agreement. If LESSOR should need to utilize the property for any length of time, for any purpose, the LESSOR shall advise the LESSEE of its intentions by oral notice.

ARTICLE 8. Assignment and Subletting

LESSEE covenants and agrees not to assign this Lease or to sublet the whole or any part of the Demised Premises, or to permit any other persons to occupy same.

ARTICLE 9. Indemnity

LESSEE, in consideration of Ten Dollars ($10.00), the receipt and sufficiency of which is hereby acknowledged, shall indemnify, defend and hold harmless LESSOR, its agents and employees from and against any and all liability (statutory or otherwise), damages, claims, suits, demands, judgments, costs, interest and expenses (including, but not limited to, attorneys' fees and disbursements both at trial and appellate levels) arising directly from any injury to, or death of, any person or persons or damage to property (including loss of use thereof) related to (A) LESSEE'S use of the Demised Premises, (B) any work or thing whatsoever done, or any condition created (other than by LESSOR, its employees, agents or contractors) by or on behalf of LESSEE in or about the Demised Premises, (C) any condition of the Demised Premises due to or resulting from any default by LESSEE in the performance of LESSEE'S obligations under this Lease, or (D) any act, omission or negligence of LESSEE or its agents, contractors, employees, subtenants, licensees or invitees.

It is acknowledged that in accord with the terms of this Lease (i) certain uses may be made of the Demised Premises by the LESSOR and (ii) LESSOR may permit third parties to make use of the Demised Premises. The Demised Premises are unimproved agricultural pasture lands and/or naturally vegetated areas. LESSEE'S responsibilities for maintenance in accord with Article 11, and its responsibility and liability to LESSOR under this Article 9 are and shall be based on the standards of care required of a tenant of lands having the forgoing characteristics and uses and an absence of business invitees. In case any action or proceeding is brought against LESSOR by reason of any one or more thereof, LESSEE shall pay all costs, attorneys' fees, expenses and liabilities resulting there from and shall defend such action or proceeding if LESSOR shall so request, at LESSEE'S expense, by counsel reasonably satisfactory to LESSOR.

The LESSOR shall not be liable for any injury or damage to person or property caused by the elements or by other persons in the Demised Premises, or from the street or sub surface, or from any other place, or for any interference caused by operations by or for a governmental authority in construction of any public or quasi public works.

The LESSOR shall not be liable for any damages to or loss of, including loss due to petty theft, any property, occurring on the Demised Premises or any part thereof, and the LESSEE agrees to hold the LESSOR harmless from any claims for damages, except where such damage or injury is the result of the gross negligence or willful misconduct of the LESSOR or its employees.

ARTICLE 10. Insurance

LESSEE shall provide and maintain a farm liability policy which shall be approved by the Collier County Risk Management Department, for not less than an amount of One Million Dollars and No/100 Cents ($1,000,000.00) throughout the term or any renewals thereof to this Agreement. In addition, LESSEE shall provide and maintain Worker's Compensation Insurance covering all employees meeting Statutory Limits in compliance with the applicable state and federal laws. The coverage shall include Employer's Liability with a minimum limit of One Hundred Thousand Dollars and No/100 Cents ($100,000.00) each accident.

Such insurance policy(ies) shall list Collier County as an additional insured thereon. Evidence of such insurance shall be provided to the Collier County Risk Management Department, 3335 Tamiami Trail East, Suite 101, Naples, Florida, 34112, for approval prior to the commencement of this Lease Agreement; and shall include a provision requiring ten (10) days prior written notice to Collier County c/o County Risk Management Department in the event of cancellation or changes in policy(ies) coverage. LESSOR reserves the right to reasonably amend the insurance requirements by issuance of notice in writing to LESSEE, whereupon receipt of such notice LESSEE shall have thirty (30) days in which to obtain such additional insurance.

LESSOR shall maintain such liability insurance, or self funded liability reserves, as are appropriate to protect itself and LESSEE from third party claims based on use of the Demised Premises that the LESSOR is permitted to make, or allows third parties to make, in accord herewith.

ARTICLE 11. Maintenance

LESSEE shall be allowed to store, within the Demised Property, in a location approved in writing by the Collier County Environmental Specialist assigned to manage Pepper Ranch Preserve, any functional maintenance equipment and supplies required for activities directly related to beef cattle production on the Demised Property.

LESSEE, at its sole cost and expense, shall mow the six hundred sixty three (663) acres of improved pasture within the Demised Property a minimum of one (1) time per year. LESSEE may roller chop specific areas of pasture when needed to control exotic and woody plant growth and to upkeep areas located around cattle pens. Any off-site mowers or other equipment must be cleaned thoroughly prior to entering the Demised Property as a means to prevent the introduction of nuisance or exotic plant species. LESSEE shall develop the mowing schedule and include variables such as excessive rainfall, drought or other unforeseen conditions, and provide such schedule to the Collier County Environmental Specialist assigned to manage Pepper Ranch Preserve.

Each individual improved pasture within the Demised Property may include mineral feeders, supplemental feed trough, and molasses feed tanks as a means to control cattle concentration areas. No outside hay may be brought into the Demised Property to prevent introduction of nuisance or exotic plant species. Rotation of cattle shall continue throughout the year on a scheduled basis. In the event there has been an extremely dry and cold winter or an exceptionally wet season, the cattle will be managed by LESSEE to fit the available forage.

LESSEE may not fertilize improved pasture areas.

Unless specifically authorized in writing by LESSOR in advance, plowing, ditching or digging of water holes shall be prohibited.

By the end of the second year of the initial term of the cattle lease, LESSEE, at its sole cost and expense, shall repair and erect, if not already existing, a fence around that area of the Demised Premises which shall contain any cattle. This fencing is crucial in retaining cattle and preventing cattle from roaming off of the Demised Premises.

LESSEE shall, at its sole cost and expense, keep the Demised Premises free from debris, litter, abandoned equipment and vehicles, and the like, at all times. If said Demised Premises are not kept free from debris, litter, abandoned equipment and vehicles, and the like, in the opinion of LESSOR, LESSEE'S manager will be so advised in writing. If corrective action is not taken within ten (10) days of the receipt of such notice, LESSOR will cause the same to be cleaned and corrected and LESSEE shall assume and pay all necessary cleaning costs and such costs shall

constitute additional rent which shall be paid by LESSEE within ten (10) days of receipt of written notice of costs incurred by LESSOR.

The LESSEE, at its sole cost, shall repair all damage to the Demised Premises caused by LESSEE, its employees, agents, independent contractors, guests, invitees, licensees, and patrons.

The LESSEE, at its sole cost, shall remove from the Demised Premises in accordance with all applicable rules, laws and regulations, all non-naturally occurring solid, liquid, semisolid, and gaseous trash and waste (but not animal waste) and refuse of any nature whatsoever which might accumulate and arise from the operations of the LESSEE'S business. Such trash, waste and refuse shall be stored in closed containers approved by the LESSOR.

LESSEE shall make monthly inspections of exterior fences and gates and make repairs to the fencing as needed.

LESSOR shall be responsible for all invasive exotic plant maintenance treatments and non-pastureland prescribed burning within the Demised Property.

LESSEE shall be responsible for providing to the LESSOR, on an annual basis, an inspection report of the property and its operations. At a minimum, the report must include the information identified in Exhibit "B".

LESSOR/ Preserve Manager shall visit the property at least semi-annually to evaluate the management and grazing operation. The LESSOR/ Preserve Manager and the LESSEE/Managing Partner shall meet annually to review and, if necessary, revise any grazing and/or pasture management plans.

LESSEE shall report any violation observed pertaining to rules and regulations promulgated by Collier County or the Florida Fish and Wildlife Conservation Commission. LESSEE shall immediately report any incidence of the following:

- Fire
- Vandalism
- Theft
- Poaching
- Trespassing
- Any hazard, condition or situation that may become a liability to the County or may be damaging to the property or improvements on the property.

LESSEE has no affirmative duty to actively monitor conditions for discovery of such activities.

Any expense related to utilities used solely by the LESSEE shall be paid for by the LESSEE.

ARTICLE 12. Default by LESSEE

Failure of LESSEE to comply for thirty (30) days with any material provision or covenant of this Lease shall constitute a default, LESSOR may, at its option, terminate this Lease after thirty (30) days written notice to LESSEE, unless the default be cured within the notice period (or such additional time as is reasonably required to correct such default). However, the occurrence of any of the following events shall constitute a default by LESSEE, and this Lease may be immediately terminated by LESSOR:

(a) Abandonment of Demised Premises or discontinuation of LESSEE'S operation.

(b) Falsification of LESSEE or an agent of LESSEE of any report required to be furnished to LESSOR pursuant to the terms of this Lease.

(c) Filing of insolvency, reorganization, plan or arrangement or bankruptcy.

(d) Adjudication as bankrupt.

(e) Making of a general assignment for the benefit of creditors.

(f) If LESSEE suffers this Lease to be taken under any writ of execution.

In the event of the occurrence of any of the foregoing defaults in this ARTICLE, LESSOR, in addition to any other rights and remedies it may have, shall have the immediate right to re enter and remove all persons and property from the Demised Premises. Such property may be removed and stored in a public warehouse or elsewhere at the cost of and for the account of LESSEE, all without service of notice or resort to legal process and without being deemed guilty of trespass, or being liable for any loss or damage which may be occasioned thereby.

LESSOR may, at its option, terminate this Lease after receipt by LESSEE of thirty (30) days notice in writing if a lien is filed against the property or the leasehold interest of the LESSEE, and not removed within thirty (30) days by LESSEE, pursuant to the Florida Mechanics Lien Law.

If LESSEE fails to pay the rental amount or any additional charges when due to LESSOR as specified in this Lease, and if said amounts remain unpaid for more than ten (10) days past the due date, the LESSEE shall pay LESSOR a late payment charge equal to five (5) percent of any payment not paid promptly when due. Any amounts not paid promptly when due shall also accrue compounded interest of two (2) percent per month or the highest interest rate then allowed by Florida law, whichever is higher, which interest shall be paid by LESSEE to LESSOR.

ARTICLE 13. Default by LESSOR

LESSOR shall in no event be charged with default in the performance of any of its obligations hereunder unless and until LESSOR shall have failed to perform such obligations within thirty (30) days (or at LESSOR'S sole discretion, such additional time as is reasonably required to correct such default) after notice to LESSOR by LESSEE properly specifying wherein LESSOR has failed to perform any such obligations.

ARTICLE 14. Notices

Any notice which LESSOR or LESSEE may be required to give to the other party shall be in writing to the other party at the following addresses:

LESSOR:
Board of County Commissioners
c/o Real Property Management
3335 Tamiami Trail East, Suite 101
Naples, Florida 34112

cc: Office of the County Attorney
3299 Tamiami Trail East, Suite 800
Naples, Florida 34112

Conservation Collier Coordinator
North Collier Regional Park
15000 Livingston Rd.
Naples, Florida 34109

LESSEE:
Mr. Thomas Taylor, General Partner
Lake Trafford Ranch, LLLP
719 Hickory Rd.
Naples, Florida 34108

Mr. Christopher Allen, General Partner
Lake Trafford Ranch, LLLP
555 Hickory Road
Naples, Florida 34108

ARTICLE 15. Surrender of Premises

LESSEE shall remove any improvements completed by LESSEE prior to the expiration of this Lease and shall deliver up and surrender to LESSOR possession of the Demised Premises and any improvements not removed upon expiration of this Lease, or its earlier termination as herein provided, in as good condition and repair as the same shall

be at the commencement of the term of this Lease or may have been put by LESSOR or LESSEE during the continuance thereof, ordinary wear and tear and damage by fire or the elements beyond LESSEE'S control excepted.

ARTICLE 16. General Provisions

LESSEE agrees to contain cattle within the Demised Premises and prevent cattle from roaming off of the Demised Premises.

LESSEE shall give oral notice to the Collier County Environmental Specialist assigned to manage Pepper Ranch Preserve at least three (3) days prior to any planned cattle round-up or additional cattle release, to allow Environmental Specialist the option to observe the cattle round-up or release.

LESSEE shall maintain no less than Fifty (50) and no more than Two Hundred (200) Animal Units at the Demised Premises without written authorization from LESSOR. Increases to the maximum stocking rate shall be subject to acceptable range conditions as outlined within the prescribed grazing plan and as determined by the Collier County Environmental Specialist assigned to manage Pepper Ranch Preserve. Animal Units will be established based on the following table:

Table 1: Animal Unit Equivalent Guide

Species	Average Weight (pounds)	Animal Unit Equivalent (AUE)
Cow, dry	950	0.92
Cow with calf	1,000	1.00
Bull, mature	1,500	1.35
Cattle, 1 year old	600	0.60
Cattle, 2 year old	800	0.80

LESSEE shall have the right to camp overnight on the Demised Premises, at LESSEE'S own risk, and shall be required to obtain any necessary permits, if required, for this use.

If LESSEE should elect to destroy sick cattle, any use of firearms shall be permitted by LESSOR so as long as LESSEE is legally permitted to possess such firearm in the County of Collier and / or the State of Florida, as applicable.

LESSEE acknowledges that there shall be no game hunting or any dispensation of firearms by LESSEE or his invitees upon the Demised Premises except as specifically allowed under this Lease.

LESSEE fully understands that the police and law enforcement security protection provided by law enforcement agencies for the above referenced Demised Premises is limited to that provided to any other business or agency situated in Collier County, and acknowledges that any special security measures deemed necessary for additional protection of the Demised Premises shall be the sole responsibility and cost of LESSEE and shall involve no cost or expense to LESSOR.

LESSEE expressly agrees for itself, its successor and assigns, to refrain from any use of the Demised Premises which would interfere with or adversely affect the operation or maintenance of LESSOR'S standard operations where other operations share common facilities.

(a) Rights not specifically granted the LESSEE by this Lease are hereby reserved to the LESSOR.

(b) LESSEE agrees to pay all sales tax imposed on the rental of the Demised Premises where applicable under law.

(c) If applicable, LESSEE agrees to pay all intangible personal property taxes that may be imposed due to the creation, by this Lease, of a leasehold interest in the Demised Premises or LESSEE'S possession of said leasehold interest in the Demised Premises.

(d) LESSEE shall not perform any environmental property management activities, such as, but not limited to, burning or removal of vegetation, unless prior approval is granted by LESSOR.

(e) LESSEE acknowledges that LESSOR will allow limited seasonal hunting on the Demised Premises. LESSOR is responsible for developing and implementing rules, protocols, and for the supervision of any hunters and members of the public generally to guard against accidents, injury to LESSEE'S cattle, and interference with LESSEE'S permitted use. LESSEE agrees to mow limited areas and/or shooting lanes prior to hunting weekends upon LESSOR's request.

(f) LESSOR will engage a Range Conservationist to develop a prescribed grazing plan for the Demised Premises. LESSEE acknowledges that he will cooperate with LESSOR and any plans that may develop for the Demised Premises as a result of future planning. Implementation of any such plan shall require sixty (60) days written notice to LESSEE.

ARTICLE 18. Extent of Liens

All persons to whom these presents may come are put upon notice of the fact that the interest of the LESSOR in the Demised Premises shall not be subject to liens for improvements made by the LESSEE, and liens for improvements made by the LESSEE are specifically prohibited from attaching to or becoming a lien on the interest of the LESSOR in the Demised Premises or any part of either. This notice is given pursuant to the provisions of and in compliance with Section 713.10, Florida Statutes.

ARTICLE 19. Quiet Enjoyment

Subject to LESSOR'S rights provided in this Lease, LESSOR covenants that LESSEE, on paying the rental amount and performing the covenants, terms and conditions required of LESSEE contained herein, shall peaceably and quietly have, hold and enjoy the Demised Premises and the leasehold estate granted to LESSEE by virtue of this Lease Agreement.

ARTICLE 20. Waiver

No failure of LESSOR to enforce any terms or conditions herein shall be deemed to be a waiver.

ARTICLE 21. Effective Date

This Lease shall become effective upon execution by both LESSOR and LESSEE.

ARTICLE 22. Governing Law

This Lease shall be governed and construed in accordance with the laws of the State of Florida.

ARTICLE 23. Assignment

LESSEE shall have the right to assign this Lease to a legal entity owned or controlled by LESSEE. LESSOR must be advised of any such assignment in writing.

IN WITNESS WHEREOF, the parties hereto have hereunder set forth their hands and seals.

AS TO THE LESSOR:

DATED: 5/27/2014

ATTEST:
DWIGHT E. BROCK, Clerk

By: _____
Deputy Clerk

Attest as to Chairman's signature only

BOARD OF COUNTY COMMISSIONERS
COLLIER COUNTY, FLORIDA

BY: _____
Tom Henning, CHAIRMAN

AS TO LESSEE:

DATED: _____

WITNESSES:

_____
(Signature)

June T. Sapp
(Print Name)

_____
(Signature)

Debra L Hegue
(Print Name)

_____
(Signature)

ANGIE LAGEMANN
(Print Name)

_____
(Signature)

Katie Wallace
(Print Name)

LAKE TRAFFORD RANCH, LLLP,
a Florida limited liability limited partnership

BY: _____
THOMAS M. TAYLOR, as General Partner

LAKE TRAFFORD RANCH, LLLP,
a Florida limited liability limited partnership

BY: _____
CHRISTOPHER L. ALLEN, as General Partner

Approved as to form and legality:

_____
Jennifer A. Belpedio
Assistant County Attorney

Exhibit "A"
(Legal Description of Demised Property)

Property Tax Identification Number: 00052360002

A parcel of land lying in the East Half (E½) of the East Half (E½) of the Southwest Quarter (SW¼) of the Southeast Quarter (SE¼) of Section 22, Township 46 South, Range 28 East, Collier County, Florida, being more particularly described as follows:

> Commence at the Southeast corner of Section 22, Township 46 South, Range 28 East, Collier County, Florida; thence run S 88°57'47" W, along the south line of the Southeast Quarter (SE¼) of said Section 22 for a distance of 1320.38 feet to the **Point of Beginning** of the parcel of land herein described; thence continue S 88°57'47" W, along the south line of the Southeast Quarter (SE¼) of said Section 22, for a distance of 330.09 feet; thence run N 00°31'18" W for a distance of 1342.51 feet; thence run N 88°58'31" E for a distance of 330.12 feet; thence run S 00°31'14" E, for a distance of 1342.44 feet to the **Point of Beginning**; containing 10.17 acres, more or less.

AND

Property Tax Identification Number: 00053000002

All of Section 28, Township 46 South, Range 28 East, Collier County, Florida; containing 645.47 acres more or less.

AND

Property Tax Identification Number: 00052960004

All of Section 27, Township 46 South, Range 28 East, Collier County, Florida; containing 643.59 acres more or less.

AND

Property Tax Identification Number: 00053200006

All of Section 33, Township 46 South, Range 28 East, Collier County, Florida; containing 706.33 acres more or less.

AND

Property Tax Identification Number: 00052640007

A parcel of land located in a portion of Section 26, Township 46 South, Range 28 East, Collier County, Florida, being more particularly described as follows:

The West Half (W½) of Section 26, Township 46 South, Range 28 East, Collier County, Florida, less the North 1452.35 feet thereof and less the Southeast Quarter (SE¼) of the Southwest Quarter (SW¼) of said Section 26, and less that parcel of land, as described and recorded in Official Records Book 2585 at Page 2735 through 2737, owned by South Florida Water Management District with Tax Folio Number 00052640007; containing 185.91 acres, more or less.

AND

Property Tax Identification Number: 00052680009

The Southeast Quarter (SE¼) of the Southwest Quarter (SW¼) of Section 26, Township 46 South, Range 28 East, Collier County, Florida; containing 40.38 acres more or less.

AND

Property Tax Identification Number: 00052440003

A parcel of land lying in the East Half (E½) of the East Half (E½) of the Southwest Quarter (SW¼) of the Southeast Quarter (SE¼) of Section 22, Township 46 South, Range 28 East, Collier County, Florida, being more particularly described as follows:

Commence at the Southeast corner of Section 22, Township 46 South, Range 28 East, Collier County, Florida; thence run S 88°57'47" W, along the south line of the Southeast Quarter (SE¼) of said Section 22 for a distance of 1320.38 feet to the Point of Beginning of the parcel of land herein described; thence continue S 88°57'47" W, along the south line of the Southeast Quarter (SE¼) of said Section 22, for a distance of 330.09 feet; thence run N 00°31'18" W for a distance of 1342.51 feet; thence run N 88°58'31" E for a distance of 330.12 feet; thence run S 00°31'14" E, for a distance of 1342.44 feet to the Point of Beginning; containing 10.17 acres, more or less.

END Legal Description

Appendix 7

Pepper Ranch Preserve Quality Wildlife Management Hunt Program 2017-2018 Brochure

Collier County

PEPPER RANCH PRESERVE QUALITY WILDLIFE MANAGEMENT HUNT PROGRAM

FOR COLLIER COUNTY RESIDENTS ONLY

2018 - 2019 Brochure

Conservation Collier Program
Collier County Parks and Recreation Department
E-mail: ConservationCollier@colliergov.net
Website: www.colliergov.net/conservationcollier
Phone: 239-252-2957
3300 Santa Barbara Blvd.
Naples, FL 34116

Collier County

PEPPER RANCH PRESERVE 2018-2019 QUALITY WILDLIFE MANAGEMENT HUNT PROGRAM

PEPPER RANCH PRESERVE QUOTA HUNT PERMITS ARE OPEN TO COLLIER COUNTY RESIDENTS ONLY.

Pepper Ranch Preserve was acquired by Collier County under the Conservation Collier Program. The purpose of Conservation Collier is to acquire, protect, restore and manage environmentally sensitive lands within Collier County for the benefit of present and future generations. Additionally, Conservation Collier's goal is to allow multiple, controlled recreational and educational uses consistent with this purpose.

The Pepper Ranch Preserve Quality Wildlife Management Hunt Program allows Collier County to use a public recreational hunt opportunity as a way to gain biological data in order to make sound wildlife management decisions.

APPLICATION PROCESS

- Quota hunt permit sales will be determined using a preference point random draw system.

- Quota hunt permit applications will be available on-line June 29, 2018:
  www.colliergov.net/conservationcollier

- Applications can be dropped off, e-mailed, faxed, or mailed to:

  Pepper Ranch Preserve Hunt Program
  Conservation Collier
  3300 Santa Barbara Blvd.
  Naples, FL 34116
  E-mail: MelissaHennig@colliergov.net
  Fax: 239-252-6720

- Applications will be accepted starting Friday, June 29, 2018.

- Any application received after 4:30 P.M. on Friday, August 3, 2018, will be processed after the random draw.

- Random draw selection for the 2018-2019 Hunt Season will take place on Monday, August 6, 2018.

- No group applications will be accepted. Permit applications may only be submitted individually.

- Submission of more than one permit application per individual will disqualify that individual from all random draws.

- Notification Letters will be mailed to drawn hunters by Friday, August 10, 2018. Notification Letters will include instructions and details concerning payment, date of selection, etc.

- Drawn hunters have until Friday, August 31, 2018, at 5:00 P.M. to provide payment for hunt(s) or forfeit their hunt position(s). Forfeited positions will be offered to the next hunter on the random draw list.

EARLY SUBMISSIONS HAVE NO PREFERENCE OVER LATER SUBMISSIONS DUE TO THE IMPLEMENTATION OF THE PREFERENCE POINT RANDOM DRAW SYSTEM.

QUOTA HUNT PREFERENCE POINTS

To allow an increased opportunity for applicants to receive quota hunt permits for Pepper Ranch hunts, Collier County will now be issuing all quota hunt permits based on a preference point system. Applicants included in the random drawing will be able to increase their odds of selection each year they fail to be drawn for a quota hunt permit.

Quota hunt permits for each hunt type shall be selected by random drawing from the applications submitted during each annual application period based on the highest number of accumulated preference points. All applicants not issued a quota hunt permit, shall receive one preference point annually for that specific quota hunt type. Preference points shall accumulate by quota hunt type. Applicants who are issued a quota hunt permit in the random drawing will loose all preference points for that hunt type and will have zero preference points next year for that hunt type. Accumulated preference points for other hunt types will be retained.

Applicants who fail to apply during the annual application period for two consecutive years will forfeit all preference points for that quota hunt type. Applicants that skip a year will neither gain nor loose their preference points.

PERMITTING & LICENSE INFORMATION

- Hunters with a deer hunt quota permit are required to have a State of Florida hunting license and a State of Florida deer permit.
- Hunters with a turkey hunt quota permit are required to have a State of Florida hunting license and a State of Florida turkey permit.
- Hunters with a hog hunt quota permit are NOT REQUIRED to have a State of Florida hunting license.
- Hunters that have never attended a Pepper Ranch Hunter Orientation will be required to attend a hunter orientation before receiving their 2018 - 2019 permit.
- All drawn hunters are required to provide proof of Collier County residency. Guest hunters do not have to be Collier County residents.
- Anyone not meeting these requirements will not be permitted to hunt, and any fees processed will not be refunded.

A State of Florida hunting license may be purchased from the Collier County Tax Collector's Office or from their sub-agents. Information on the categories and costs of hunting licenses is available in the FWC Florida Hunting Handbook.

A STATE OF FLORIDA WILDLIFE MANAGEMENT AREA (WMA) STAMP IS NOT REQUIRED AT PEPPER RANCH PRESERVE.

QUOTA HUNT PERMIT

- Deer quota hunt permits and turkey quota hunt permits are non-transferable.
- Hunters within the northern portion of the ranch are required to hunt within designated zones assigned by random draw process for each hunt weekend.
- There will be **10** hog quota hunt permits issued for each scheduled hog hunt weekend – 8 permits for the northern portion of the ranch and 2 permits for the archery ONLY portion of the ranch.
- There will be **4** deer quota hunt permits issued for the scheduled "DEER" hunt. Permits will be for the northern portion of the ranch.
- There will be **4** turkey quota hunt permits issued for the scheduled "TURKEY" hunt. Permits will be for the northern portion of the ranch.
- If a hunter has not called or checked in at the Check Station by 9:00 A.M. the morning of a hunt, that hunter is a "no-show hunter". They may still hunt at any time during the hunt weekend, but they forfeit their hunt zone for that day.
- Hunters with a valid quota hunt permit for the designated hunt may switch their hunt zone for an open hunt zone that has been vacated by either a "no-show hunter" or a hunter with a valid quota hunt permit that has left for the day, on a first-come, first served basis with the approval of Check Station staff.

- As a courtesy, if a hunter is unable to attend one or more hunt days during a hunt weekend, the hunter should inform the Check Station attendant as soon as possible.

GUESTS

A hunter possessing a valid quota hunt permit may be accompanied by one hunting guest.

- Guests must have all required Florida licenses and permits.
- A guest permit, available at the check station, must be completed, signed by the guest, and carried by the guest in the field.
- A new guest permit must be completed for each guest hunter that participates in each hunt.
- A quota permit holder may only bring one additional person to hunt with them at a time.
- The quota permit holder and their guest must share the same vehicle and must enter and exit the area together.
- The guest permit holder may hunt only when the quota permit holder is present on the preserve.
- The quota permit holder and the guest must hunt in the same zone; however, they are not required to hunt together once inside the zone unless one of them is a minor.
- The quota permit holder and the guest must share a single bag limit, and the quota permit holder is responsible for making sure that the shared bag limit is not exceeded.

MINORS

- Minors under the age of 16 possessing a valid quota hunt permit must be accompanied by a parent/ guardian over the age of 21.
- Minors under the age of 16 may not be in possession of firearms unless they have completed an FWC Hunter's Education Course and are in the presence and under the supervision of an adult. (F.S. 790.22 and 784.05).

DOGS

Dogs on leashes may be used for trailing wounded game only.

SHOOTING HOURS

- Shooting hours during "HOG" and "DEER" hunts are one-half hour before sunrise to one-half hour after sunset.
- Shooting hours during "TURKEY" hunts are one-half hour before sunrise to sunset.

MANDATORY HUNTER ORIENTATION

Hunters that have never attended a Pepper Ranch Hunter Orientation will be required to attend the following orientation to be held at Pepper Ranch Preserve; 6315 Pepper Road; Immokalee, FL 34142:

Saturday, October 6, 2018; 9:00 A.M.– 9:30 A.M.

PERMIT FEE

All fees are non-refundable.

PERMIT FEE **– non-refundable**
Permit fee is paid per hunt.

"HOG".....	$55.00
"DEER".....	$80.00
"TURKEY".....	$105.00
FWC Youth Hunt*.....	$75.00

* Youth Hunt Fee includes all meals and campsite accommodations for 1 child and 1 guardian during youth hunt weekend.

BAG AND POSSESSION LIMITS

Deer ..... 1 buck per quota hunt permit

Turkey..... 1 gobbler per quota hunt permit

Wild Hog..... No Limit

Coyote, Raccoon, Opossum, Skunk, Nutria, Beaver..... No Limit

Gray Squirrel, Rabbit, ... Daily Bag Limit – 12
Possession Limit – 24

HUNT SCHEDULE

HOG HUNTS

December 8 - 9, 2018..... HOG 1*

April 6 - 7, 2019.....HOG 2

June 1 – 2, 2019.....HOG 3

- Game may be taken using a Shotgun, Muzzleloader, Bow, or Crossbow with a "HOG" permit within firearm zones of the ranch.
- Game may be taken using a bow or crossbow with a "HOG" permit within the Archery Only zone of the ranch
- Legal game: wild hog, rabbit, raccoon, opossum, skunk, nutria, beaver and coyote.

* Gray squirrel may be taken by Shotgun, Muzzleloader, Bow or Crossbow during HOG 1.

DEER HUNT

October 13 - 14, 2018.....DEER

- Game may be taken using a shotgun, muzzleloader, bow or crossbow with a "DEER" permit
- Legal game: deer, wild hog, gray squirrel, rabbit, raccoon, opossum, skunk, nutria, beaver and coyote.

TURKEY HUNT

March 9-10, 2019 .....TURKEY

- Game may be taken using shotgun, bow, or crossbow
- Legal game: turkey, wild hog, rabbit, raccoon, opossum, skunk, nutria, beaver and coyote.

FWC YOUTH HUNTS*

November 16, 17 and 18, 2018.....Youth Deer Hunt

January 18, 19 and 20, 2019.....Youth Hog Hunt

February 22, 23 and 24, 2019.....Youth Turkey Hunt

* A Pepper Ranch Hunt Program Application is not required for Youth Hunts. Youth Hunts are administered through FWC. Please call (239) 252-2957 for Youth Hunt application information.

SCOUTING

Pepper Ranch Preserve will be open for scouting on every non-hunt and non-holiday Friday, Saturday and Sunday, November 1, 2018 - June 30, 2019, from 9 A.M. to 4 P.M.

GENERAL REGULATIONS

In addition to the regulations that follow, all laws and regulations of the State of Florida relating to wildlife shall apply. Pepper Ranch Preserve regulations are more restrictive than the state regulations. Hunters who violate these regulations will be subject to penalties as determined by the Facilities Management Department Director and/or the State of Florida. Hunting or the taking of wildlife shall be allowed only during preserve scheduled hunt weekends and only in the manner set forth herein.

EACH HUNTER IS PERSONALLY RESPONSIBLE FOR KNOWING AND ADHERING TO ALL LAWS AND RULES PERTAINING TO THIS HUNT PROGRAM AND PEPPER RANCH PRESERVE.

1. Any person entering Pepper Ranch Preserve during the prescribed hunts, except during archery and turkey hunts, shall wear at least 500 square inches of hunter orange material above the waistline as an outer garment.

2. During hunt weekends, access to Pepper Ranch Preserve is restricted to hunters with a valid quota hunt permit and their guests.

3. The use of feeders, baiting, or the possession of baiting materials of any kind is prohibited, except during Florida Fish and Wildlife Conservation Commission (FWC) sponsored Youth Hog Hunts.

4. One hunter, one guest, and one minor allowed per valid quota hunt permit.

5. The turkey harvest quota is one gobbler per quota hunt permit per weekend. If a hunter fills his/her turkey quota, he/she may only take wild hogs or other legal small game during the remainder of the weekend.

6. All harvested animals shall be field dressed and kept whole until after check-in at the Check Station.

7. Male deer (buck) must have a minimum of 3 points on one antler to be harvested. (A point is defined as antler growth off the main beam that is at least 1" in length.)

8. The deer harvest quota is one buck per quota hunt permit per hunt weekend. If a hunter fills his/her deer quota, he/she may only take wild hogs or other legal small game during the remainder of the weekend.

9. All deer harvested are required to have one jawbone extracted for aging.

10. Transport of deer or parts of deer off property requires a copy of the harvest sheet signed by staff. It is the hunter's responsibility to acquire a copy of the harvest sheet from staff. See FWC Hunting Handbook for state rules on dismemberment.

11. Hunting is prohibited in areas posted "No Hunting."

12. STATE REGULATIONS REGARDING BUFFER ZONE DISTANCES APPLY.

13. No visitor shall cut, damage, or remove any natural, man-made, or cultural resource, except for palm fronds.

14. Tampering with or destruction of equipment, improvements, and water control structures is prohibited.

15. Cutting or damaging fences is prohibited.

16. Taking or attempting to take any game with the aid of live decoys, recorded game calls or sounds, set guns, artificial light, net, trap, snare, drug or poison is prohibited.

17. The wanton or willful waste of wildlife is prohibited.

18. Taking or herding wildlife from any motorized vehicle which is under power is prohibited

19. Wild hogs may not be transported alive.

20. It is unlawful to set fire to any forest, grass or woodlands.

21. An FWC Law Enforcement Officer, Government security officer, or local law enforcement officer may search any camp or vehicle, in accordance with the law.

22. No plants, or their parts, or any animals shall be introduced, liberated, planted, or placed in any part of Pepper Ranch Preserve by visitors.

23. It is unlawful to leave garbage or litter in Pepper Ranch Preserve.

24. The possession and/or consumption of alcoholic beverages anywhere in Pepper Ranch Preserve is prohibited.

25. All injuries sustained at Pepper Ranch Preserve must be reported to Check Station staff.

TREE STANDS and GAME CAMERAS

- No permanent stands or stands that will damage vegetation will be permitted.
- Driving a metal object into any tree or hunting from a tree into which a metal object has been driven is prohibited.
- Hunters shall inform Conservation Collier staff of game camera locations and durations.
- Temporary tree stands and game cameras must be removed at the end of the hunt season. Any tree stands or cameras not removed by July 1, 2019 become the property of the Collier County Board of County Commissioners.
- No hunting is allowed within 100 feet of mapped trails, which includes sitting in vehicles or blinds. Trails are not to be used as shooting lanes.
- A prescribed fire program may begin within the preserve this hunt season. If you would like advanced notice of prescribed fire locations, please contact Conservation Collier staff.

FIREARMS

- Discharging firearms within the Archery Only portion of Pepper Ranch Preserve is prohibited.
- Rifles and handguns using centerfire cartridges may not be discharged at Pepper Ranch Preserve, except during FWC sponsored Youth Hunts.
- The hunt permit holder will be responsible for knowing state and federal laws regarding the permitted firearm for each season. Only designated firearms may be used for designated hunts.
- All firearms must be unloaded and made safe prior to entering a vehicle. No side arms shall be exposed or worn around the Check Station.
- Ammunition must be physically separated from the guns in order for the gun to be considered unloaded. No loaded guns will be permitted at the Check Station or in any vehicle while in Pepper Ranch Preserve. Muzzleloaders are considered unloaded when the cap (or primer) is absent and the hammer is in the closed position.
- Discharging firearms at anything other than legal game while in Pepper Ranch Preserve is prohibited. Target practice and random discharging of firearms is a threat to the safety and quality of the Pepper Ranch Preserve hunt program.
- Persons in possession of a valid Concealed Weapon or Firearm License may carry concealed handguns.

PUBLIC ACCESS and VEHICLES

- Vehicle access is prohibited on any portion of the Preserve posted as "No Unauthorized Vehicles". Exceptions may be made for FWC certified mobility-impaired hunters with SUV Permits.
- Any vehicle entering Pepper Ranch Preserve must have a current license tag, meet federal and state safety requirements, and be operated by a licensed driver with appropriate insurance.
- Entry and exit is permitted through the designated entrances only.
- All gates must be returned to the state in which they were found once a vehicle or pedestrian has passed.
- Vehicles may be operated only on roads designated for vehicles. Trails can be closed at any time. Exceptions may be made for FWC certified mobility -impaired hunters with Special Use Vehicle (SUV) Permits.
- Vehicles may only park along-side roads that are designated for vehicles. Exceptions may be made for FWC certified mobility-impaired hunters with SUV Permits.
- Vehicles shall not be parked in such a manner as to obstruct roads, gates, or fire lanes.
- The use of all-terrain vehicles, swamp buggies, or tracked vehicles is prohibited. Exceptions will be made for FWC certified mobility-impaired hunters with SUV Permits.
- Vehicles must be operated in a safe manner for the condition of the vehicle trails.
- Maximum speed limit is 20 mph.

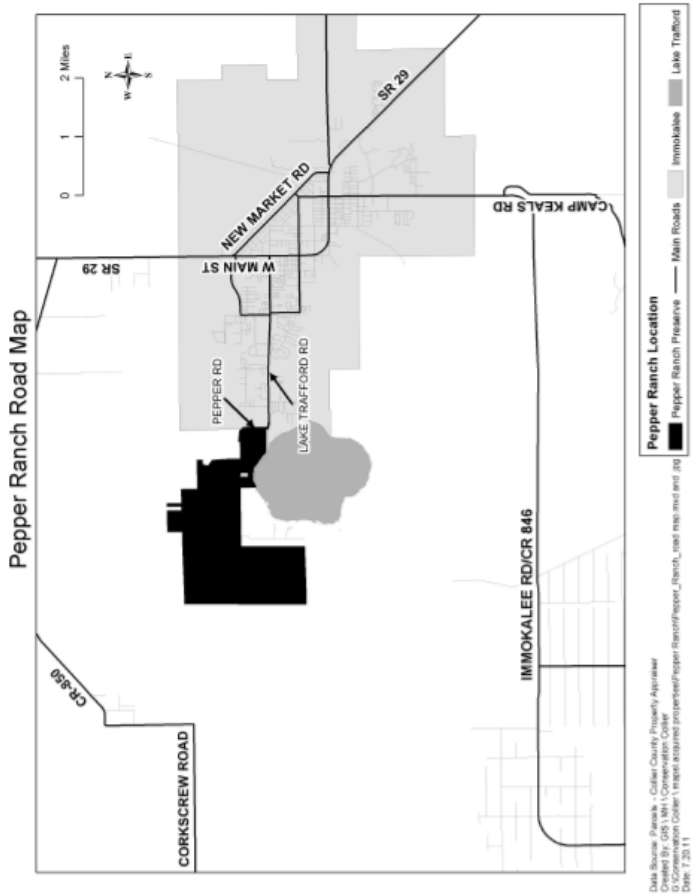
EQUAL OPPORTUNITY & ACCESS

Equal Opportunity and Access requests must come through the Conservation Collier Office:
239-252-2957.

CHECK STATION

- Hunters must enter and exit (check in and out) at the Check Station only.
- Hunters may enter 1 hour before sunrise for all hog hunts, and 1.5 hours before sunrise for all deer and turkey hunts.
- During hunts, the preserve closes one hour after sunset. Anyone exiting later than one hour after sunset may lose hunt privileges.
- All game must be checked in by staff at the Check Station.
- Check Station phone number: 239-657-1999

EMERGENCY NOTICES OR REGULATION CHANGES WILL BE POSTED AT THE CHECK STATION. IT IS THE RESPONSIBILITY OF EACH PARTICIPANT TO BE AWARE OF AND OBEY THESE CHANGES.



CONSERVATION COLLIER

For Present and Future Generations

Collier County

Administrative Services Division
Facilities Management
Conservation Collier Program

Pepper Ranch Preserve Check Station
6315 Pepper Road
Immokalee, FL 34142
Phone: 239-657-1999

Conservation Collier Program Office
Collier County Parks and Recreation Department
3300 Santa Barbara Blvd.
Naples, FL 34116
E-mail: ConservationCollier@colliergov.net
Website: www.colliergov.net/conservationcollier
Phone: 239-252-2957

Appendix 8

Pepper Ranch Preserve –
Land Use Compatibility Matrix

Pepper Ranch Preserve - Compatibility Matrix

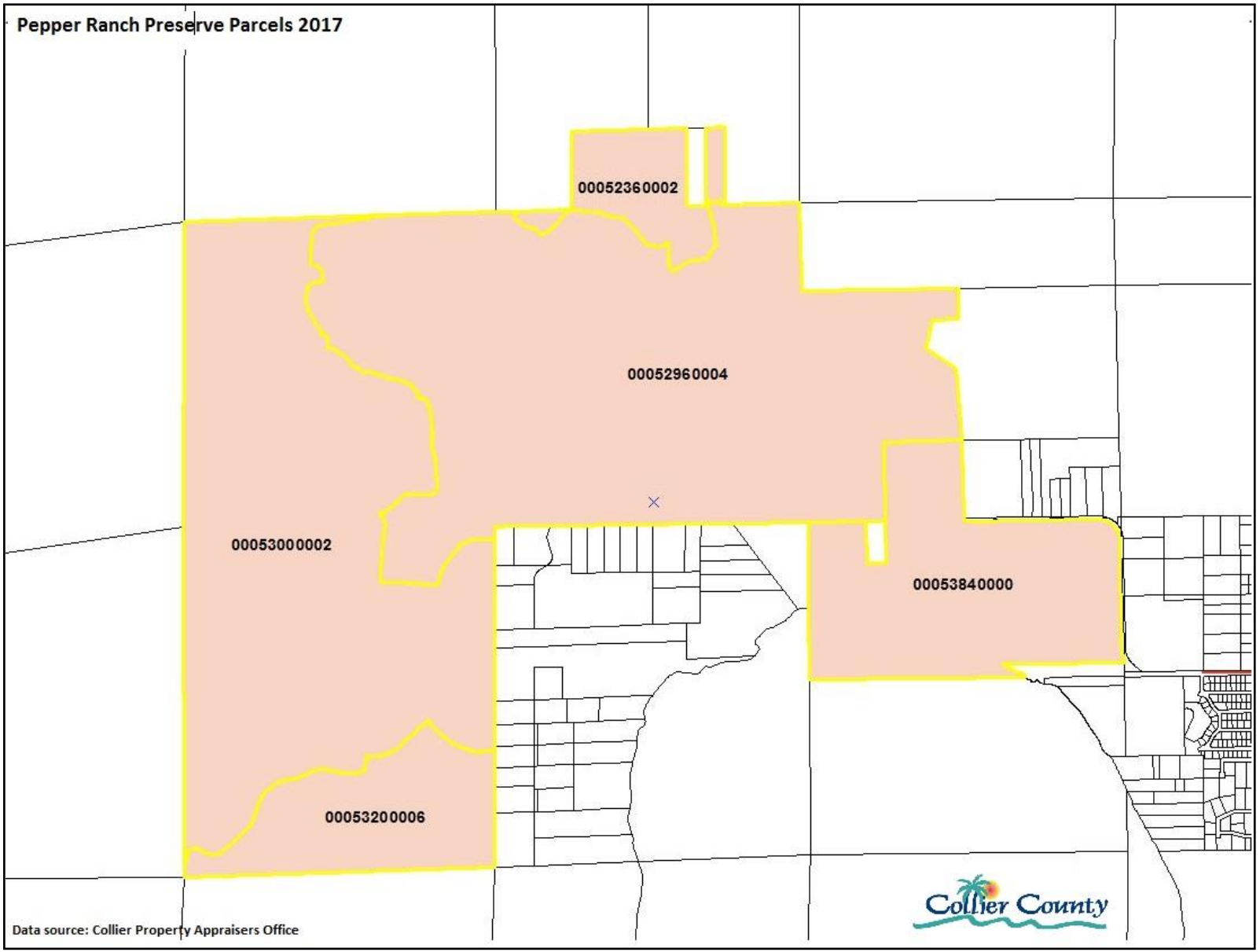
		PUBLIC USES											MITIGATION & LAND USE				OTHER REVENUE GENERATING		Conservation Collier Ordinance No. 2007-65
		hiking	mountain biking	primitive camping	horseback riding	hunting	fishing	nature photography	special events lodge rental	ecotourism	campground	archery	Panther Conservation Bank	wetlands mitigation	water storage	SSA	oil drilling	cattle grazing	
PUBLIC USES	hiking																		
	mountain biking																		
	primitive camping																		
	horseback riding																		
	hunting																		
	fishing																		
	nature photography																		
	special events logde rental																		
	ecotourism																		
	campground																		
	archery																		
MITIGATION & LAND USE	Panther Conservation Bank																		
	Wetlands Mitigation																		
	water storage																		
	SSA																		
OTHER REVENUE GENERATING	oil drilling																		
	cattle grazing																		
Conservation Collier Ordinance No. 2007-65																			

Uses are compatible throughout the Preserve

Uses are compatible but on seperate portions of the Preserve

Uses are not compatible during certain times of the year

Appendix 9
Parcel Folio Map of Pepper Ranch Preserve


Pepper Ranch Preserve Parcels 2017
00052360002
00052960004
00053000002
00053840000
00053200006
Collier County
Data source: Collier Property Appraisers Office

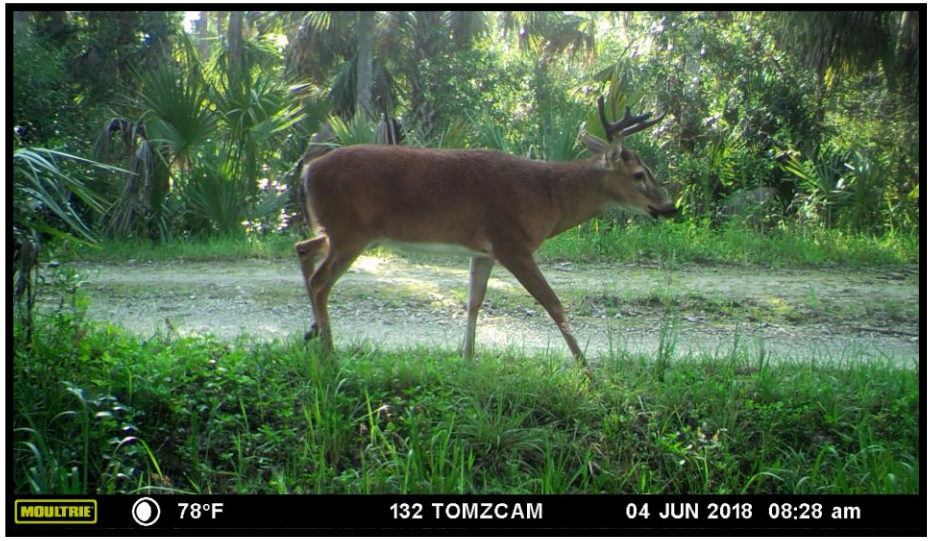
Appendix 10. Wildlife Camera Photographs


MOULTRIE
77°F
278 M-888I
23 MAY 2018 05:57 pm


MOULTRIE
55°F
167 TOMZCAM
10 APR 2016 08:11 am


2018-08-07 6:02:05 PM M 1/3
89°F
HC600 HYPERFIRE
RECONYX


MOULTRIE
53°F
132 TOMZCAM
01 JAN 2018 07:52 am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78°F
132 TOMZCAM
04 JUN 2018 08:28 am


MOULTRIE
77°F
173 TOMZCAM
02 JAN 2017 09:59 am


2018-11-15 10:40:15 AM M 2/3
69°F
HC600 HYPERFIRE
RECONYX


MOULTRIE
66°F
142 TOMZCAM
09 APR 2015 08:12 am


HCO UOVISION
12.04.2017 19:24:10
017°C 063°F


HCO UOVISION-Railhea2
12.08.2016 09:17:15
014°C 057°F

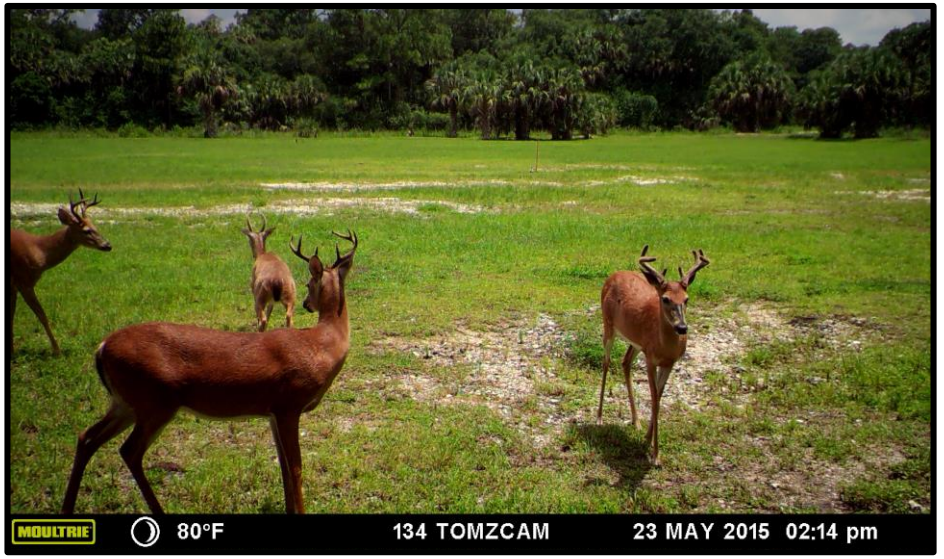

2018-07-08 7:46:10 AM M 2/3
75°F
HC600 HYPERFIRE
RECONYX


2018-07-21 8:41:27 AM M 1/3
80°F
HC600 HYPERFIRE
RECONYX


2018-08-20 6:34:13 PM M 1/3 76°F
HC600 HYPERFIRE
RECONYX


2018-07-15 11:23:14 AM M 1/3 87°F
HC600 HYPERFIRE
RECONYX


MOULTRIE 96°F 192 TOMZCAM 19 JUL 2018 10:46 am


MOULTRIE 80°F 134 TOMZCAM 23 MAY 2015 02:14 pm