

A Management Plan for  
Fisheating Creek  
Wildlife Management Area  
2015 - 2025



Glades County, Florida

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**Florida Fish and Wildlife Conservation Commission**  
620 South Meridian Street  
Tallahassee, Florida 32399-1600



## Florida Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

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Carlos Lopez-Cantera  
Lt. Governor

Jonathan P. Steverson  
Secretary

September 1, 2015

Mr. Gary Cochran  
Florida Fish and Wildlife Conservation Commission  
620 South Meridian Street  
Tallahassee, FL 32399-1600

**RE: Fisheating Creek Wildlife Management Area - Lease #4257**

Dear Mr. Cochran:

On **August 21, 2015**, the Acquisition and Restoration Council recommended approval of the **Fisheating Creek Wildlife Management Area** management plan. Therefore, the Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Fisheating Creek Wildlife Management Area management plan. The next management plan update is due August 21, 2025.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

A handwritten signature in cursive script that reads "M. Sengenbach".

Marianne S. Gengenbach  
Office of Environmental Services  
Division of State Lands

**A Management Plan  
for  
Fisheating Creek Wildlife Management Area**

Glades County, Florida

Owned by the Board of Trustees of the Internal Improvement Trust Fund  
Managed by the Florida Fish and Wildlife Conservation Commission



June 2015

Approved Thomas H. Eason

Thomas Eason  
Director, Division of Habitat and Species Conservation

**LAND MANAGEMENT PLAN EXECUTIVE SUMMARY**

Lead Agency: Florida Fish and Wildlife Conservation Commission (FWC)  
 Common Name of Property: Fisheating Creek Wildlife Management Area  
 Location: Glades County, Florida  
 Acreage Total: 18,380 acres  
 Acreage Breakdown:

<u>Land Cover Classification</u>	<u>Acres</u>	<u>Percent of Total Area</u>
Floodplain swamp	6,570.01	35.75%
Floodplain marsh	5,237.35	28.50%
Pasture - semi-improved	1,974.37	10.74%
Mesic hammock	1,952.17	10.62%
Hydric hammock	1,232.74	6.71%
Blackwater stream	414.85	2.26%
Baygall	240.53	1.31%
Depression marsh	181.88	0.99%
Mesic flatwoods	129.70	0.71%
Dry prairie	97.73	0.53%
Xeric hammock	94.73	0.52%
Dome swamp	67.52	0.37%
Scrub	46.25	0.25%
Canal/ditch	45.93	0.25%
River floodplain lake	29.00	0.16%
Developed	28.80	0.16%
Seepage slope	15.68	0.09%
Wet flatwoods	15.55	0.08%
Artificial pond	3.24	0.02%
Clearing/regeneration	0.93	0.01%

\*GIS-calculated acreage for land cover classification varies slightly from actual total acreage.

Lease/Management Agreement No.: 4257 (Appendix 13.1)

Use: Single \_\_\_\_\_ Management Responsibilities:  
 Multiple X Agency FWC Responsibilities  
LEAD, SUBLESSEE (Wildlife Management Area, resource protection, law enforcement)

Designated Land Use: Wildlife and Environmental Area

Sublease (s): None

Encumbrances: List: Settlement Agreement; Cattle Grazing Agreement with Lykes Bros., Inc.; Concessionaire Contract with Fisheating Creek outpost, Inc. for operation of campground; Hog removal contract; Access agreement with Lykes Bros., Inc.; Agreement with South Central Florida Express for access road across railroad; Housing contract with area manager.

Type Acquisition: Fish and Wildlife Habitat Program

Unique Features: Natural: Fisheating Creek, Cowbone Marsh, swallow-tailed kite roosting area, and a variety of natural communities.

Archaeological/Historical: 48 documented within the FCWMA, including Fort Center, an important pre-Columbian period site.

Management Needs: Habitat restoration and improvement; public access and recreational opportunities; hydrological preservation and restoration; exotic and invasive species maintenance and control; imperiled species habitat maintenance, enhancement, and restoration.

Acquisition Needs/Acreage: 0 acres FWC Additions and Inholdings list; 109,943 acres remaining in the Fisheating Creek Ecosystem Florida Forever Project (Figure 11).

Surplus Lands/Acreage: None

Public Involvement: Management Advisory Group consensus building meeting and Public Hearing (Appendix 13.5)

DO NOT WRITE BELOW THIS LINE (FOR DIVISION OF STATE LANDS USE ONLY)

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ARC Approval Date \_\_\_\_\_ BTIITF Approval Date: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
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## Land Management Plan Compliance Checklist

Required for State-owned conservation lands over 160 acres

### Section A: Acquisition Information Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
1	The common name of the property.	18-2.018 & 18-2.021	1
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	7
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	9-10
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	i, 1, 139-164
5	A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.	18-2.018 & 18-2.021	11, 93
6	An <b>assessment</b> as to whether the property, or any portion, should be declared surplus. <i>Provide information regarding <b>assessment and analysis</b> in the plan, and provide <b>corresponding map</b>.</i>	18-2.021	65
7	Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. <i>Please clearly indicate parcels on a map.</i>	18-2.021	95-97
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	15
9	A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034 and the statutory authority for such use or uses.	259.032(10)	6
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	10-14

### Section B: Use Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
11	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	63-64, 98-100
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	60-62, 65
13	A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.	18-2.018	63-64
14	A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.	18-2.018	8, 98-100
15	Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources.	18-2.021	90-91, 109-110

16	Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.	18-2.021	95-96, 98-100
17	A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	259.032(10)	83-88
18	A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent “balanced public utilization,” specific agency statutory authority and any other legislative or executive directives that constrain the use of such property.	18-2.021	8, 63, 71-72, 135
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	656
20	An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.	18-2.018 & 18-2.021	65, 102
21	*For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations.	18-2.021 & 253.036	62-63
22	If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.	18-021	89-90, 639-641
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	65

\*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.

### Section C: Public Involvement Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
24	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	15-16
25	The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	259.032(10)	385-423
26	LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. <i>Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.</i>	259.032(10)	340-347
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	340-347
28	During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. <i>Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.</i>	253.034(5) & 259.032(10)	348-384
29	The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. <i>Include manager's replies to the team's findings and recommendations.</i>	259.036	72, 424-438
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	424-438
31	If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations.	259.036	424-438

### Section D: Natural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
32	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. <i>Use brief descriptions and include USDA maps when available.</i>	18-2.021	17-19, 439-448
33	Insert FNAI based natural community maps when available.	ARC consensus	22-23
34	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna and geological conditions.	18-2.021	16-17, 58

35	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns and large sinkholes.	18-2.018 & 18-2.021	46, 58-59
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	59
37	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas and phosphate, etc.	18-2.018 & 18-2.021	59
38	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.	18-2.018 & 18-2.021	20-57
39	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.	18-2.021	55-57
40	The identification of resources on the property that are listed in the Natural Areas Inventory. <i>Include letter from FNAI or consultant where appropriate.</i>	18-2.021	33-46, 57, 449
41	Specific description of how the managing agency plans to identify, locate, protect and preserve or otherwise use fragile, nonrenewable natural and cultural resources.	259.032(10)	71-133
42	<b>Habitat Restoration and Improvement</b>	259.032(10) & 253.034(5)	
42-A.	Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.	↓	71-133
42-B.	Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.		103-128
42-C.	The associated measurable objectives to achieve the goals.		103-114
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. <i>Include fire management plans - they can be in plan body or an appendix.</i>		71-133, 507-534
42-E.	A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities.		131-133, 642-653
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. <i>See footnote.</i>	253.034(5)	21
44	<b>Sustainable Forest Management, including implementation of prescribed fire management</b>	18-2.021, 253.034(5) & 259.032(10) ↓	
44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		71-133

44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
44-C.	Measurable objectives (see requirement for #42-C).		103-114
44-D.	Related activities (see requirement for #42-D).		71-133 , 507-534
44-E.	Budgets (see requirement for #42-E).		131-133, 642-653
45	Imperiled species, habitat maintenance, enhancement, restoration or population restoration	259.032(10) & 253.034(5)	
45-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	71-133
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
45-C.	Measurable objectives (see requirement for #42-C).		103-114
45-D.	Related activities (see requirement for #42-D).		71-133
45-E.	Budgets (see requirement for #42-E).		131-133, 642-653
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. <i>See footnote.</i>	253.034(5)	31, 82-83
47	Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.	BOT requirement via lease language	135, 654
48	Exotic and invasive species maintenance and control	259.032(10) & 253.034(5)	
48-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	71-133
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
48-C.	Measurable objectives (see requirement for #42-C).		103-114
48-D.	Related activities (see requirement for #42-D).		71-133
48-E.	Budgets (see requirement for #42-E).		131-133, 642-653

### Section E: Water Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
49	A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. <i>If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.</i>	18-2.018 & 18-2.021	58-59

50	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C.	18-2.021	21-22, 33-44, 58-59
51	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes and other wetlands.	18-2.021	21-22, 33-44, 58-59
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. <i>See footnote.</i>	253.034(5)	21-22
53	<b>Hydrological Preservation and Restoration</b>	259.032(10) & 253.034(5)	
53-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	71-133
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
53-C.	Measurable objectives (see requirement for #42-C).		103-114
53-D.	Related activities (see requirement for #42-D).		71-133
53-E.	Budgets (see requirement for #42-E).		131-133, 642-653

## Section F: Historical, Archeological and Cultural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
54	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. <i>Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.</i>	18-2.018, 18-2.021 & per DHR's request	59-60, 90-91, 490-493
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	490-493
56	A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	18-2.021	59-60, 90-91, 109-110
57	<b>Cultural and Historical Resources</b>	259.032(10) & 253.034(5)	
57-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	71-133
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
57-C.	Measurable objectives (see requirement for #42-C).		103-114
57-D.	Related activities (see requirement for #42-D).		71-133
57-E.	Budgets (see requirement for #42-E).		131-133, 642-653

\*\*While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.

## Section G: Facilities (Infrastructure, Access, Recreation)

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
58	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. <i>See footnote.</i>	253.034(5)	91-93
59	<b>Capital Facilities and Infrastructure</b>	259.032(10) & 253.034(5)	
59-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	71-133
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
59-C.	Measurable objectives (see requirement for #42-C).		103-114
59-D.	Related activities (see requirement for #42-D).		71-133
59-E.	Budgets (see requirement for #42-E).		131-133, 642-653
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	83-88, 91-93
61	<b>Public Access and Recreational Opportunities</b>	259.032(10) & 253.034(5)	
61-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	71-133
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		103-128
61-C.	Measurable objectives (see requirement for #42-C).		103-114
61-D.	Related activities (see requirement for #42-D).		71-133
61-E.	Budgets (see requirement for #42-E).		131-133, 642-653

## Section H: Other/ Managing Agency Tools

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
62	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	iii-x
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	i
64	If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.	ARC consensus	66-71
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	71-133

66	Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, law enforcement activities.	253.034(5)	131-133, 642-653
67	Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.	259.032(10)	131-133, 642-653
68	A statement of gross income generated, net income and expenses.	18-2.018	62-63, 131-133, 642-653

\*\*\* = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

Management Plan Compliance Checklist - Conservation Lands.xlsx

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# 1 Introduction and General Information

Fisheating Creek, the only free-flowing tributary to Lake Okeechobee, flows from its headwaters in Highlands County through vast prairies and flatwoods as it courses through rural Glades County on its way to Lake Okeechobee. Providing important habitat and wildlife corridor links to Big Cypress Swamp, Okaloacoochee Slough, Babcock-Webb Wildlife Management Area, Babcock Ranch Preserve, Lake Okeechobee, and the Lake Wales Ridge, Fisheating Creek is critical to the long-term welfare of Florida panthers, Florida black bears, swallow-tailed kites, crested caracara, and a number of other imperiled and common wildlife species native to the area.



Conservation of Fisheating Creek’s floodplain and upland communities provides critical watershed and water quality protection for the Creek. The area’s wetlands also filter and aid in the protection of water flowing into Lake Okeechobee. Functioning as the second largest tributary of Lake Okeechobee, the Creek remains a vital waterway of the Lake.

Rich in both its natural and historic heritage, Fisheating Creek was a mecca for Native Americans for thousands of years. The Creek’s abundant fish and wildlife sustained Native Americans who lived in villages and camps along the creek for centuries. One of the most notable historical sites on the area is Fort Center, an important pre-Columbian archaeological site that is extensively interpreted on the area.

Today’s visitors to the Fisheating Creek Wildlife Management Area (FCWMA) are drawn by the diversity of its natural and historical resources and unique opportunities for enjoying the wilderness of the area. Exploring the iconic natural beauty while paddling on the Creek or exploring its associated swamps and uplands provides the visitor a rare opportunity to experience nature and see wildlife in an extraordinary ancient Florida ecosystem.

Framed by bald cypress swamps and hardwood hammocks, Fisheating Creek stretches 40 miles as it travels along its path through the FCWMA. Managed by the Florida Fish and Wildlife Conservation Commission (FWC), the FCWMA is an 18,380 acre conservation area with a variety of natural resources and a rich history. The FCWMA has long been valued for its scenic quality as well as its unique fish and wildlife-based public outdoor recreational opportunities.

The FCWMA is managed by the FWC to conserve the important natural communities on-site that provide habitat for a wide range of imperiled and more common wildlife species, to conserve and restore natural wildlife habitat, and to provide high-quality opportunities for hunting, fishing, wildlife viewing, and other fish and wildlife-based public outdoor recreational opportunities including camping, paddling, biking, and hiking. Additionally, the FWC will continue to utilize cattle grazing in the management of the property in accordance with the Fisheating Creek Settlement Agreement (Appendix 13.2). Fisheating Creek is also referred to as “the Creek” throughout this Plan.

## **1.1 Management Plan Purpose**

This Management Plan serves as the basic statement of policy and direction for the management of the FCWMA. It provides information including the past usage, conservation acquisition history, and descriptions of the natural and historical resources found on the FCWMA. Furthermore, it identifies the FWC’s future management intent, goals and associated short and long-term objectives, as well as identifying challenges and solutions. This Management Plan has been developed to guide each aspect of the FCWMA’s management for the next ten years.

This Management Plan is submitted for review to the Acquisition and Restoration Council (ARC) acting on behalf of the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) of the State of Florida through the Florida Department of Environmental Protection’s (DEP) Division of State Lands (DSL), in compliance with paragraph seven of Lease No. 4257 (Appendix 13.1) and pursuant to Chapters 253 and 259, Florida Statutes (FS), and Chapters 18-2 and 18-4, Florida Administrative Code (FAC). Format and content were drafted in accordance with ARC requirements for management plans and the model plan outline provided by the staff of DSL. Terms (Appendix 13.4) used in this Management Plan describing management activities and associated measurable goals and objectives conform to those developed for the Land Management Uniform Accounting Council Biennial Land Management Operational Report.

Additionally, this Management Plan is in conformance with the terms and conditions of the 1999 Fisheating Creek Settlement Agreement (Settlement Agreement) that established the area and is designed to be in conformance with all the requirements and stipulations of that Settlement Agreement (Appendix 13.2).

### **1.1.1 FWC Planning Philosophy**

The FWC’s planning philosophy includes emphasizing management recommendation consensus-building among stakeholders and input from user groups and the general public at the beginning of the planning process. The FWC engages stakeholders by convening a Management Advisory Group (MAG) and solicits additional input from user groups and the general public at a public hearing (Appendix 13.5). The FWC also engages area, district, and regional agency staff, as well as other FWC staff expertise, in developing this

Management Plan, thereby facilitating area biologist and manager “ownership” of the Management Plan, and thus the development of meaningful management intent language, goals with associated measurable objectives, timelines for completion, and the identification of challenges and solution strategies for inclusion in the FCWMA Management Plan (Sections 5 – 8).

Further management planning input is received through Land Management Reviews (LMR) conducted every five years, which includes a review of the previous Management Plan, as well as a field review of the FCWMA. The LMR report (Section 5.1, Appendix 13.6) provides FWC staff with important information and guidance provided by a diverse team of land management auditors, and communicates the recommendations of the LMR team to the FWC so they may be adequately addressed in this Management Plan, and thus guide the implementation of the LMR team recommendations on the FCWMA.

Moreover, the FWC maintains transparency and accountability throughout the development and implementation of this Management Plan. A “living document” concept, linking this updated Management Plan to the previous one, is accomplished by reporting on the objectives, management activities, and projects accomplished over the last planning timeframe (previous ten years; see Section 4), thereby ensuring agency accountability through time. Also, in an effort to remain adaptive for the duration of this Management Plan, continuous input and feedback will be collected from FWC staff, stakeholders, user groups, and other interested parties and individuals. As needed, amendments to this Management Plan will be presented to the DSL and the ARC for review and consideration.

## **1.2 Location**

As noted above, the FCWMA is located in Glades County along the course of Fisheating Creek from the northern boundary of Glades County where the Creek enters from Highlands County, to and including Cowbone Marsh where the Creek spreads out before encountering the Hoover Dike and rim canal surrounding Lake Okeechobee (Figure 1). The FCWMA is located in multiple sections in Township 40S, Ranges 29E-32E and Township 41S, Ranges 29E-32E (Figure 2). Fort Myers is located 46 miles west, Cape Coral is 56 miles west, Palmdale is one mile north of the designated campground, and Lakeport is approximately one mile northeast.

Visitors may enter the FCWMA through the Fisheating Creek Campground located off of US 27 near Palmdale. There is also an access and parking area located off of Main Street in Palmdale, north of the campground. The campground is approximately 19 miles northwest of Moore Haven, two miles north of the intersection of Highway 29, and one mile south of Palmdale.

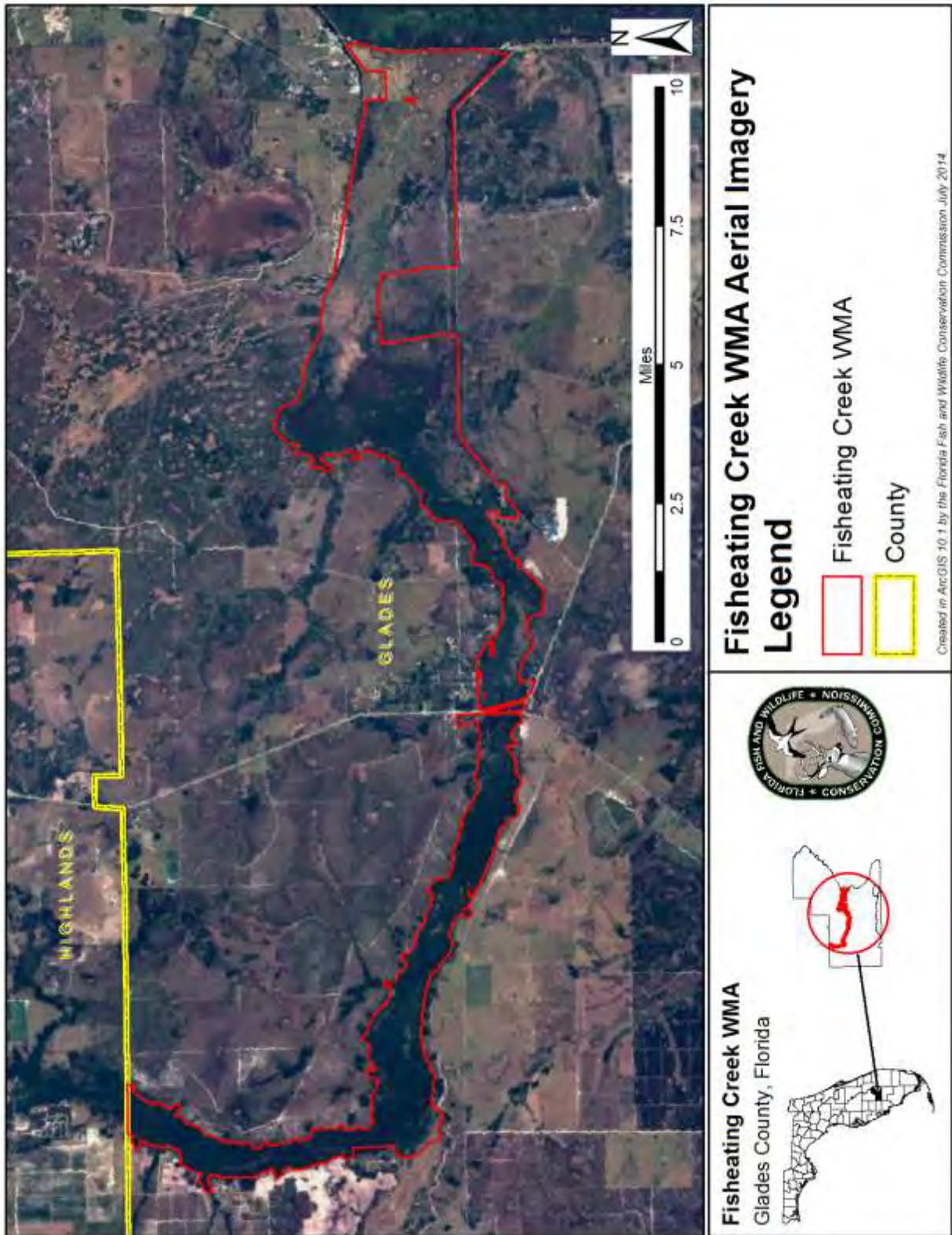


Figure 1. Aerial Imagery of FCWMA

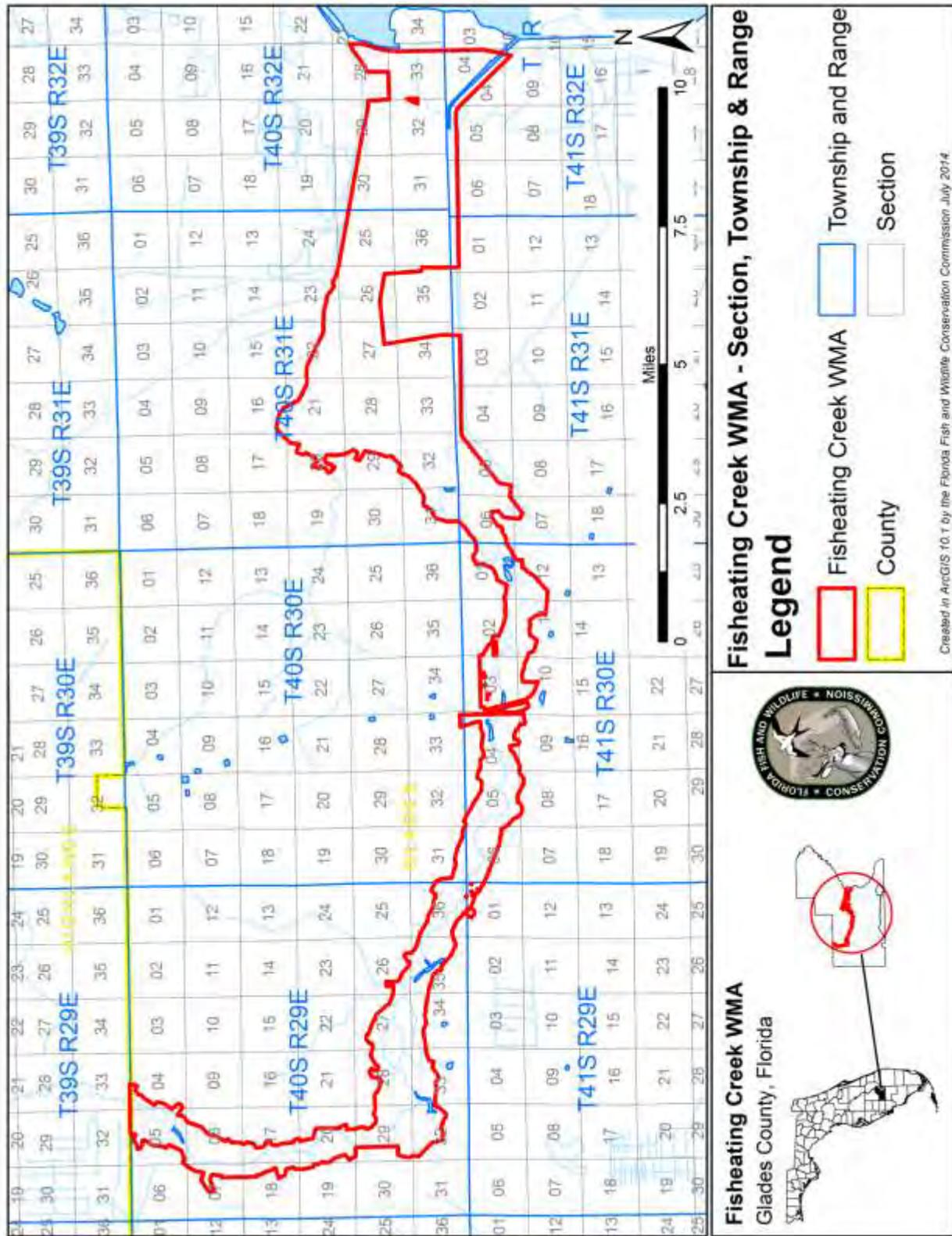


Figure 2. FCWMA – Section, Township and Range

## **1.3 Acquisition**

### **1.3.1 Purpose for Acquisition of the Property**

The Florida Forever Annual Report states that the primary objectives for purchase of the Fisheating Creek Project are “to conserve and protect natural communities along the shores of the Fisheating Creek, and thereby assist in maintaining and possibly improving the status of several rare plant and animal communities,” and to “provide for traditional public uses and recreational activities within the fee lands as specified in the Settlement Agreement.” It was recognized that conserving the lands surrounding Fisheating Creek would “help to secure the survival of the Florida panther in this state, as well as protect many other rare and endangered animals and a number of migratory birds.”

Additionally, the overall project that includes fee title purchase of the lands within the FCWMA as well as conservation easement rights on the surrounding area is designed to help link Big Cypress Swamp, Okaloacoochee Slough, Babcock-Webb WMA, and Lake Okeechobee to provide contiguous habitat linkage for species such as the Florida panther, swallow-tailed kite and other plants and animals associated with the ecosystems of the region. Further, the project was acquired to be managed by the FWC for the purpose of operating a Wildlife Management Area, providing ecological diversity, providing managed habitat for both common and imperiled wildlife, and for providing the public with fish and wildlife-oriented outdoor recreational opportunities.

### **1.3.2 Acquisition History**

On February 19, 1998, Circuit Judge Charles Carlton ruled that Fisheating Creek in Glades County is sovereignty land, held in trust for the people of Florida, with title vested in the Board of Trustees. This decision helped to terminate a long-standing dispute between the Board of Trustees and Lykes Bros., Inc., over ownership of Fisheating Creek. Judge Carlton’s order awarded immediate possession of the Creek to the Board of Trustees, notwithstanding the fact that the ordinary high water line establishing the boundary between sovereign waters and private uplands had not been established. Lykes Bros., Inc. appealed.

In order to end continued litigation and put an end to expensive and time-consuming efforts to establish the ordinary high water line, the parties to the lawsuit entered into a Settlement Agreement on May 25, 1999, calling for the State of Florida to purchase a corridor along the Creek consisting of Lyke Bros., Inc., lands lying above the “25% exceedance line,” a line well above a reasonable approximation of the ordinary high water line. The Settlement Agreement also called for Lykes Bros., Inc., to provide a quitclaim deed to company lands lying below the exceedance line. Thereby the Board of Trustees acquired clear title to 18,272 acres along the Creek corridor, known in the Settlement Agreement as the “Expanded Corridor.” It is this portion of the Fisheating Creek Florida Forever project that has been leased to the FWC to be operated as the FCWMA initially under the Conservation and Recreation Lands (CARL) Program which was later succeeded

by the Florida Forever Program. A Settlement Agreement Advisory Board (SAAB) was appointed by the agreement to advise the managing agency regarding the provisions of the Settlement Agreement. The SAAB is a 13-member board, the composition of which is dictated by the Settlement Agreement.

In February 2013, approximately 108 acres were added to the FCWMA through an establishment order and amendment to Lease Number 4257 (Appendix 13.1.1). As a result of this addition, the total area of the FCWMA is now 18,380 acres.

The lands purchased to date have been purchased under the auspices of the CARL Program and Florida Forever Program using funds appropriated under authority granted by the Florida Forever Act (Chapter 259.105, FS). The Fisheating Creek Florida Forever Project is a multi-phased fee/less-than-fee acquisition proposal. As of the 2014 Florida Forever Annual Report, the State had acquired 68,291 acres of fee and less-than-fee lands, which include conservation easements. Less-than-fee lands are owned and managed by a private landowner while a public agency or not-for-profit organization holds a conservation easement and has monitoring responsibility on the land. The 18,380 acres of fee lands are leased to the FWC for management under Lease 4257 executed in 2003 and Amendment 1 to Lease 4257 executed in 2013.



The Fisheating Creek Conservation Easement is composed of less-than-fee conservation lands that were also acquired by the State and which total approximately 49,911 acres, with many of the fee interests remaining in private ownership and with many of the rights of private ownership intact. However, the State has acquired certain conservation easement interests or rights from Lykes Bros., Inc., to ensure that the rural ranchland character and associated conservation values of the land are retained. The FWC has been given the oversight and responsibility as “monitor” of the Fisheating Creek Conservation Easement to assure that those conservation values and the State’s interests or rights are maintained and protected.

Any future lands acquired within the Fisheating Creek Florida Forever Project in both categories of fee or less-than-fee acquisition will continue to be added to the responsibilities

of the FWC for either lead management or conservation easement monitoring in conformance with the Settlement Agreement and the Fisheating Creek Florida Forever Project Management Prospectus. No management plan is required for the less-than-fee lands, but a Conservation Easement Monitoring Report is administered by the DSL, through which the FWC reports on its ongoing monitoring efforts for the conservation easement lands.

#### **1.4 Management Authority**

As described above, the FWC is the designated lead managing agency for the FCWMA under the authority granted by Lease Number 4257 from the Board of Trustees agent, the DSL. Further management authority derives from Article IV, Section 9 of the Florida Constitution as well as the guidance and directives of Chapters 253, 259, 327, 370, 373, 375, 378, 379, 403, 487, 870, and 597, FS. These constitutional provisions and laws provide the FWC the authority to protect, conserve, and manage the State's fish and wildlife resources.

#### **1.5 Management Directives**

The 50-year Board of Trustees' Lease Agreement Number 4257 with the FWC directs the FWC to "manage the leased premises only for the conservation and protection of natural and historical resources and resource-based, public outdoor recreation which is compatible with the conservation and protection of these public lands, as set forth in subsection 253.023(11), FS..." However, the lease also mandates that the management plan for the FCWMA and "all management activities shall be in strict compliance with the terms and conditions of the Settlement Agreement." The lease agreement further directs the FWC to "implement applicable Best Management Practices for all activities under this lease in compliance with paragraph 18-2.018(2)(h), F.A.C., which have been selected, developed, or approved by lessor, lessee, or other land managing agencies for the protection and enhancement of the leased premises." Additionally, the lease agreement directs the FWC to provide for the navigability of Fisheating Creek within the boundaries of the FCWMA, as permissible by natural water level.

The Settlement Agreement stipulates that the FWC is required to allow public access to the FCWMA and to provide for a variety of recreational activities on the area, including hunting, airboating, fishing, canoeing, boating, frogging, camping, and hiking. The Settlement Agreement further directs the FWC to implement resource management activities including prescribed burning, protection of historical resources, and the maintenance of the navigability of the creek.

## 1.6 Title Interest and Encumbrances

As State-owned lands, title to the FCWMA is vested in the Board of Trustees (Governor and Cabinet). In March 2003, the DSL, as staff to the Board of Trustees, entered into Lease Agreement Number 4257, a 50 year lease agreement, granting FWC management authority for the FCWMA. Further, the Settlement Agreement provides the FWC with a number of directives regarding the management of the FCWMA. Lease 4257 states that “all management activities shall be in strict compliance with the terms and conditions of the Settlement Agreement.” As stated above, the Settlement Agreement stipulates that the FWC must allow for public access and a variety of recreational activities, including hunting, fishing, frogging, airboating, paddling, boating, camping, and hiking.

Additionally, there are a variety of leases and agreements in effect at the FCWMA. The FWC signed an agreement with the Lykes Bros., Inc., and South Central Florida Express, Inc., which took effect in September 2000, to transfer an agreement to the FWC for the use of an electrical wireline and a private road that crossed the railroad tracks adjacent to the FCWMA campground (Contract #00053, Appendix 13.3.1). In January 2002, the FWC



entered into another agreement with South Central Florida Express, Inc., to allow the FWC to construct, maintain, and use a private road crossing across railroad tracks in order to provide additional access into the campground (Contract #2044, Appendix 13.3.2).

In 2007, the FWC entered into a Cattle Grazing Agreement with the Lykes Bros., Inc. (Contract #6283, Appendix 13.3.3). This agreement was executed pursuant to the terms

of the Settlement Agreement, which stipulates that the Lykes Bros., Inc., retains grazing rights within the FCWMA. The Cattle Grazing Agreement states that prescribed grazing will be implemented on the FCWMA cooperatively by the FWC and the Lykes Bros., Inc., and provides the terms under which grazing is to take place. The specifics of this Cattle Grazing Agreement are discussed in greater detail in section 5.13.3 of this Management Plan.

In 2009, the FWC executed a contract for wild hog removal on the FCWMA (Contract #8321, Appendix 13.3.4). This contract provides for the trapping and removal of feral hogs on the FCWMA. The initial five-year agreement was extended for an additional five years in 2014 and is set to expire in May 2019.

In April 2015, the FWC entered into an agreement with a private concessionaire, Cape Leisure Corporation, for the operation of the Fisheating Creek campground (Contract #14370, Appendix 13.3.5). This agreement governs the concession operations and allows for the concessionaire to operate a camp store and to provide camping, boat launching, a paddling livery, and nature-based tours on the FCWMA campground. The agreement also requires the concessionaire to maintain the facilities on the campground.



In October 2012, the FWC entered into a no cost agreement with the Lykes Bros., Inc., to allow FWC staff to access the LD3 dike and portions of Lykes' property and to obtain fill from that property in order to facilitate the restoration of Cowbone Marsh (Contract #12159, Appendix 13.3.6). This agreement is set to expire on October 3, 2016.

The FWC also maintains a residence on the FCWMA in order to provide housing for area staff. Most recently, the FWC entered into a contract in June 2014 to provide on-site housing for the lead biologist of the FCWMA (Contract #13494, Appendix 13.3.7).

## **1.7 Proximity to Other Public Conservation Lands**

The geographic location of the FCWMA at the southern terminus of the Lake Wales Ridge places it within close proximity to a large number of conservation lands (Figure 3). With the exception of the eastern extent of the area, the FCWMA is bordered by the Fisheating Creek Lykes Brothers Conservation Easement, which is monitored by the FWC.

Additionally, as described above, the FCWMA is strategically located as a link among Big Cypress Swamp, Okaloacoochee Slough, Babcock-Webb WMA, Babcock Ranch Preserve, and Lake Okeechobee which makes it vital for the conservation of wide-ranging wildlife species such as the Florida panther, swallow-tailed kite, sandhill cranes, crested caracara and a number of other species native to the region.

Tables 1 and 2 list the Florida Forever projects and conservation lands within a 20-mile radius of the FCWMA, including lands managed by public and private entities, that conserve historical and natural resources within this region of Florida.

Most of the conservation lands listed in Table 1 are owned in full-fee by a public entity. However, some of these areas fall within a less-than-fee ownership classification where the land is owned and being managed by a private landowner while a public agency or not-for-profit organization holds a conservation easement on the land.

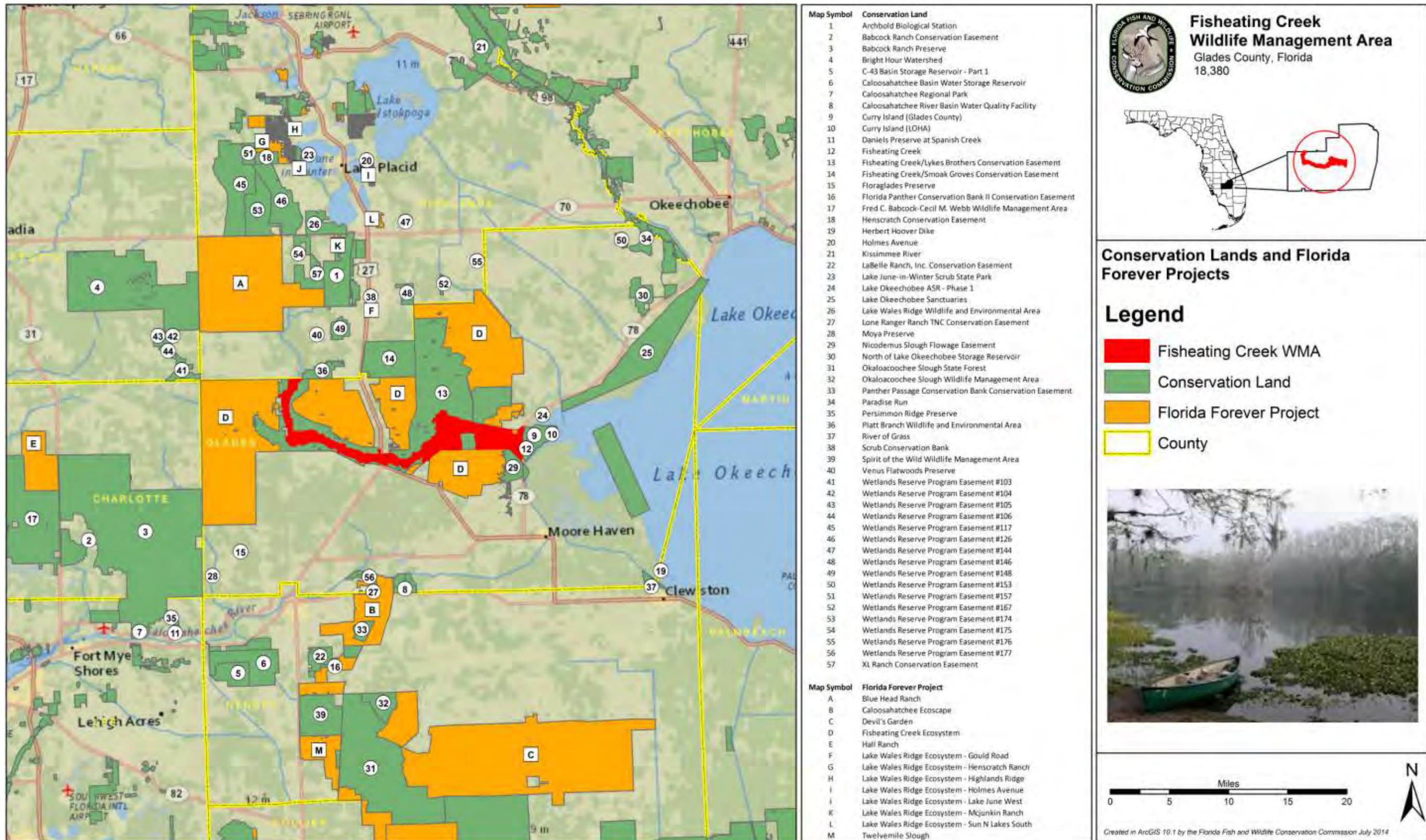


Figure 3. Conservation Lands and Florida Forever Projects within a 20-mile Radius of FCWMA

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**Table 1. Conservation Lands within a 20-mile Radius of the FCWMA**

<b>United States</b>	<b>Managing Agency</b>
Florida Panther Conservation Bank II Conservation Easement	DOI - USFWS
Wetlands Reserve Program Easement #103	USDA - NRCS
Wetlands Reserve Program Easement #104	USDA - NRCS
Wetlands Reserve Program Easement #105	USDA - NRCS
Wetlands Reserve Program Easement #106	USDA - NRCS
Wetlands Reserve Program Easement #117	USDA - NRCS
Wetlands Reserve Program Easement #126	USDA - NRCS
Wetlands Reserve Program Easement #144	USDA - NRCS
Wetlands Reserve Program Easement #146	USDA - NRCS
Wetlands Reserve Program Easement #148	USDA - NRCS
Wetlands Reserve Program Easement #153	USDA - NRCS
Wetlands Reserve Program Easement #157	USDA - NRCS
Wetlands Reserve Program Easement #167	USDA - NRCS
Wetlands Reserve Program Easement #174	USDA - NRCS
Wetlands Reserve Program Easement #175	USDA - NRCS
Wetlands Reserve Program Easement #176	USDA - NRCS
Wetlands Reserve Program Easement #177	USDA - NRCS
<hr/>	
<b>State of Florida</b>	<b>Managing Agency</b>
Babcock Ranch Conservation Easement	DEP - DSL
Fisheating Creek/Lykes Brothers Conservation Easement	FWC
Fisheating Creek/Smoak Groves Conservation Easement	DEP - DSL
Fred C. Babcock-Cecil M. Webb Wildlife Management Area	FWC
LaBelle Ranch, Inc. Conservation Easement	DEP - DSL
Lake June-in-Winter Scrub State Park	DEP - DRP
Lake Wales Ridge Wildlife and Environmental Area	FWC
Okaloacoochee Slough State Forest	DACS - FFS
Okaloacoochee Slough Wildlife Management Area	FWC
Panther Passage Conservation Bank Conservation Easement	FWC
Platt Branch Wildlife and Environmental Area	FWC
Spirit of the Wild Wildlife Management Area	FWC
<hr/>	
<b>Water Management District</b>	<b>Managing Agency</b>
Bright Hour Watershed	SFWWMD
C-43 Basin Storage Reservoir - Part 1	SFWMD
Caloosahatchee Basin Water Storage Reservoir	SFWMD
Caloosahatchee River Basin Water Quality Treatment and Testing Facility	SFWMD
Fisheating Creek	SFWMD

**Table 1. Conservation Lands within a 20-mile Radius of the FCWMA**

Henscratch Conservation Easement	SFWMD
Herbert Hoover Dike	SFWMD
Kissimmee River	SFWMD
Lake Okeechobee ASR - Phase 1	SFWMD
Nicodemus Slough Flowage Easement	SFWMD
North of Lake Okeechobee Storage Reservoir	SFWMD
Paradise Run	SFWMD
River of Grass	SFWMD
<hr/>	
<b>Local Government</b>	<b>Managing Agency</b>
Persimmon Ridge Preserve	Lee County
Caloosahatchee Regional Park	Lee County
Daniels Preserve at Spanish Creek	Lee County
Curry Island	Glades County
<hr/>	
<b>Private</b>	<b>Manager</b>
Archbold Biological Station	Archbold Expeditions
Babcock Ranch Preserve	Babcock Ranch Management, LLC
Curry Island (LOHA)	Lake Okeechobee Habitat Alliance
Floraglades Preserve	Floraglades Foundation
Holmes Avenue	The Nature Conservancy
Lake Okeechobee Sanctuaries	National Audubon Society
Lone Ranger Ranch TNC Conservation Easement	The Nature Conservancy
Moya Preserve	Floraglades Foundation
Scrub Conservation Bank	Archbold Expeditions
Venus Flatwoods Preserve	The Nature Conservancy
XL Ranch Conservation Easement	The Nature Conservancy

**Table 1 Acronym Key:**

DACS-FFS: Florida Department of Agriculture and Consumer Services, Florida Forest Service

DEP-DRP: Florida Department of Environmental Protection, Division of Recreation and Parks

DEP-DSL: Florida Department of Environmental Protection, Division of State Lands

DOI-USFWS: U.S. Department of the Interior, United States Fish and Wildlife Service

SFWMD: South Florida Water Management District

SFWMD: Southwest Florida Water Management District

USDA-NRCS: United States Department of Agriculture, Natural Resources Conservation Service

**Table 2. Florida Forever Projects within a 20-mile Radius of the FCWMA**

<b>Project Name</b>	<b>GIS Acres</b>
Blue Head Ranch	40,558.62
Caloosahatchee Ecoscape	18,454.98
Devil's Garden	82,994.75
Fisheating Creek Ecosystem	177,319.04
Hall Ranch	8,518.61
Lake Wales Ridge Ecosystem - Gould Road	268.21
Lake Wales Ridge Ecosystem - Henscratch Ranch	2,292.33
Lake Wales Ridge Ecosystem - Highlands Ridge	6,061.61
Lake Wales Ridge Ecosystem - Holmes Avenue	1,074.84
Lake Wales Ridge Ecosystem - Lake June West	864.48
Lake Wales Ridge Ecosystem - Mcjunkin Ranch	790.13
Lake Wales Ridge Ecosystem - Sun N Lakes South	485.12
Twelvemile Slough	15,967.48

### **1.8 Adjacent Land Uses**

In Glades County, the area surrounding the FCWMA is overwhelmingly rural in nature and is primarily zoned Agricultural. The Agricultural land use designation refers to lands that support and allow activities which are predominately used for the cultivation of crops and livestock including cropland, pastureland, orchards, vineyards, nurseries, ornamental horticulture areas, groves, confined feeding operations, specialty farms, and silviculture.

Much of the land directly adjacent to the FCWMA is owned by the Lykes Brothers, Inc., and is classified as timberland, agricultural land or pasture. Some residential and commercial land uses can be found adjacent to the FCWMA, primarily in the vicinity of US 27, which runs through the central portion of the FCWMA, and Highway 78, along the eastern boundary of the area.

The current land use designation as depicted in the Future Land Use Map for the FCWMA is conservation and recreation.

### **1.9 Public Involvement**

The FWC conducted a MAG meeting in Lake Placid, Florida, on June 26, 2013, to obtain input from both public and private stakeholders regarding management of the FCWMA. Results of this meeting were used by FWC to develop management goals and objectives and to identify opportunities and strategies for inclusion in this Management Plan. A summary of issues and



opportunities raised by the MAG, as well as a listing of participants, is included as Appendix 13.5.1. Additionally, a public hearing, as required by Chapter 259.032(10), F.S., was held in Moore Haven, Florida, on August 1, 2013. The report of that hearing is also contained in Appendix 13.5.3. A website is also maintained for receipt of public input at <http://myfwc.com/conservation/terrestrial/management-plans/develop-mps/> . Further testimony and input is received at a public hearing held by the ARC when the Plan is considered for approval. Input received from all public involvement efforts has been considered in the development of this Management Plan. Additionally, the SAAB has also provided recommendations and input regarding this Management Plan.

## 2 Natural and Historical Resources

### 2.1 Physiography

The FCWMA is located within the mid-peninsular physiographic zone at the foot of the Lake Wales Ridge, just north of the southern physiographic zone. The mid-peninsular zone contains discontinuous highlands separated by broad valleys and is composed of distinct physiographic divisions. The FCWMA lies within four of these physiographic divisions: the Okeechobee Plain in the northern portion of the eastern edge of the area, the Caloosahatchee Valley just south of the Okeechobee Plain, the Caloosahatchee Incline in the central portion of the area, and the Desoto Plain in the western portion of the area. The corridor of Fisheating Creek occupies a slight valley within these physiographic divisions; otherwise, the area is predominantly flat, with only gentle slopes and slight changes in elevation.

#### 2.1.1 Climate

The climate of Glades County, like most of peninsular Florida, is humid and subtropical, with long, warm, and humid summers and mild, dry winters. In the summer, temperature tends to remain relatively constant from day to day, with high temperatures being tempered by clouds and frequent afternoon rain showers. In the winter, on the other hand, temperatures tend to vary considerably due to dry, cold air coming in the form of cold fronts from the north. The average annual temperature in Glades County is 81° Fahrenheit (F) in the summer and 62° F in the winter. The average annual rainfall is approximately 54 inches. Temperatures tend to be the highest in August, when the average maximum temperature is 91° F and the average minimum is nearly 73°



F. January tends to be the coldest month, with an average maximum temperature of nearly 74° F and an average minimum temperature of nearly 52° F.

Precipitation also tends to vary greatly with the season, as nearly 60% of the annual rainfall occurs during the summer months. The seasonal variation in rainfall causes distinct rainy and dry seasons, with the water levels of Fisheating Creek fluctuating greatly depending on the season.

### **2.1.2 Topography**

As mentioned above, the FCWMA is located at the foot of the Lake Wales Ridge, and along the corridor of Fisheating Creek. The topography is characterized by gently sloping bottomland along both sides of the creek, with an elevation at the north end (at the Glades/Highlands county line) of 81 feet above mean sea level (MSL), down to an elevation of 15 feet MSL where the creek enters Lake Okeechobee.

### **2.1.3 Soils**

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) data were used to identify the FCWMA’s soil series and soil depth to water table (Figures 4 and 5). Twenty-three soil map units described in the soil survey of the FCWMA are distributed as shown in Figure 4. Analyses of depth to water table for map units occurring within the FCWMA are also provided in Figure 5. The NRCS defines a soil map unit as: “a collection of soil areas or non-soil areas (miscellaneous areas) delineated in a soil survey.” Soil map units may contain multiple soil components, which are given names that are unique identifiers. Figure 4 provides aggregation data for FCWMA map units. Soils series descriptions may be found in Appendix 13.7.



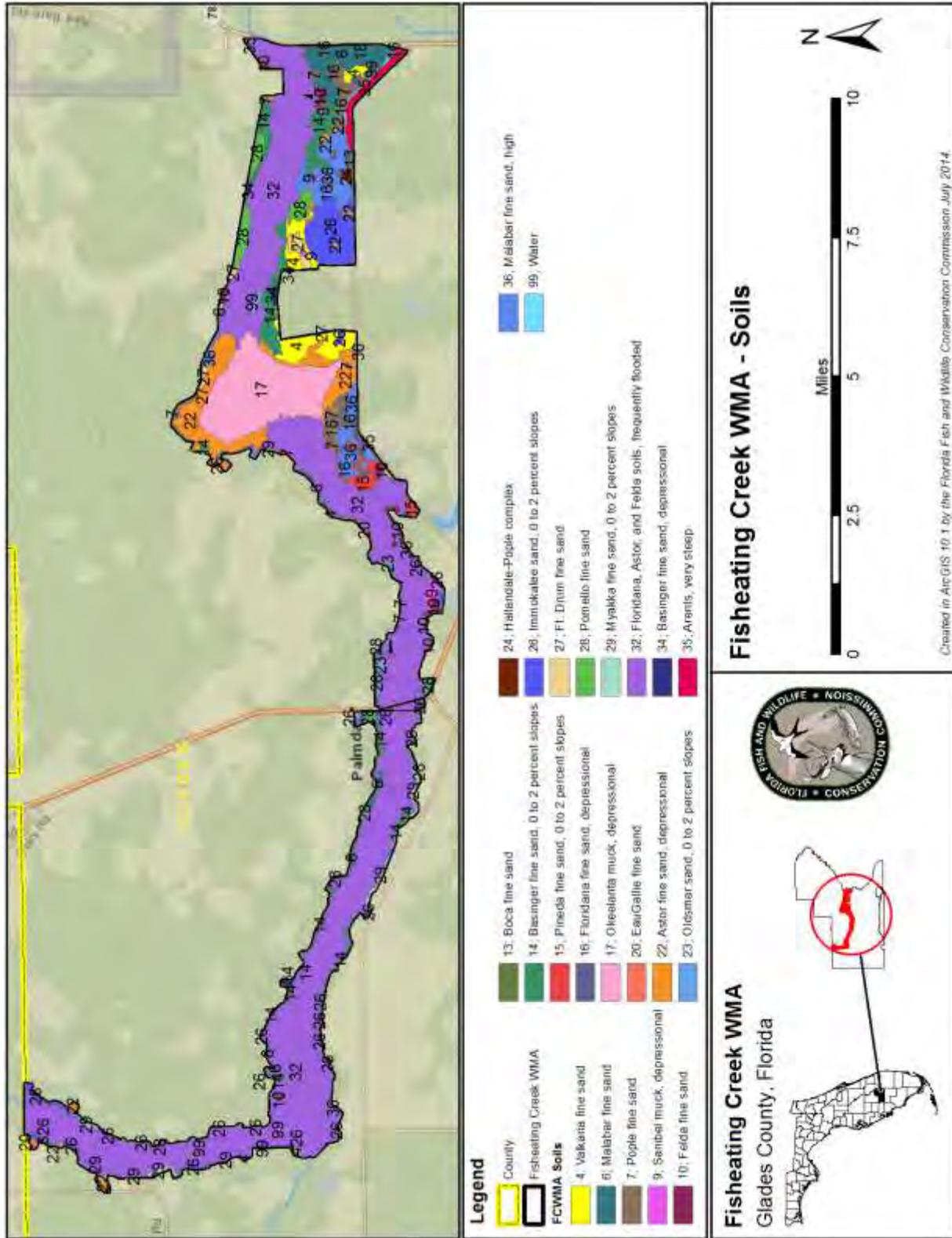


Figure 4. FCWMA Soil Type

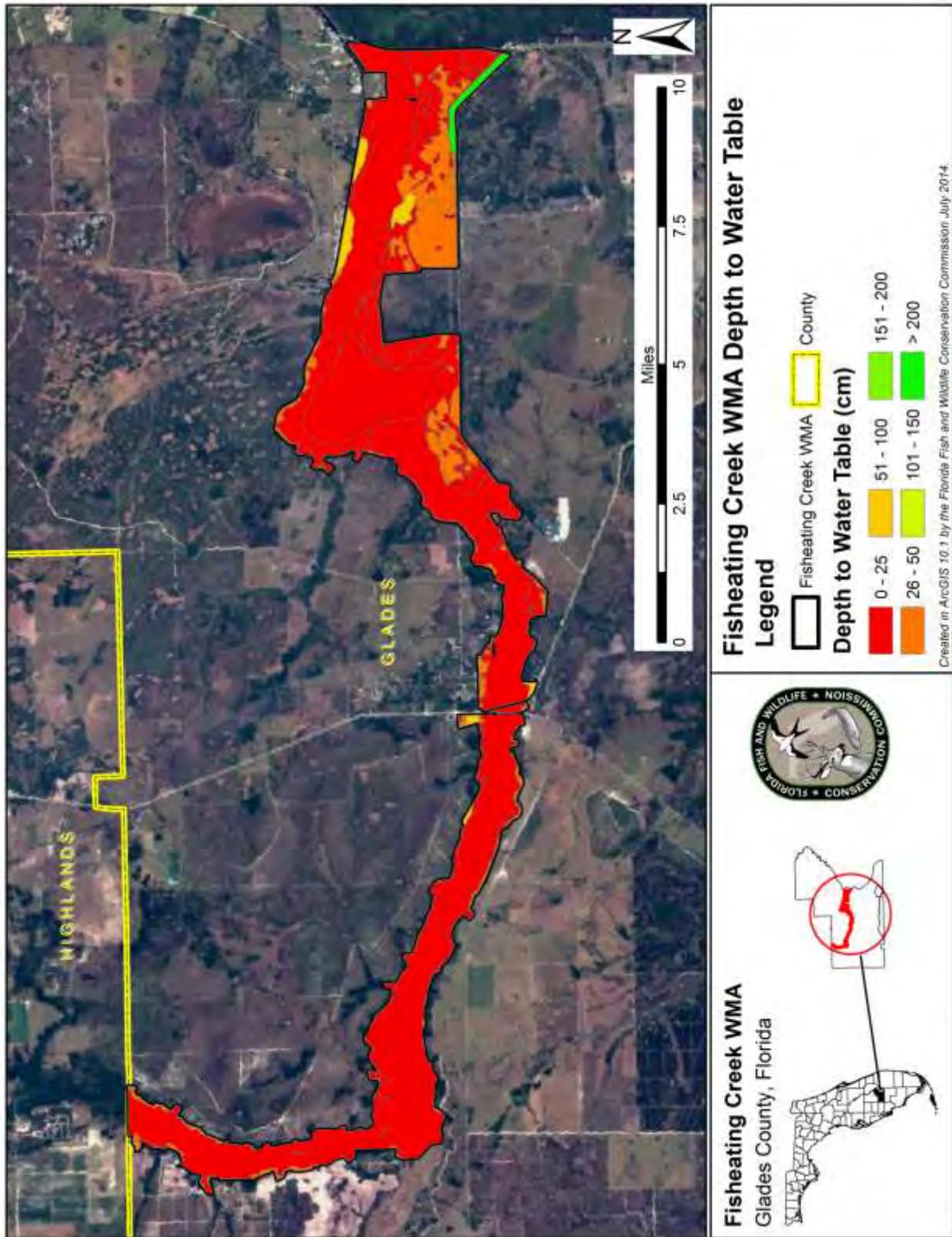


Figure 5. FCWMA Soil Depth to Water Table

### 2.1.4 Geologic Conditions

Fisheating Creek begins atop the Fort Preston formation of the Miocene series. The stream traverses several lower marine and estuarine terrace deposits of the Recent and Pleistocene series and then moves into the Caloosahatchee formation of the Pleistocene series. The Caloosahatchee formation is a shell hash of limestone and clay. Just before reaching Lake Okeechobee, the stream enters the Fort Thompson formation area, which is a shell hash of alternating marine and freshwater mollusks, clay and sand. There are no known notable geologic features occurring along the Creek.

## 2.2 Vegetation

Fisheating Creek itself is a high-quality, free-flowing blackwater stream. The tea-colored water results from the swamps and the marshes through which the source of its water flows. Extensive forested wetlands and floodplain marsh buffer Fisheating Creek for most of its route. The portions of the FCWMA that border Fisheating Creek contain a diversity of natural communities which contain a variety of vegetative cover types. Closer to Lake Okeechobee, some areas were converted to rangeland for cattle grazing in the past and are in the process of being restored.

Through the services of the Florida Natural Areas Inventory (FNAI), the natural communities of the FCWMA were initially mapped in 2003 and were re-certified and re-mapped in 2015. FNAI describes 15 natural community types and five anthropogenic



(ruderal) or altered community types (Table 3, Figure 6) on the FCWMA. Additionally, utilizing historic aerial photographs from 1944-1967 and survey information of the area from 1871-1875, FNAI has mapped the historic natural communities on the area (Figure 7). The mapping of historic natural communities provides the FWC with knowledge of the historic conditions of the area and is used to help guide the management and restoration of the current natural communities on the

FCWMA. FWC biologists, along with contracted surveys through FNAI, have documented the native plant species (Table 4), rare plant species (Table 5) and invasive exotic plant species (Table 6) that are known to occur on the FCWMA.

**Table 3. FCWMA FNAI Natural and Anthropogenic Communities**

<b>Natural Community</b>	<b>Acreage*</b>	<b>Percentage</b>
Floodplain swamp	6,570.01	35.75%
Floodplain marsh	5,237.35	28.50%
Pasture - semi-improved	1,974.37	10.74%
Mesic hammock	1,952.17	10.62%
Hydric hammock	1,232.74	6.71%
Blackwater stream	414.85	2.26%
Baygall	240.53	1.31%
Depression marsh	181.88	0.99%
Mesic flatwoods	129.70	0.71%
Dry prairie	97.73	0.53%
Xeric hammock	94.73	0.52%
Dome swamp	67.52	0.37%
Scrub	46.25	0.25%
Canal/ditch	45.93	0.25%
River floodplain lake	29.00	0.16%
Developed	28.80	0.16%
Seepage slope	15.68	0.09%
Wet flatwoods	15.55	0.08%
Artificial pond	3.24	0.02%
Clearing/regeneration	0.93	0.01%

\*Total GIS-calculated acreage for natural community classifications varies slightly from the actual total acreage of FCWMA

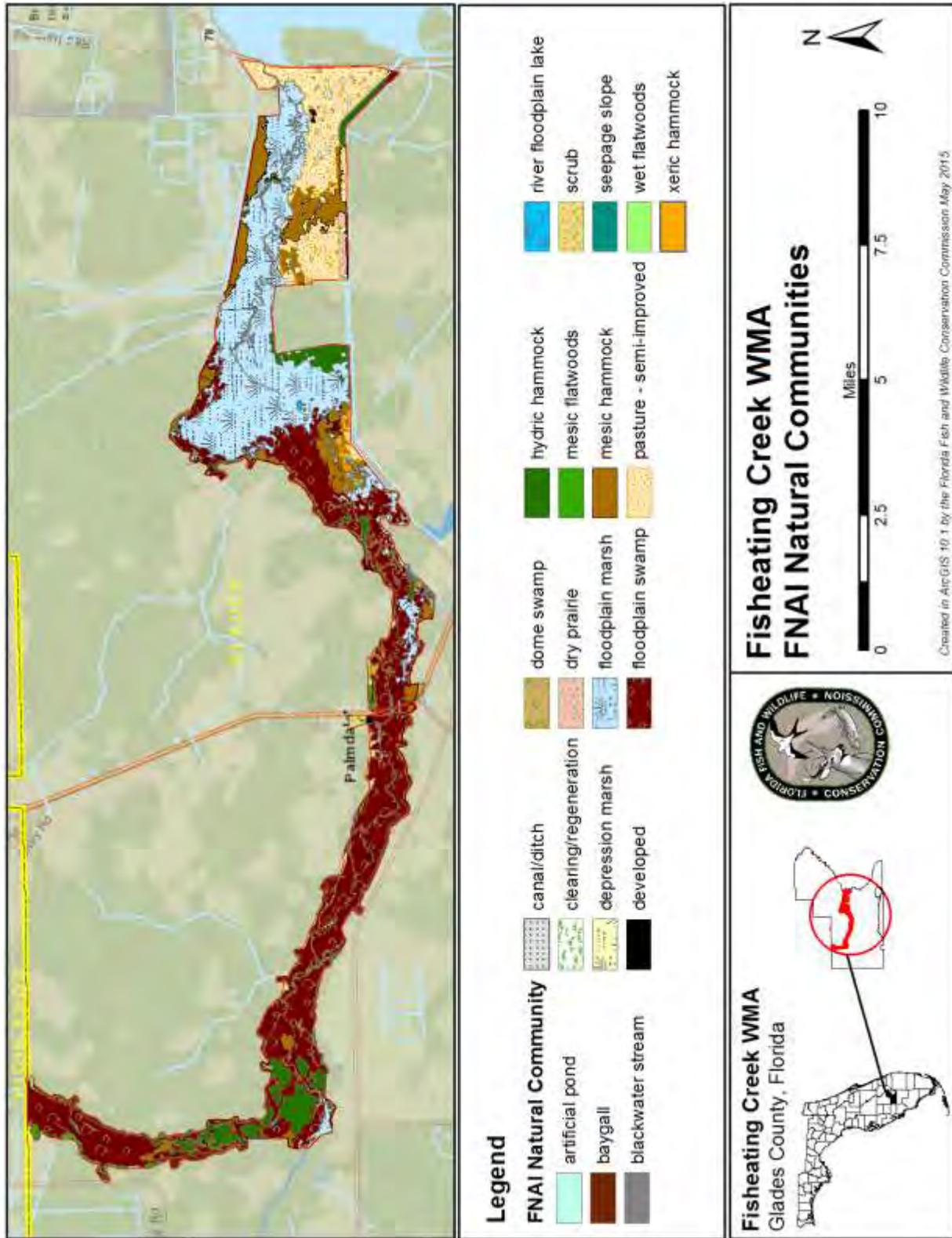


Figure 6. FCWMA FNAI Natural and Anthropogenic Communities

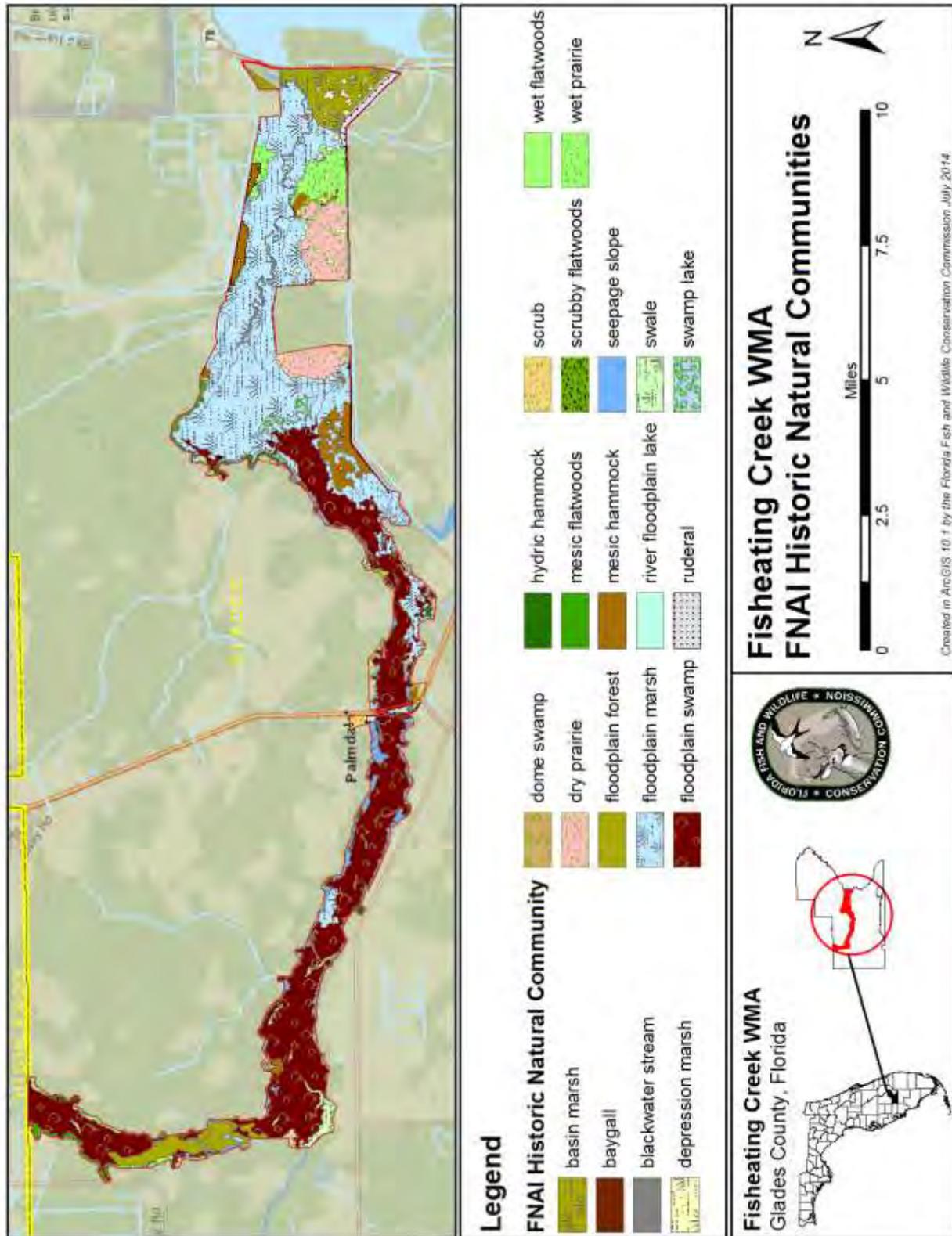


Figure 7. FCWMA Historic Natural Community Types

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Adam's needle	<i>Yucca filamentosa</i>
Alabama swamp flatsedge	<i>Cyperus ligularis</i>
American beautyberry	<i>Callicarpa americana</i>
American cupscale	<i>Sacciolepis striata</i>
American holly	<i>Ilex opaca</i>
American pokeweed	<i>Phytolacca americana</i>
Anglepod blue-flag	<i>Iris hexagona</i>
Annual ragweed	<i>Ambrosia artemisiifolia</i>
Arrowfeather threeawn	<i>Aristida purpurascens</i>
Atlantic St. John's-wort	<i>Hypericum tenuifolium</i>
Bagpod	<i>Sesbania vesicaria</i>
Bahaman aster	<i>Symphotrichum bahamense</i>
Bald cypress	<i>Taxodium distichum</i>
Baldwin's coyote thistle	<i>Eryngium baldwinii</i>
Bandanna-of-the-Everglades	<i>Canna flaccida</i>
Bantambuttons	<i>Syngonanthus flavidulus</i>
Bay lobelia	<i>Lobelia feayana</i>
Beaked panicum	<i>Panicum anceps</i>
Big carpetgrass	<i>Axonopus furcatus</i>
Bighead rush	<i>Juncus megacephalus</i>
Bishop's weed	<i>Ptilimnium capillaceum</i>
Black gum	<i>Nyssa sylvatica</i>
Black-eyed Susan	<i>Rudbeckia hirta</i>
Blackroot	<i>Pterocaulon pycnostachyum</i>
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>
Blue mistflower	<i>Conoclinium coelestinum</i>
Blue-eyed grass	<i>Sisyrinchium sp.</i>
Bluestem palmetto	<i>Sabal minor</i>
Bog white violet	<i>Viola lanceolata</i>
Bottlebrush threeawn	<i>Aristida spiciformis</i>
Bracken fern	<i>Pteridium aquilinum</i>
Bristlegrass	<i>Setaria spp.</i>
Bristly greenbrier	<i>Smilax tamnoides</i>
Broadleaf carpetgrass	<i>Axonopus compressus</i>
Broadleaf cattail	<i>Typha latifolia</i>
Broomsedge	<i>Andropogon virginicus</i>
Browne's blechum	<i>Ruellia blechum</i>
Burmann's basketgrass	<i>Oplismenus burmannii</i>
Butterfly orchid	<i>Encyclia tampensis</i>

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Butterweed	<i>Packera glabella</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Cabbage palm	<i>Sabal palmetto</i>
Canadian toadflax	<i>Nuttallanthus canadensis</i>
Capillary hairsedge	<i>Bulbostylis ciliatifolia</i>
Cardinal airplant	<i>Tillandsia fasciculata</i>
Carolina cranesbill	<i>Geranium carolinianum</i>
Carolina willow	<i>Salix caroliniana</i>
Carolina yelloweyed grass	<i>Xyris caroliniana</i>
Carpetgrass	<i>Axonopus fissifolius</i>
Cathedral bells	<i>Kalanchoe pinnata</i>
Chaffweed	<i>Anagallis minima</i>
Camphorweed	<i>Heterotheca subaxillaris</i>
Chapman's oak	<i>Quercus chapmanii</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>
Climbing aster	<i>Symphotrichum carolinianum</i>
Climbing hempvine	<i>Mikania scandens</i>
Coast cockspur	<i>Echinochloa walteri</i>
Coastal plain hawkweed	<i>Hieracium megacephalum</i>
Coastal plain milkwort	<i>Polygala setacea</i>
Columbia waxweed	<i>Cuphea carthagenensis</i>
Common rush	<i>Juncus effusus</i>
Common yellow stargrass	<i>Hypoxis curtissii</i>
Common yellow woodsorrel	<i>Oxalis corniculata</i>
Coral bean	<i>Erythrina herbacea</i>
Coral greenbrier	<i>Smilax walteri</i>
Cupgrass	<i>Eriochloa sp.</i>
Cutleaf groundcherry	<i>Physalis angulata</i>
Cutthroatgrass	<i>Panicum abscissum</i>
Cypress witchgrass	<i>Dichantheium ensifolium</i>
Dahoon holly	<i>Ilex cassine</i>
Deer moss	<i>Cladonia evansii</i>
Dog fennel	<i>Eupatorium capillifolium</i>
Dog's-tongue	<i>Pseudelephantopus spicatus</i>
Dotted smartweed	<i>Persicaria punctata</i>
Downy milkpea	<i>Galactia volubilis</i>
Duck potato	<i>Sagittaria lancifolia</i>
Dwarf huckleberry	<i>Gaylussacia dumosa</i>
Dwarf live oak	<i>Quercus minima</i>

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Dwarf St. John's-wort	<i>Hypericum mutilum</i>
Dye bedstraw	<i>Galium tinctorium</i>
Eastern baccharis	<i>Baccharis halimifolia</i>
Edison's St. John's-wort	<i>Hypericum edisonianum</i>
Elliot's bluestem	<i>Andropogon gyrans</i>
False hop sedge	<i>Carex lupuliformis</i>
False nettle	<i>Boehmeria cylindrica</i>
False-pimpernel	<i>Lindernia grandiflora</i>
Fascicled beaksedge	<i>Rhynchospora fascicularis</i>
Feay's palaflox	<i>Palafloxia feayi</i>
Fetterbush	<i>Lyonia lucida</i>
Finger-rot	<i>Cnidocolus stimulosus</i>
Fire flag	<i>Thalia geniculata</i>
Fireweed	<i>Erechtites hieraciifolius</i>
Florida alicia	<i>Chapmannia floridana</i>
Florida bluestem	<i>Andropogon floridanus</i>
Florida hedgenettle	<i>Stachys floridana</i>
Florida paintbrush	<i>Carphephorus corymbosus</i>
Florida pellitory	<i>Parietaria floridana</i>
Florida tickseed	<i>Coreopsis floridana</i>
Forked fimbry	<i>Fimbristylis dichotoma</i>
Fourvalve mimosa	<i>Mimosa quadrivalvis</i>
Fragrant flatsedge	<i>Cyperus oderatus</i>
Fringed nutrush	<i>Scleria ciliata</i>
Fringed yelloweyed grass	<i>Xyris fimbriata</i>
Fringeleaf paspalum	<i>Paspalum setaceum</i>
Frog-fruit	<i>Phyla nodiflora</i>
Gallberry	<i>Ilex glabra</i>
Giant airplant	<i>Tillandsia utriculata</i>
Giant leather fern	<i>Acrostichum danaeifolium</i>
Gopher apple	<i>Licania michauxii</i>
Gopher grass	<i>Pityopsis graminifolia</i>
Grassleaf lettuce	<i>Lactuca graminifolia</i>
Grassleaf rush	<i>Juncus marginatus</i>
Green arrow arum	<i>Peltandra virginica</i>
Green flatsedge	<i>Cyperus virens</i>
Hackberry	<i>Celtis laevigata</i>
Hairy beggarticks	<i>Bidens pilosa</i>
Hairy fimbry	<i>Fimbristylis puberula</i>

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Hairy pod cowpea	<i>Vigna luteola</i>
Haspan flatsedge	<i>Cyperus haspan</i>
Helmet flower	<i>Scutellaria integrifolia</i>
Hemlock witchgrass	<i>Dichanthelium portoricense</i>
Highbush blueberry	<i>Vaccinium corymbosum</i>
Hog plum	<i>Ximenia americana</i>
Iceweed	<i>Verbesina virginica</i>
Juba's bush	<i>Iresine diffusa</i>
Juniperleaf	<i>Polypremum procumbens</i>
Knotroot bristlegrass	<i>Setaria parviflora</i>
Lanceleaf primrosewillow	<i>Ludwigia lanceolata</i>
Large sedge	<i>Carex gigantea</i>
Laurel greenbrier	<i>Smilax laurifolia</i>
Laurel oak	<i>Quercus laurifolia</i>
Leavenworth's tickseed	<i>Coreopsis leavenworthii</i>
LeConte's flatsedge	<i>Cyperus lecontei</i>
Lemon bacopa	<i>Bacopa caroliniana</i>
Lesser creeping rush	<i>Juncus repens</i>
Limestone sandmat	<i>Euphorbia blodgettii</i>
Little duckweed	<i>Lemna obscura</i>
Live oak	<i>Quercus virginiana</i>
Lizard's-tail	<i>Saururus cernuus</i>
Loblolly bay	<i>Gordonia lasianthus</i>
Lowland rotala	<i>Rotala ramosior</i>
Maidencane	<i>Panicum hemitomom</i>
Maleberry	<i>Lyonia ligustrina</i>
Manatee mudflower	<i>Micranthemum glomeratum</i>
Manatee River airplant	<i>Tillandsia simulata</i>
Manyflower marshpennywort	<i>Hydrocotyle umbellata</i>
Manyspike flatsedge	<i>Cyperus polystachyos</i>
Marsh primrosewillow	<i>Ludwigia palustris</i>
Marsh St. John's-wort	<i>Triadenum virginicum</i>
Marsh-pink	<i>Sabatia grandiflora</i>
Millet beaksedge	<i>Rhynchospora miliacea</i>
Moistbank pimpernel	<i>Lindernia dubia</i>
Musky mint	<i>Hyptis alata</i>
Myrtle oak	<i>Quercus myrtifolia</i>
Netted chain fern	<i>Woodwardia areolata</i>
Netted pawpaw	<i>Asimina reticulata</i>

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Northern needleleaf	<i>Tillandsia balbisiana</i>
Nuttall's thistle	<i>Cirsium nuttallii</i>
Oakleaf fleabane	<i>Erigeron quercifolius</i>
Oppositeleaf spotflower	<i>Acmella oppositifolia</i>
Orange milkwort	<i>Polygala lutea</i>
Ovateleaf flatsedge	<i>Cyperus ovatus</i>
Partridge pea	<i>Chamaecrista fasciculata</i>
Pennsylvania bittercrest	<i>Cardamine pennsylvanica</i>
Pennsylvania everlasting	<i>Gamochaeta pennsylvanica</i>
Pennyroyal	<i>Piloblephis rigida</i>
Persimmon	<i>Diospyros virginiana</i>
Peruvian primrosewillow	<i>Ludwigia peruviana</i>
Pickerelweed	<i>Pontederia cordata</i>
Piedmont pinweed	<i>Lechea torreyi</i>
Piedmont primrosewillow	<i>Ludwigia arcuata</i>
Pine barren frostweed	<i>Helianthemum corymbosum</i>
Pine barren goldenrod	<i>Solidago fistulosa</i>
Pineland scalypink	<i>Stipulicida setacea</i>
Pinewoods fingergrass	<i>Eustachys petraea</i>
Pink sundew	<i>Drosera capillaris</i>
Plumed beaksedge	<i>Rhynchospora plumosa</i>
Poison ivy	<i>Toxicodendron radicans</i>
Pop ash	<i>Fraxinus caroliniana</i>
Possumhaw	<i>Viburnum nudum</i>
Princess-of-the-night	<i>Selenicereus pteranthus</i>
Privet wild sensitive plant	<i>Senna ligustrina</i>
Queen's delight	<i>Stillingia sylvatica</i>
Rabbitbells	<i>Crotalaria rotundifolia</i>
Red bay	<i>Persea borbonia</i>
Red maple	<i>Acer rubrum</i>
Red mulberry	<i>Morus rubra</i>
Redtop panicum	<i>Panicum rigidulum</i>
Resurrection fern	<i>Pleopeltis polypodioides</i>
Richard's yelloweyed grass	<i>Xyris jupicai</i>
Rockweed	<i>Pilea microphylla</i>
Rose rush	<i>Lygodesmia aphylla</i>
Rosy camphorweed	<i>Pluchea rosea</i>
Rough buttonweed	<i>Diodella teres</i>
Rough hedgehyssop	<i>Gratiola hispida</i>

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Roundfruit hedgehyssop	<i>Gratiola virginiana</i>
Roundpod St. John's-wort	<i>Hypericum cistifolium</i>
Runner oak	<i>Quercus margarettae</i>
Rusty staggerbush	<i>Lyonia ferruginea</i>
Sand blackberry	<i>Rubus cuneifolius</i>
Sand cord grass	<i>Spartina bakeri</i>
Sand live oak	<i>Quercus geminata</i>
Sand pine	<i>Pinus clausa</i>
Sand spike-moss	<i>Selaginella arenicola</i>
Sandyfield beaksedge	<i>Rhynchospora megalocarpa</i>
Saw greenbrier	<i>Smilax bona-nox</i>
Saw palmetto	<i>Serenoa repens</i>
Sawtooth blackberry	<i>Rubus pensilvanicus</i>
Scrub bay	<i>Persea humilis</i>
Scrub hickory	<i>Carya floridana</i>
Scrub holly	<i>Ilex opaca var. arenicola</i>
Scrub oak	<i>Quercus inopina</i>
Scrub palmetto	<i>Sabal etonia</i>
Seaside brookweed	<i>Samolus valerandi</i>
Seaside primrosewillow	<i>Ludwigia maritima</i>
Sensitive pea	<i>Chamaecrista nictitans</i>
Serpent fern	<i>Phlebodium aureum</i>
Shade mudflower	<i>Micranthemum umbrosum</i>
Shield fern	<i>Thelypteris sp.</i>
Shiny blueberry	<i>Vaccinium myrsinites</i>
Shoestring fern	<i>Vittaria lineata</i>
Shortleaf yelloweyed grass	<i>Xyris brevifolia</i>
Silverling	<i>Baccharis glomeruliflora</i>
Simmonds' Aster	<i>Symphotrichum simmondsii</i>
Slash pine	<i>Pinus elliottii</i>
Slender goldentop	<i>Euthamia graminifolia</i>
Smallhead doll's daisy	<i>Boltonia diffusa</i>
Small-leaf arrowwood	<i>Viburnum obovatum</i>
Smartweed	<i>Polygonum spp.</i>
South Florida slash pine	<i>Pinus elliottii var. densa</i>
Southern beaksedge	<i>Rhynchospora microcarpa</i>
Southern beeblossom	<i>Oenothera simulans</i>
Southern bogbutton	<i>Lachnocaulon beyrichianum</i>
Southern fox grape	<i>Vitis rotundifolia</i>

**Table 4. Native Plant Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Southern marsh yellowcress	<i>Rorippa teres</i>
Southern needleleaf	<i>Tillandsia setacea</i>
Southern umbrellasedge	<i>Fuirena scirpoidea</i>
Spadeleaf	<i>Centella asiatica</i>
Spanish moss	<i>Tillandsia usneoides</i>
Sphagnum moss	<i>Sphagnum sp.</i>
Spreading chinchweed	<i>Pectis prostrata</i>
St. Andrew's cross	<i>Hypericum hypericoides</i>
St. John's-wort	<i>Hypericum tetrapetalum</i>
Staggerbush	<i>Lyonia fruticosa</i>
Starrush whitetop	<i>Rhynchospora colorata</i>
Stinkweed	<i>Pluchea odorata</i>
Swamp bay	<i>Persea palustris</i>
Swamp fern	<i>Blechnum serrulatum</i>
Swamp milkweed	<i>Asclepias incarnata</i>
Swamp tupelo	<i>Nyssa biflora</i>
Sweetbay	<i>Magnolia virginiana</i>
Tall dodder	<i>Cuscuta exaltata</i>
Tarflower	<i>Bejaria racemosa</i>
Tropical fimbry	<i>Fimbristylis cymosa</i>
Tropical flatsedge	<i>Cyperus surinamensis</i>
Tropical white morning-glory	<i>Ipomoea alba</i>
Variable panicgrass	<i>Dichanthelium commutatum</i>
Violet milkwort	<i>Polygala violacea</i>
Virginia buttonweed	<i>Diodia virginiana</i>
Virginia chain fern	<i>Woodwardia virginica</i>
Virginia saltmarsh mallow	<i>Kosteletzkya pentacarpos</i>
Virginia willow	<i>Itea virginica</i>
Viviparous spikerush	<i>Eleocharis vivipara</i>
Water oak	<i>Quercus nigra</i>
Water paspalum	<i>Paspalum repens</i>
Water-willow	<i>Justicia angusta</i>
Wax myrtle	<i>Myrica cerifera</i>
Whip nutrush	<i>Scleria triglomerata</i>
White lobelia	<i>Lobelia paludosa</i>
White twinevine	<i>Funastrum clausum</i>
Whitehead bogbutton	<i>Lachnocaulon anceps</i>
Whorled marsh pennywort	<i>Hydrocotyle verticillata</i>
Winged loosestrife	<i>Lythrum alatum</i>

**Table 4. Native Plant Species of the FCWMA**

Common Name	Scientific Name
Winged sumac	<i>Rhus copallinum</i>
Wiregrass	<i>Aristida stricta</i> var. <i>beyrichiana</i>
Wood sage	<i>Teucrium canadense</i>
Woodland false buttonweed	<i>Spermacoce remota</i>
Woolly pawpaw	<i>Asimina incana</i>
Yellow milkwort	<i>Polygala rugelii</i>

**Table 5. Rare and Imperiled Plant Species of the FCWMA**

Common Name	Scientific Name	Status
Cardinal airplant	<i>Tillandsia fasciculata</i>	SE
Cutthroatgrass	<i>Panicum abscissum</i>	SE
Edison's St. John's-wort	<i>Hypericum edisonianum</i>	SE
Giant airplant	<i>Tillandsia utriculata</i>	SE
Northern needleleaf	<i>Tillandsia balbisiana</i>	ST

Abbreviation	Status
ST	State Threatened
SE	State Endangered

**Table 6. Exotic and Invasive Plant Species of the FCWMA**

Common Name	Scientific Name	FLEPPC Category
Air-potato	<i>Dioscorea bulbifera</i>	I
Alligatorweed	<i>Alternanthera philoxeroides</i>	II
Aquatic soda apple	<i>Solanum tampicense</i>	I
Asian marshweed	<i>Limnophila sessiliflora</i>	II
Australian pine	<i>Casuarina equisetifolia</i>	I
Bahiagrass	<i>Paspalum notatum</i>	-
Bermuda grass	<i>Cynodon dactylon</i>	-
Bloodflower	<i>Asclepias curassavica</i>	-
Bowstring hemp	<i>Sansevieria hyacinthoides</i>	II
Brazilian pepper	<i>Schinus terebinthifolia</i>	I
Caesarweed	<i>Urena lobata</i>	I
Castorbean	<i>Ricinus communis</i>	II
Centipedegrass	<i>Eremochloa ophiuroides</i>	-
Chinaberry	<i>Melia azedarach</i>	II
Cogongrass	<i>Imperata cylindrica</i>	I
Colombian waxweed	<i>Cuphea carthagenensis</i>	-

Common bamboo	<i>Bambusa vulgaris</i>	-
Common dayflower	<i>Commelina diffusa</i>	-
Creeping oxeye	<i>Sphagneticola trilobata</i>	II
Downy maiden fern	<i>Thelypteris dentata</i>	-
Florida tassleflower	<i>Emilia fosbergii</i>	-
Guava	<i>Psidium guajava</i>	I
Guineagrass	<i>Panicum maximum</i>	II
Indian chickweed	<i>Mollugo verticillata</i>	-
Java plum	<i>Syzygium cumini</i>	I
Kumquat	<i>Citrus japonica</i>	-
Lantana	<i>Lantana camara</i>	I
Largeflower Mexicanclover	<i>Richardia grandiflora</i>	II
Lax panicgrass	<i>Panicum laxum</i>	-
Lemon	<i>Citrus x limon</i>	-
Llima	<i>Sida cordifolia</i>	-
Madagascar periwinkle	<i>Catharanthus roseus</i>	-
Melaleuca	<i>Melaleuca quinquenervia</i>	I
Nakedstem dewflower	<i>Murdannia nudiflora</i>	-
Old world climbing fern	<i>Lygodium microphyllum</i>	I
Paragrass	<i>Urochloa mutica</i>	I
Paraguyan dock	<i>Rumex paraguayensis</i>	-
Rosary Pea	<i>Abrus precatorius</i>	I
Sesslie joyweed	<i>Alternanthera sessilis</i>	-
Shrubby false buttonweed	<i>Spermacoce verticillata</i>	II
Smooth rattlebox	<i>Crotalaria pallida var. obovata</i>	-
Smutgrass	<i>Sporobolus indicus</i>	-
Spiny sowthistle	<i>Sonchus asper</i>	-
Tangerine	<i>Citrus reticulata</i>	-
Tanglehead	<i>Heteropogon contortus</i>	-
Tender lovegrass	<i>Eragrostis scaligera</i>	-
Thalia lovegrass	<i>Eragrostis atrovirens</i>	-
Threeflower ticktrefoil	<i>Desmodium triflorum</i>	-
Torpedo grass	<i>Panicum repens</i>	I
Vaseygrass	<i>Paspalum urvillei</i>	-
Water hyacinth	<i>Eichhornia crassipes</i>	I
Water-lettuce	<i>Pistia stratiotes</i>	I
Watersprite	<i>Ceratopteris thalictroides</i>	-
West Indian marsh grass	<i>Hymenachne amplexicaulis</i>	I
Wild bushbean	<i>Macroptilium lathyroides</i>	II

### **2.2.1 FNAI Community Descriptions**

The following are descriptions of the 15 natural and five anthropogenic communities found on the FCWMA (Table 3). These community descriptions were prepared by FNAI and modified by the FWC.

#### **2.2.1.1 FNAI Natural Community Descriptions**

##### **Baygall (241 acres)**

Baygall is a forested wetland typically at the base of sandy slopes where water seepage maintains a saturated peat substrate. They generally support a dense canopy of loblolly bay, sweetbay, water oak, and laurel oak. Red bay and dahoon holly are usually in the subcanopy and shrub strata along with younger trees of the other two bay species. Wax myrtle and fetterbush are the dominant shrubs, with highbush blueberry, dwarf huckleberry, and Virginia willow less common. Saw palmetto also may be present. The herbaceous groundcover frequently includes Virginia chain fern, netted chain fern, swamp fern, and cinnamon fern.

In the absence of fire, bay trees will invade adjacent communities, particularly cutthroat grass seepage slope and wet to mesic flatwoods. Baygall can withstand a moderate fire frequency since the bay trees re-sprout following fire; however, during a drought, the bays can be killed if the fire burns into the peat layer.

On the FCWMA, baygall typically forms linear stretches that are primarily located west of U.S. 27 just in from the fence line boundary, both north and south of Fisheating Creek. Additionally, baygall located on the western and eastern edges of the FCWMA boundary, north of Rainey Slough, have almost completely enclosed the seepage slope community. An almost continuous swath of cutthroat grass occurs in the large, linear, north-south oriented baygall that stretches for approximately 1.5 miles on the west side of the creek. Edison's asycrum is more common in the open edges along the fence line.

##### **Blackwater Stream (415 acres)**

Blackwater streams are characterized as perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The tea-colored waters of blackwater streams are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. The dark-colored water reduces light penetration and thereby inhibits the growth of submerged aquatic plants. Emergent and floating aquatic vegetation may occur along shallower and slower moving sections, but their presence is often reduced because of typically steep banks and considerable seasonal fluctuations in water level.

On the FCWMA, blackwater stream is delineated in the Fisheating Creek floodplain. Fisheating Creek originates in Highlands County and represents the remaining free-flowing tributary to Lake Okeechobee. The Glades County portion of the creek is the least



disturbed by man-made alterations such as channelization, although it is greatly impacted by the proliferation of exotic species, including West Indian marsh grass, paragrass, aquatic soda apple, torpedo grass, water hyacinth, and water lettuce. The flowing, mostly tannin-stained waters are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through the swamps and marshes. The creek also receives seepage from the nearby slopes,

especially west of U.S. 27, that transition from higher ground communities that are or were once predominately dry prairie, scrub, and mesic flatwoods.

### **Depression Marsh (182 acres)**

Depression marsh, an herbaceous wetland community found in low flatlands, forms the characteristic pockmarked landscape seen on aerial photographs of the flat landscapes of the Florida peninsula. Depression marsh is usually characterized as a shallow, rounded depression in sand substrate with herbaceous vegetation and shrubs, often in concentric bands. These marshes also frequently form an outer rim around swamp communities such as dome swamps. They form when the overlying sands slump into depressions dissolved in underlying limestone. Depression marshes often burn with the surrounding landscape, and are seasonally inundated. Depression marshes typically occur in landscapes occupied by fire-maintained natural communities such as mesic flatwoods, dry prairie, or sandhill.

On the FCWMA, depression marsh is principally found east of Cowbone Marsh, scattered throughout the semi-improved pasture area. These generally circular marshes range in size from approximately one half acre to 25 acres. Because water depth in depression marshes usually increases toward the center, vegetation typically forms distinctive zones corresponding to depth. On the FCWMA, there is usually an inner, central zone occupied by buttonbush and duck potato and less often willow, pop ash, pickerelweed, or fire flag. The zone encircling the center is often dominated by maidencane and beakrushes, followed by an outer herbaceous zone that often includes maidencane, bristlegrass, musky mint, water-willow, and marsh pennywort. Many marshes were encircled by sand cord grass or

wax myrtle. Some of the marshes were irregularly shaped, resulting from two or marshes merging together with wet prairie vegetation connecting them. These transition areas typically contained bantam-buttons, pink sundew, marsh-pink, beakrush, and yellow-eyed grass.

### **Dome Swamp** (68 acres)

Dome swamp is an isolated, forested, depression wetland occurring within a fire-maintained community such as mesic flatwoods. These swamps are generally small, but may also be large and shallow. The characteristic dome shape is created by smaller trees that grow in the shallower waters of the outer edge, while taller trees grow in the deeper water in the interior of the swamp. Dome swamps are most often found on flat terraces, where they develop when the overlying sand has slumped into a depression in the underlying limestone, creating a rounded depression connected to a shallow water table. In uplands with clay soils, dome swamps may occupy depressions over a perched water table. Soils in dome swamps are variable, but are most often composed of a layer of peat, which may be thin or absent at the periphery, becoming thicker toward the center of the dome.

Dome swamp occurring within the FCWMA refers to forested wetland systems, dominated by bald cypress, that occur in relatively isolated depression areas or imbedded in floodplain forest/swamp communities. All the areas identified as dome swamps appear to have a hydrological connection with Fisheating Creek, at least during times of high water. As late as the 1940s many of the points identified as dome swamp (especially west of the campground) were completely surrounded by seepage slope or wet prairie. Since that time, hammocks and floodplain swamp and forest have developed around them.

In the dome swamps on the FCWMA, bald cypress comprises the canopy with scattered cabbage palms and red maple making up the generally sparse subcanopy and tall shrub layer. Red bay, wax myrtle, dahoon holly, and American holly may also be present. Small hummocks may have saw palmetto, bluestem palmetto, and even live oak. Various sedges, anglepod blue-flag, lizard's tail, false nettle, lemon bacopa, and green arrow arum comprise the variable herbaceous cover, as well as several ferns including Virginia chain fern and swamp fern. Vines commonly include poison ivy and peppervine.

### **Dry Prairie** (98 acres)

Dry prairie is a community of low shrubs and grasses occupying vast, level expanses in three major areas north and west of Lake Okeechobee in south-central Florida. Dry prairies do not support pines and have poorly drained, generally impermeable soils, which can result in frequent flooding. Often included within dry prairie are islands of scrub or scrubby flatwoods, shallow depression marshes, grassy wet prairies, and islands of mesic flatwoods. Dry prairie differs from scrub and scrubby flatwoods by the absence of scrub

oaks, and from mesic flatwoods in the nearly complete absence of pines, stumps, or stump holes.

Dry prairie within the FCWMA has probably always been negligible, although it was once (and still is north of the creek) one of the most prevalent natural communities surrounding the riverine corridor. FNAI identified a swath of dry prairie along the southern Hoover Dike southwest of Fort Center. The semi-improved pasture to the north was historically dry prairie and there was extensive prairie stretching south to Hendry County.

The long, sandy rectangular prairie on the FCWMA is dominated by low saw palmetto and abundant runner oak. Staggerbush and shiny blueberry are occasional. The sparse groundcover (1-5%) consists of blackroot, Florida paintbrush, blue-eyed grass, pawpaw, and redbud panicum. The eastern end of the dry prairie polygon has slash pine and live oak present. The semi-improved pasture to the north of the polygon contains a mixture of pasture and native species and could, with time and prescribed fire, be restored to more dry prairie conditions.

#### **Floodplain Marsh (5,237 acres)**

Floodplain marsh is a wetland community occurring in river floodplains and dominated by herbaceous vegetation and/or shrubs. The highest part of the marsh is often a drier, wet prairie-like zone with a large diversity of graminoids and forbs. Broadleaf emergents and floating plants occupy the deepest and most frequently flooded portions of the community. While the progression from high to low marsh occurs generally from the upland edge to the river edge, these vegetation patches may also be scattered throughout the marsh, which provides a diversity of habitats beneficial to wildlife. Other than occasional thickets, woody vegetation is generally sparse, although some shrubby species may be present. Occasionally, flood tolerant trees may be found scattered in floodplain marsh, becoming more concentrated in the ecotone to adjacent hydric hammocks. Most floodplain marshes are freshwater (salinity less than 0.5 parts per thousand); however, saltwater may influence marshes near the mouths of rivers (freshwater tidal marsh variant) and in areas where there is upwelling groundwater that is partly saline.

Floodplain marshes are found along rivers and streams from just below the headwaters to the freshwater portions of tidally influenced river mouths. They also occur in river overflow channels and lakes with both input and output of river flow. Floodplain marshes are directly influenced by river flooding on an annual or semi-annual basis where most of the marsh is inundated from approximately 120 to 350 days per year. Soils are typically sand or a thin to thick organic layer over sand and may be saturated for most of the year. Floodplain marsh may burn periodically depending on dominant vegetation.

On the FCWMA, floodplain marsh is used to describe several variations of expansive, mostly herbaceous-dominated wetlands. Very low marsh flanks both sides of Fisheating Creek east of Cowbone Marsh. It is typically dominated by a low herbaceous cover with scattered cabbage palm and live oak. Wax myrtle often forms patches associated with cabbage palm clumps or monotypic patches along the outer edge of the marsh, especially south of Fisheating Creek. Patches of short shrubby buttonbush occur closer to the creek. Looking south from the north side, west of where Gator Slough comes down, the broad



expansive view includes maidencane, duck potato, smartweed, low formed buttonbush and Virginia saltmarsh mallow, cup grass, large sedge, frog-fruit, Columbia waxweed, swamp milkweed, Nuttall's thistle, fireweed, and stinkweed. Other areas east of Cowbone Marsh, south of the Creek were dominated by waxweed, Florida tickseed, and knotroof bristlegrass. Pockets of duck potato, pickerelweed, and shrubby buttonbush with angle-

pod blueflag and softrush are also common. Unfortunately much of the area east of Cowbone Marsh and south of the Creek was converted to pasture and what was not has been heavily grazed by cattle. This has probably contributed greatly to the spread and pervasiveness of a number of exotic grasses. West Indian marsh grass, torpedo grass, and paragrass are throughout the marsh system and have probably displaced maidencane and other native species.

There are also large stretches of floodplain marsh south of Fisheating Creek, west of Cowbone Marsh and east of Palmdale. Smaller patches or fingers of marsh also occur in this area along the Creek. These marshes are dominated by graminoids including invasive bahiagrass, torpedo grass, West Indian marsh grass, and paragrass. Large pockets of paragrass occur as a light colored signature on the digital ortho quarter quad photos (DOQQs). Other species present include sedges, frog-fruit, beakrushes, flat sedge, Baldwin's coyote thistle, false-pimpernel, smartweed, musky mint, anglepod blue-flag, broomsedge, and marsh pennywort, among others. Some shrub encroachment includes young cypress, cabbage palm, and wax myrtle.

The large Cowbone Marsh area was identified as floodplain marsh although much of it is composed of woody species; shrub swamp is perhaps a better term. The majority of the

marsh is underlain by Okeelanta Muck soil. Cowbone Marsh was viewed from its western and northeastern edges and through photographs of the interior accessed via airboat. Viewed from the edge, a wall of Peruvian primrosewillow, Carolina willow, and buttonbush is visible. Virginia saltmarsh mallow is also dominant in some areas. Pockets of broadleaf cattail also occur although it is not very extensive. There is usually a margin of lower vegetation between the shrub swamp and a cypress edge that consists of smartweed, arrowhead, pickerelweed, maidencane, Columbia waxweed, as well as torpedo grass and West Indian marsh grass. Cypress and cabbage palm clumps are also visible in places with patches of thalia or fire flag in between.

### **Floodplain Swamp (6,570 acres)**

Floodplain swamp is located within floodplains of any permanently moving stream or river. It ranges from narrow strips of cypress along primary and secondary streams to expansive stands along large rivers to tidally influenced freshwater swamps near river mouths. Often, floodplain swamps immediately border the stream or river channel. In many cases, however, floodplain swamps are isolated from the main channel by riverbank levees and restricted to oxbows, overflow channels, old stream beds, and expansive flats commonly called backswamps. Soils are variable mixtures of alluvial and organic materials, sometimes with layers of sand in the subsoil. Inundation is seasonal and usually prolonged, restricting the growth of most shrubs and herbs and leaving most of the ground surface open or thinly mantled with leaf litter.

On the FCWMA, floodplain swamp occurs throughout the floodplain of Fisheating Creek from Cowbone Marsh west to Rainey Slough and north to the north boundary of the area along the Highlands County line. It is largely comprised of buttressed bald cypress and an abundance of cypress knees. Young cypress, red maple, cabbage palm, pop ash and wax myrtle may occur in the subcanopy or shrub layers although they are often scattered and infrequent. The groundcover varies from little to none in recently washed over situations to areas with abundant herbaceous cover. Standing water or damp muck may also be present. Common species in the groundcover include false nettle, lizard's-tail, anglepod blue-flag, lemon bacopa, smartweed, and large sedge. Carpets of ferns including Virginia chain fern, swamp fern, and shield fern make up the dominant herbaceous cover in some areas. The impressive giant leather fern was common in the northern stretch of the creek.

There are many areas of floodplain swamp where aquatic soda apple forms a monoculture in the shrub layer. This exotic occurs throughout the floodplain of Fisheating Creek but seems more prevalent west of U.S. 27. Old world climbing fern occurs in patches primarily west of Cowbone Marsh. It is especially insidious in the north stretch of the FCWMA from the Last Chance Ranch area north to the boundary line. In this portion of the area, old world climbing fern forms huge blankets over the ground and sends curtains of green up into the canopy creating a primordial feel to the swamp.

### **Hydric Hammock (1,233 acres)**

Hydric hammock is an evergreen hardwood and/or palm forest with a variable understory typically dominated by palms and ferns occurring on moist soils, often with limestone very near the surface. While species composition varies, the community generally has a closed canopy of oaks and palms, an open understory, and a sparse to a moderate groundcover of grasses and ferns. Hydric hammock occurs on low, flat, wet sites where limestone may be near the surface, and soil moisture is kept high mainly by rainfall accumulation on poorly drained soils. Periodic flooding from rivers, seepage, and spring discharge may also contribute to hydric conditions.

Hydric hammock is a minor component of the landscape on the FCWMA and most often occur as inclusions in low, wet areas of mesic hammocks. Laurel oak is usually the more common oak and cabbage palm dominates the subcanopy and understory in areas identified as hydric hammock. Cypress is usually scattered, and red maple or sweetbay are also sometimes present. Litter cover is generally high and consists of downed palm fronds and oak and epiphyte litter. Hydric hammock may have more floodplain forest or mesic hammock characteristics and can be difficult to classify.



### **Mesic Flatwoods (130 acres)**

Mesic flatwoods is the most widespread natural community in Florida, covering the flat sandy terraces left behind by former high sea levels. Mesic flatwoods is characterized by an open canopy of tall pines and a dense, low ground layer of shrubs, grasses, and forbs. Longleaf pine is the principal canopy tree in northern and central Florida, transitioning to predominately slash pine in south Florida. Soils are acidic, nutrient-poor, fine sands with upper layers darkened by organic matter. Drainage in this flat terrain can be impeded by a loosely cemented organic layer (spodic horizon) formed within several feet of the soil surface. The soils may be alternately xeric during dry periods and saturated or even inundated after heavy rain events.

On the FCWMA, mesic flatwoods occur infrequently and in small patches that range from approximately one to 40 acres. The most acreage is located north of the Ingram's Crossing area along the western boundary of the FCWMA. These are linear strips of flatwoods and

represent what remains from the once probably extensive flatwoods that stretched to the west. Most of the flatwoods to the west, outside the FCWMA, have been cut. Two small, disturbed patches occur north of the creek just east of U.S. 27 and one larger area is located on the north end of Cowbone Marsh. The basal area of these flatwoods is generally low, mostly zero and 10, and the shrub layer generally high, mostly 50 to 100%.

The flatwoods are generally dense with an open canopy of slash pine or South Florida slash pine and a thick shrub layer consisting primarily of saw palmetto. Lower densities of gallberry, shiny blueberry, wax myrtle, fetterbush, and staggerbush also occur in the shrub layers. Loblolly bay, red bay, and laurel oak occur in the subcanopy of some areas that are taking on characteristics of baygall or mesic hammock. The herbaceous groundcover is sparse to mostly intact in some places. It may include wiregrass, bottlebrush threeawn, blue maidencane, blackroot, queen's delight, Atlantic St. John's-wort, bantambuttons, gopher apple, pennyroyal, dwarf live oak, and bracken fern.

#### **Mesic Hammock (1,952 acres)**

Mesic hammock is a well-developed evergreen hardwood and/or palm forest, typically with a closed canopy of live oak. Mesic hammock may occur as "islands" on high ground within basin or floodplain wetlands, as patches of oak/palm forest in dry prairie or flatwoods communities, on river levees, or in ecotones between wetlands and upland communities. Historically, mesic hammocks were likely restricted to fire shadows, or other naturally fire-protected areas such as islands and peninsulas of lakes. Other landscape positions that can provide protection from the spread of fire are likely places for mesic hammock development, including edges of lakes, sinkholes, other depressional or basin wetlands, and river floodplains. Although mesic hammock is not generally considered a fire-adapted community, some small patches of hammock occurring as islands within marshes or prairies may experience occasional low-intensity ground fires. Mesic hammocks occur on well-drained sands mixed with organic matter and are rarely inundated. High moisture is maintained by heavy shading of the ground layer and accumulation of litter. Where limestone is near the surface, rocky outcrops are common in mesic hammocks.

Mesic hammock occurs throughout the FCWMA in the form of large blocks adjacent to the floodplain of the Creek and also as smaller patches on higher ground within floodplain forest or floodplain swamp. Large areas of mesic hammock are located east of Cowbone Marsh in the Fort Center area and also north of the creek along the northern boundary of the FCWMA. There is also a large area identified as mesic hammock just west of Cowbone Marsh, south of the Creek and north of the southern Hoover Dike. Smaller patches occur imbedded within floodplain swamp or floodplain forest and occasionally form high banks along Fisheating Creek, especially west of U.S. 27.

Mesic hammocks on the FCWMA are closed-canopy forests dominated by tree species of temperate affinities and may have a diverse shrub layer; disturbance by hogs, humans, and cattle is common in these shady hammocks, resulting in a reduced diversity of species in the shrub and ground layer. The canopy and subcanopy of mesic hammocks contain live oak (often large and gnarly), laurel oak, persimmon, cabbage palm, hackberry, red mulberry, or red bay. Saw palmetto, wax myrtle, beautyberry, coral bean, and winged sumac are also found in the shrub layer of mesic hammocks. Vines are generally common



and include cat brier, poison ivy, and southern fox grape. The live oaks are often covered with numerous epiphytes including resurrection fern, as well as several species of bromeliads. Butterfly orchid is found infrequently. Cabbage palms in these hammocks commonly support serpent fern and shoestring fern.

Many of the mesic hammock patches on the area, both large and small, are disturbed by cattle and hog rooting. Bahiagrass is a common groundcover. Many hammocks have bare ground and a heavy leaf litter of old palm fronds. Mesic hammocks are highly susceptible to invasion by Brazilian pepper, melaleuca, and caesarweed.

### **River Floodplain Lake (29 acres)**

River floodplain lake is an isolated body of water that exists within the floodplain of a river system. This community is not connected to the typical flow of the river and is only connected to the river channel during extreme flood stages. This natural community forms in closed oxbow of the river. River floodplain lakes also have an ecotone of floodplain marsh dominated by graminoids and floating aquatic bed plants.

There are five river floodplain lakes located on the FCWMA, ranging in size from less than two acres to over 11 acres. Three river floodplain lakes are located toward the western edge of the area and are generally encompassed by floodplain swamps, while two are located within Cowbone Marsh and are surrounded by floodplain marsh.

### **Scrub (46 acres)**

Scrub is a community composed of evergreen, xerophytic shrubs, with or without a canopy of pines, and is found on dry, infertile, sandy ridges. Scrub communities dominated by a canopy of sand pine are usually found on the highest sandy ridgelines. The pine canopy

may range from widely scattered trees with a short, spreading growth form, to tall thin trees forming a dense canopy of uniform height. Scrub is located on dry, infertile, sandy ridges which often mark the location of former shorelines.

Scrub within the FCWMA occurs on the edge portions of xeric communities that have more extensive area outside the FCWMA. Scrub is found in small amounts on higher elevations in the north part of the campground and as a narrow strip approximately one mile long on the east side of U.S. 27, along the north east-west boundary and as it turns in a southeasterly direction. The boundary fence and roads associated with the campground and other access create wide disturbances within the communities.

Sand live oak dominates the tall shrub layer in the community on the FCWMA and a few may reach canopy status; pines are scarce except for a more mesic patch of flatwoods within the scrub polygon. Other oaks comprising the shrub strata are myrtle oak, Chapman's oak, and occasionally scrub oak. The shrub layer includes saw palmetto, scrub palmetto, shiny blueberry, fetterbush and staggerbush, hog plum, scrub holly, dwarf huckleberry, and less frequently tarflower. Groundcover is sparse but includes sand spike-moss, gopher grass, and lichens. A litter cover of oak leaves is abundant.

#### **Seepage Slope (16 acres)**

Seepage slope is an open, grass-sedge dominated community kept continuously moist by groundwater seepage. It occurs in dissected topography, with 30 to 50-foot elevation differences, and is usually bordered by well-drained sandhill or upland pine communities. Seepage slope is a wetland at the base of a slope where the ground is usually saturated but rarely inundated. The moisture is maintained by downslope seepage from an adjacent sandy ridge. Drier portions of seepage slope are dominated by wiregrass. Wetter portions of seepage slope are dominated by several species of beaksedge.

On the FCWMA, seepage slope is a wetland at the base of a slope where the ground is usually saturated but rarely inundated. The moisture is maintained by downslope seepage from an adjacent sandy ridge. Many of the seepage slopes within the FCWMA are overgrown and are identified as points within the dominant community, principally baygall but also wet flatwoods or mesic flatwoods. More open patches are typically found along the edges of the FCWMA. In both situations they are dominated by cutthroat grass. Frequent fires, probably every three to five years, are needed to limit shrub and tree invasion. In the absence of fire, woody plants may cover the seepage slope as in the cases where it appears to be baygall but upon breaking through the thick vegetation cutthroat grass is present in narrow openings where trees and shrubs have not totally invaded. As mentioned above, the most continuous stretch of cutthroat grass is within baygall along the western side of the FCWMA, approximately 1.5 miles north of Rainey Slough. Seepage slope/baygall

complexes are also common along the eastern side of the FCWMA but are generally patchier in distribution.

On the FCMWA, in more open situations the seepage slopes are typically vegetated by a sometimes dense carpet of cutthroat grass with a mixed shrub stratum that includes Edison's ascyrum, gallberry and fetterbush, and a scattered tree canopy that contains loblolly bay, red bay, and sometimes South Florida slash pine and laurel oak.

### **Wet Flatwoods (16 acres)**

Wet flatwoods occur in broad, low flatlands, often in a mosaic with other wetland communities. They are found in the ecotones between mesic flatwoods, shrub bogs, wet prairies, dome swamps, or strand swamps. Wet flatwoods are pine forests with a sparse or absent midstory and a dense groundcover of hydrophytic grasses, herbs, and low shrubs. The relative density of shrubs and herbs varies greatly in wet flatwoods. Shrubs tend to dominate where fire has been absent for a long period or where cool season fires predominate; herbs are more abundant in locations that are frequently burned. Soils and hydrology also influence the relative density of shrubs and herbs. Soils of shrubby wet flatwoods are generally poorly to very poorly drained sands. These soils generally have a mucky texture in the uppermost horizon. Loamy sands are typical of soils in grassy wet flatwoods.

Wet flatwoods on the FCWMA are mostly confined to a small area just north of Ingram's Crossing on the western edge of the FCWMA and an area in the very northeastern corner of the north-south stretch of the FCWMA on the Highlands County line. The Ingram's site has been disturbed by some clearing. Caesarweed is common in this area. In the less disturbed portion there is a canopy of slash pine and a subcanopy with sweet bay and loblolly bay. There is abundant needle litter, downed limbs and southern fox grape. Other species include high bush blueberry, American beautyberry, wax myrtle, Virginia chain fern, blue maidencane, beakrushes, and yellow-eyed grass.

At the northeastern site the canopy of slash pine is over a groundcover dominated by cutthroat grass. There is also some Virginia chain fern, bracken fern, and sphagnum. Shrubs present are young dahoon holly, water oak, red bay, and maleberry. Wax myrtle, red bay, water oak, laurel oak, and red maple make up the tall shrub layer and subcanopy.

### **Xeric Hammock (95 acres)**

Xeric hammock is an evergreen forest found on well-drained sandy soils. The low canopy is typically closed and usually dominated by sand live oak. An emergent canopy of pine may be present. Xeric hammock typically develops where fire-exclusion allows for the establishment of the oak canopy. This may occur naturally when the area has significant barriers to fire, or more commonly, as the result of human intervention. In these areas,

xeric hammock can form extensive stands or can occur as small patches within or near sandhill or scrub. Xeric hammock can also occur on high islands within flatwoods, or on a high, well-drained ridge within a floodplain. Xeric hammock also can occur on barrier islands and in other coastal environs as an advanced successional stage of scrub.

On the FCWMA, xeric hammock is a dry upland forest characterized by a scrubby, dense low canopy of xeric oaks with little understory other than saw palmetto, or a multistoried forest with tall trees, or somewhere in between. Xeric hammock is considered to be an advanced successional stage of scrub or sandhill resulting from the long term lack of fire.

Xeric hammock patches are located mostly within two miles on either side of U.S. 27, north and south of Fisheating Creek. They are on some of the highest land within the FCWMA and generally transition from mesic hammock and floodplain forest downslope to scrub/scrubby flatwoods upslope. These hammocks typically have a closed canopy dominated by sand live oak and live oak and an understory of saw palmetto, scrub palmetto, rusty staggerbush, and shrubby oaks, including Chapman's oak, myrtle oak, and sand live oak. Some of the scrub oaks make up the canopy as well. Scrub hickory, scrub bay, and hog plum are also present. The groundcover is largely sandy leaf litter over most of the areas. A few sand pine or slash pine may emerge above the oaks.

### **2.2.1.2 FNAI Anthropogenic Community Descriptions**

#### **Artificial Pond (3 acres)**

Artificial pond is a created habitat meant for water retention, including impoundments and cattle ponds. There is one artificial pond on the FCWMA that is just over three acres in size. This artificial pond is located along the boundary of the FCWMA in the north end of the campground where the waste water treatment plant is located, just west of U.S. Highway 27.

#### **Canal/Ditch (46 acres)**

Canal/ditch areas are areas where the historic natural community has been altered by an artificial drainage way. Approximately 46 acres of the FCWMA are classified as canals and ditches, with the largest such area occurring on the southeastern border of the property adjacent to the Hoover Dike.

#### **Clearing/regeneration (1 acre)**

Clearing/regeneration areas are dove fields, wildlife food plots, old homesites, or recent or historic clearings that have significantly altered the groundcover and/or overstory of the original natural community. There is one small area on the FCWMA, totaling less than one

acre and located along the northwest boundary of the property, that is classified as clearing/regeneration.

**Developed (29 acres)**

The FNAI classifies land as developed if it contains check stations, off-road vehicle use areas, parking lots, buildings, maintained lawns, botanical or ornamental gardens, campgrounds, or recreational, industrial, or residential areas. On the FCWMA, there are two main areas of developed land. Sixteen of the acres that are classified as developed occur within the campground located on the property adjacent to U.S. Highway 27, and 13 of the acres that are classified as developed occur in the office complex located off of Highway 78 near the eastern edge of the property.

**Pasture - Semi-improved (1,974 acres)**

Pasture - semi-improved is not a natural community but a type of alteration where the natural vegetation has been altered to improve grazing conditions. These areas have much of the woody vegetation removed and a lower than normal water table because of drainage by canals and ditches. Semi-improved pasture is dominated by a mix of planted non-native or domesticated native forage species and native groundcover, due to an incomplete conversion to pasture rather than regeneration. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted in non-native or domesticated native forage species, but still retain scattered patches of native vegetation with natural species composition and structure (most often small areas of mesic flatwoods) among the pastured areas. The planted areas are usually dominated by bahiagrass and can resemble improved pastures. Seeding of bahiagrass can also occur within areas of native groundcover.

On the FCWMA, semi-improved pasture is most prevalent in the eastern corner of the area south of Fisheating Creek. It also occurs in certain places located mostly along the fence line that have been encroached by pasture and weedy species. The pasture areas show affinity to their respective historic natural community in many cases. Species typical of wet prairie, dry prairie, mesic hammock, and mesic flatwoods are present in greater abundance than more improved situations and there is greater potential for restoration through the use of appropriate management strategies.

Bahiagrass is common on the semi-improved pastures of the FCWMA, as well as many weedy species such as dog fennel and broom grass, and the exotic species torpedo grass and paragrass. Native vegetation occurring in the semi-improved pastures includes scattered live oaks and pockets of saw palmetto. St. John's-wort, pawpaw, runner oak occur in the shrubby stratum and wax myrtle is weedy in some places. Herbaceous species include wiregrass, beakrush, bog buttons, blue maidencane, yellow-eyed grass, blackroot, queen's

delight, camphorweed, musky mint, sand cord grass, panic grasses, knotroof bristlegrass, and Bishop's weed.

### **2.2.2 Forest Resources**

The Florida Forest Service (FFS) conducted a timber assessment of the FCWMA in 2002 to evaluate the area's timber resources and to explore the feasibility of utilizing silvicultural techniques as a management activity on the area (Appendix 13.15). The FWC has requested an update of that assessment which will be incorporated into the Appendix once it is completed by the FFS.

The FCWMA is characterized by extensive forested wetlands and floodplain marsh along both sides of Fisheating Creek which consist predominantly of hydrophytic vegetation. Though upland hardwood species are spread throughout some of the natural communities throughout the site, the only species with commercial potential present on the area are slash pine and bald cypress. In the 2002 timber assessment, the FFS found that the opportunities for utilizing silvicultural techniques on the FCWMA are almost nonexistent, due to the limited amount of pine acreage and the fact that harvesting bald cypress is incompatible with conserving and protecting the wetlands along the Creek and the wildlife that depend upon the forest structure of old growth trees for nesting, foraging, and roosting.

### **2.3 Fish and Wildlife Resources**

As previously described, the FCWMA contains a variety of natural communities that provide critical habitat for a wide array of imperiled and common wildlife species. In addition to the five rare plant species noted in Table 5, there are twenty rare or imperiled animal species documented as occurring on the FCWMA. Those rare and imperiled species are listed in Table 12.

The FWC also maintains an inventory of fauna occurring on or near the FCWMA listed in the following tables, including mammals (Table 7), birds (Table 8), amphibians and reptiles (Table 9), and fish (Table 10). Additionally, Table 11 contains



an inventory of the exotic invasive wildlife species that have been documented on or near the FCWMA. All of these species inventories will continue to be maintained and updated by FWC staff.

**Table 7. Mammal Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Bobcat	<i>Lynx rufus</i>
Cotton rat	<i>Peromyscus gossypinus</i>
Coyote	<i>Canis latrans</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Florida black bear	<i>Ursus americanus floridanus</i>
Florida mouse	<i>Podomys floridanus</i>
Florida panther	<i>Puma concolor coryi</i>
Hispid cotton Rat	<i>Sigmodon hispidus</i>
House mouse	<i>Mus musculus</i>
Marsh rabbit	<i>Sylvilagus palustris</i>
Marsh rice rat	<i>Oryzomys palustris</i>
Opossum	<i>Didelphis virginiana</i>
Raccoon	<i>Procyon lotor</i>
River otter	<i>Lontra canadensis</i>
White-tailed deer	<i>Odocoileus virginianus</i>
Sherman's fox squirrel	<i>Sciurus niger shermani</i>

**Table 8. Avian Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
American bittern	<i>Botaurus lentiginosus</i>
American coot	<i>Fulica americana</i>
American redstart	<i>Setophaga ruticilla</i>
American robin	<i>Turdus migratorius</i>
Anhinga	<i>Anhinga anhinga</i>
Bachman's sparrow	<i>Peucaea aestivalis</i>
Barn owl	<i>Tyto alba</i>
Barn swallow	<i>Hirundo rustica</i>
Barred owl	<i>Strix varia</i>
Belted kingfisher	<i>Megaceryle alcyon</i>
Black rail	<i>Laterallus jamaicensis</i>
Black vulture	<i>Coragyps atratus</i>
Black-and-white warbler	<i>Mniotilta varia</i>
Black-crowned night heron	<i>Nycticorax nycticorax</i>
Black-necked stilt	<i>Himantopus mexicanus</i>
Black-throated blue warbler	<i>Setophaga caerulescens</i>
Blue jay	<i>Cyanocitta cristata</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Blue-winged teal	<i>Anas discors</i>
Boat-tailed grackle	<i>Quiscalus major</i>

**Table 8. Avian Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Bobolink	<i>Dolichonyx oryzivorus</i>
Brown thrasher	<i>Toxostoma rufum</i>
Burrowing owl	<i>Athene cunicularia</i>
Cape May warbler	<i>Setophaga tigrina</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Cattle egret	<i>Bubulcus ibis</i>
Chuck-will's-widow	<i>Antrostomus carolinensis</i>
Common gallinule	<i>Gallinula chloropus</i>
Common grackle	<i>Quiscalus quiscula</i>
Common ground dove	<i>Columbina passerina</i>
Common nighthawk	<i>Chordeiles minor</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Crested caracara	<i>Caracara cheriway</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Eastern bluebird	<i>Sialia sialis</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eastern meadowlark	<i>Sturnella magna</i>
Eastern phoebe	<i>Sayornis phoebe</i>
Eastern screech owl	<i>Megascops asio</i>
European starling	<i>Sturnus vulgaris</i>
Fish crow	<i>Corvus ossifragus</i>
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>
Florida sandhill crane	<i>Grus Canadensis pratensis</i>
Florida scrub-jay	<i>Aphelocoma coerulescens</i>
Gadwall	<i>Anas strepera</i>
Glossy ibis	<i>Plegadis falcinellus</i>
Gray catbird	<i>Dumetella carolinensis</i>
Great blue heron	<i>Ardea herodias</i>
Great egret	<i>Ardea albus</i>
Great-crested flycatcher	<i>Myiarchus crinitus</i>
Green-backed heron	<i>Butorides striata</i>
House sparrow	<i>Passer domesticus</i>
Killdeer	<i>Charadrius vociferus</i>
King rail	<i>Rallus elegans</i>
Least bittern	<i>Ixobrychus exilis</i>
Lesser yellowlegs	<i>Tringa flavipes</i>
Limpkin	<i>Aramus guarauna</i>

**Table 8. Avian Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Little blue heron	<i>Egretta caerulea</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Mallard	<i>Anas platyrhynchos</i>
Marian's marsh wren	<i>Cistothorus palustris</i>
Merlin	<i>Falco columbarius</i>
Mottled duck	<i>Anas fulvigula</i>
Mourning dove	<i>Zenaida macroura</i>
Northern bobwhite quail	<i>Colinus virginianus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern flicker	<i>Colaptes auratus</i>
Northern harrier	<i>Circus cyaneus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Northern parula warbler	<i>Setophaga americana</i>
Northern rough-winged swallow	<i>Stelgidopteryx ruficollis</i>
Northern waterthrush	<i>Parkesia noveboracensis</i>
Osprey	<i>Pandion haliaetus</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Palm warbler	<i>Setophaga palmarum</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pied-billed grebe	<i>Podilymbus podiceps</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Pine warbler	<i>Setophaga pinus</i>
Prairie warbler	<i>Setophaga discolor</i>
Prothonotary warbler	<i>Protonotaria citrea</i>
Purple gallinule	<i>Porphyrio martinica</i>
Purple martin	<i>Progne subis</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Red-eyed vireo	<i>Vireo olivaceus</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Ringneck duck	<i>Aythya collaris</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
Short-tailed hawk	<i>Buteo brachyurus</i>
Smooth-billed ani	<i>Crotophaga ani</i>
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>
Snowy egret	<i>Egretta thula</i>
Southeastern American kestrel	<i>Falco sparverius paulus</i>
Southern bald eagle	<i>Haliaeetus leucocephalus</i>

**Table 8. Avian Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Swallow-tailed kite	<i>Elanoides forficatus</i>
Swamp sparrow	<i>Melospiza georgiana</i>
Tree swallow	<i>Tachycineta bicolor</i>
Tricolored heron	<i>Egretta tricolor</i>
Tufted titmouse	<i>Baeolophus bicolor</i>
Turkey vulture	<i>Cathartes aura</i>
White ibis	<i>Eudocimus albus</i>
White-eyed vireo	<i>Vireo griseus</i>
Wigeon	<i>Anas americana</i>
Wild turkey	<i>Meleagris gallopavo</i>
Wilson's snipe	<i>Gallinago delicata</i>
Wood duck	<i>Aix sponsa</i>
Wood stork	<i>Mycteria americana</i>
Yellow warbler	<i>Setophaga petechia</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>
Yellow-rumped warbler	<i>Setophaga coronata</i>
Yellow-throated warbler	<i>Setophaga dominica</i>

**Table 9. Reptile and Amphibian Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
American alligator	<i>Alligator mississippiensis</i>
American crocodile	<i>Crocodylus acutus</i>
Blue-striped garter snake	<i>Thamnophis sirtalis similis</i>
Corn snake	<i>Pantherophis guttatus</i>
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>
Eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>
Eastern indigo snake	<i>Drymarchon couperi</i>
Eastern kingsnake	<i>Lampropeltis getula getula</i>
Eastern mud snake	<i>Farancia abacura abacura</i>
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>
Florida cottonmouth	<i>Agkistrodon piscivorus conanti</i>
Florida cricket frog	<i>Acris gryllus dorsalis</i>
Florida redbelly turtle	<i>Pseudemys nelsoni</i>
Florida snapping turtle	<i>Chelydra serpentina osceola</i>
Florida softshell	<i>Apalone ferox</i>
Florida water snake	<i>Nerodia fasciata pictiventris</i>
Gopher tortoise	<i>Gopherus polyphemus</i>
Green anole	<i>Anolis carolinensis</i>

**Table 9. Reptile and Amphibian Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Green treefrog	<i>Hyla cinerea</i>
Ground skink	<i>Scincella lateralis</i>
Little grass frog	<i>Pseudacris ocularis</i>
River cooter	<i>Pseudemys concinna</i>
Peninsula ribbon snake	<i>Thamnophis sauritus sackenii</i>
Pig frog	<i>Lithobates grylio</i>
Dusky pygmy rattlesnake	<i>Sistrurus miliarius barbouri</i>
Rough green snake	<i>Opheodrys aestivus</i>
Southern black racer	<i>Coluber constrictor priapus</i>
Southern five-lined skink	<i>Plestiodon inexpectatus</i>
Southern leopard frog	<i>Lithobates sphenoccephalus</i>
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>
Southern toad	<i>Anaxyrus terrestris</i>
South Florida rainbow snake*	<i>Farancia erythrogramma seminola*</i>
Squirrel treefrog	<i>Hyla squirella</i>
Striped crayfish snake	<i>Regina alleni</i>
Striped mud turtle	<i>Kinosternon baurii</i>
Two-toed amphiuma	<i>Amphiuma means</i>
Yellow rat snake	<i>Pantherophis alleghaniensis</i>

\*There have been three confirmed observations of the South Florida rainbow snake on the area encompassed by the FCWMA, however the species has not been observed since the 1950s.

**Table 10. Fish Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
American eel	<i>Anguilla rostrata</i>
Bigmouth sleeper	<i>Gobiomorus dormitor</i>
Black acara	<i>Cichlasoma bimaculatum</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Bluefin killifish	<i>Lucania goodei</i>
Bluegill	<i>Lepomis macrochirus</i>
Bluespotted sunfish	<i>Enneacanthus gloriosus</i>
Bowfin	<i>Amia calva</i>
Brook silverside	<i>Labidesthes sicculus</i>
Brown bullhead	<i>Ameiurus nebulosus</i>
Butterfly peacock bass	<i>Cichla ocellaris</i>
Chain pickerel	<i>Esox niger</i>
Channel catfish	<i>Ictalurus punctatus</i>
Common snook	<i>Centropomus undecimalis</i>

**Table 10. Fish Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Dollar sunfish	<i>Lepomis marginatus</i>
Everglades pygmy sunfish	<i>Elassoma evergladei</i>
Florida flagfish	<i>Jordanella floridae</i>
Florida gar	<i>Lepisosteus platyrhincus</i>
Giant gourami	<i>Osphronemus goramy</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
Golden topminnow	<i>Fundulus chrysotus</i>
Lake chubsucker	<i>Erimyzon sucetta</i>
Largemouth bass	<i>Micropterus salmoides</i>
Least killifish	<i>Heterandria formosa</i>
Marsh killifish	<i>Fundulus confluentus</i>
Mosquitofish	<i>Gambusia affinis</i>
Oscar	<i>Astronotus ocellatus</i>
Pirate perch	<i>Aphredoderus sayanus</i>
Redear sunfish	<i>Lepomis microlophus</i>
Redfin pickerel	<i>Esox americanus</i>
Sailfin molly	<i>Poecilia latipinna</i>
Seminole killifish	<i>Fundulus seminolis</i>
Sheepshead	<i>Archosargus probatocephalus</i>
Spotted sunfish	<i>Lepomis punctatus</i>
Starhead topminnow	<i>Fundulus notti</i>
Striped mullet	<i>Mugil cephalus</i>
Swamp darter	<i>Etheostoma fusiforme</i>
Tadpole madtom	<i>Noturus gyrinus</i>
Taillight shiner	<i>Notropis maculatus</i>
Threadfin shad	<i>Dorosoma petenense</i>
Walking catfish	<i>Clarias batrachus</i>
Warmouth	<i>Lepomis gulosus</i>
White catfish	<i>Ameiurus catus</i>
Yellow belly cichlid	<i>Cichlasoma salvini</i>
Yellow bullhead	<i>Ameiurus natalis</i>

**Table 11. Exotic Fish and Wildlife Species Known to Occur on the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
African jewelfish	<i>Hemichromis letourneuxi</i>
Blue tilapia	<i>Oreochromis aureus</i>
Brown anole	<i>Anolis sagrei</i>
Brown hoplo	<i>Hoplosternum littorale</i>

**Table 11. Exotic Fish and Wildlife Species Known to Occur on the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Burmese python	<i>Python molurus bivittatus</i>
Common carp	<i>Cyprinus carpio</i>
Cuban treefrog	<i>Osteopilus septentrionalis</i>
Eurasian collared-dove	<i>Streptopelia decaocto</i>
European starling	<i>Sturnus vulgaris</i>
Feral hog	<i>Sus scrofa</i>
Greenhouse frog	<i>Eleutherodactylus planirostris</i>
House sparrow	<i>Passer domesticus</i>
Mayan cichlid	<i>Cichlasoma urophthalmus</i>
Mediterranean gecko	<i>Hemidactylus turcicus</i>
Nile monitor	<i>Varanus niloticus</i>
Nine-banded armadillo	<i>Dasyus novemcinctus</i>
Orinoco sailfin catfish	<i>Pterygoplichthys multiradiatus</i>
Purple swamphen	<i>Porphyrio porphyrio</i>
Spotted tilapia	<i>Tilapia mariae</i>

### 2.3.1 Integrated Wildlife Habitat Ranking System

The FWC has developed the Integrated Wildlife Habitat Ranking System (IWHRS) as a Geographic Information Systems (GIS)-based assessment tool that incorporates a wide variety of land cover and wildlife species data. The IWHRS evaluates the Florida landscape



based upon the habitat needs of wildlife as a way to identify ecologically significant lands in the state, and to assess the potential impacts of management and land-use changes. The IWHRS was developed to provide technical assistance to various local, regional, state, and federal agencies, and entities interested in wildlife needs and conservation in order to: (1) determine ways to avoid or minimize project impacts by evaluating alternative placements, alignments, and transportation corridors during early planning stages, (2) assess

direct, secondary, and cumulative impacts to habitat and wildlife resources, and (3) identify appropriate parcels for public land acquisition for wetland and upland habitat mitigation purposes. The IWHRS (2009) indicates that the FCWMA has a very high mean wildlife value of 8.4 (Figure 8).

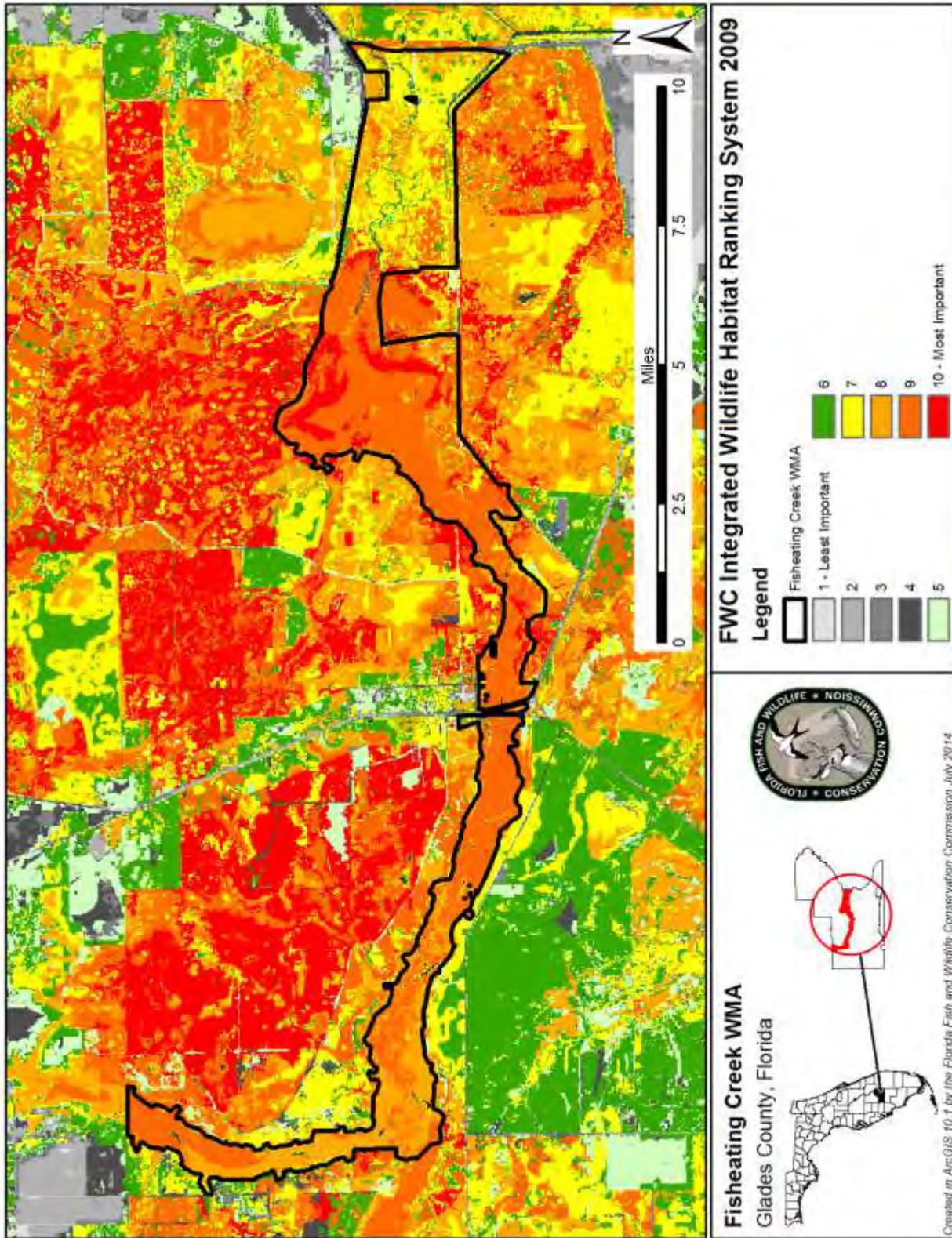


Figure 8. FCWMA – FWC Integrated Wildlife Habitat Ranking System 2009

### 2.3.2 Imperiled Species

For the purposes of this Management Plan, the term “imperiled species” refers to plant and animal species that are designated as endangered, threatened, or a species of special concern by FWC, or that are designated as endangered or threatened by the U.S. Fish and Wildlife Service. This designation is also commonly known as “listed species.” Table 12, below, contains a list of the imperiled species that have been documented on the FCWMA.

On November 8, 2010, new threatened species rules approved by the FWC were implemented. All federally listed species that occur in Florida will now be included on Florida’s list as federally-designated endangered or federally-designated threatened species. In addition, the state has implemented a listing process to identify species that are not federally listed, but that may be at risk of extinction. These species will be called state-designated threatened. All previous state-designated imperiled species were grandfathered on the list and are currently undergoing status reviews. The FWC will continue to maintain a separate species of special concern category until all the former imperiled species have been reviewed and those species are either determined to be state-designated threatened or removed from the list.



**Table 12. Rare or Imperiled Species of the FCWMA**

Common Name	Scientific Name	Status
American alligator	<i>Alligator mississippiensis</i>	FT (S/A)
American crocodile	<i>Crocodylus acutus</i>	FT
Burrowing owl	<i>Athene cunicularia</i>	SSC
Crested caracara	<i>Caracara cheriway</i>	FT
Eastern indigo snake	<i>Drymarchon couperi</i>	FT
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>	FE
Florida mouse	<i>Podomys floridanus</i>	SSC
Florida panther	<i>Puma concolor coryi</i>	FE
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ST
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	FT
Gopher frog	<i>Lithobates capito</i>	SSC
Gopher tortoise	<i>Gopherus polyphemus</i>	ST
Limpkin	<i>Aramus guarauna</i>	SSC
Little blue heron	<i>Egretta caerulea</i>	SSC

**Table 12. Rare or Imperiled Species of the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
Sherman’s fox squirrel	<i>Sciurus niger shermani</i>	SSC
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>	FE
Snowy egret	<i>Egretta thula</i>	SSC
Southeastern American kestrel	<i>Falco sparverius paulus</i>	ST
Tricolored heron	<i>Egretta tricolor</i>	SSC
White ibis	<i>Ardea alba</i>	SSC
Wood stork	<i>Mycteria americana</i>	FT

<b>Acronym</b>	<b>Status</b>
FE	Federally-designated Endangered
FT	Federally-designated Threatened
FT(S/A)	Federally-designated Threatened species due to similarity of
ST	State-designated Threatened
SSC	State Species of Special Concern

### 2.3.3 FWC Wildlife Observations and FNAI Element Occurrences

A diversity of wildlife species is found on the FCWMA. The FNAI element occurrence records include five imperiled species and a notable migratory bird concentration area. As defined by the FNAI, an “element” is any exemplary or rare component of the natural environment, such as a species, natural community, bird colony, spring, sinkhole, cave, or other ecological feature. An element occurrence is a single extant habitat which sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element. The FNAI assigns a rank to each “element” occurrence. This ranking system was developed by The Nature Conservancy and the Natural Heritage Program Network based on the element’s global rank (element’s worldwide status) or state rank (status of element in Florida). The FNAI ranking system and definitions are located on the following website: [www.fnai.org/ranks.cfm](http://www.fnai.org/ranks.cfm).

Known locations of FWC wildlife occurrences and FNAI element occurrences from the most recent GIS databases of the respective agencies are displayed in Figure 9. Appendix 13.8 contains a letter from the FNAI authorizing the FWC to utilize their database for the purpose of displaying known plant and animal resources.

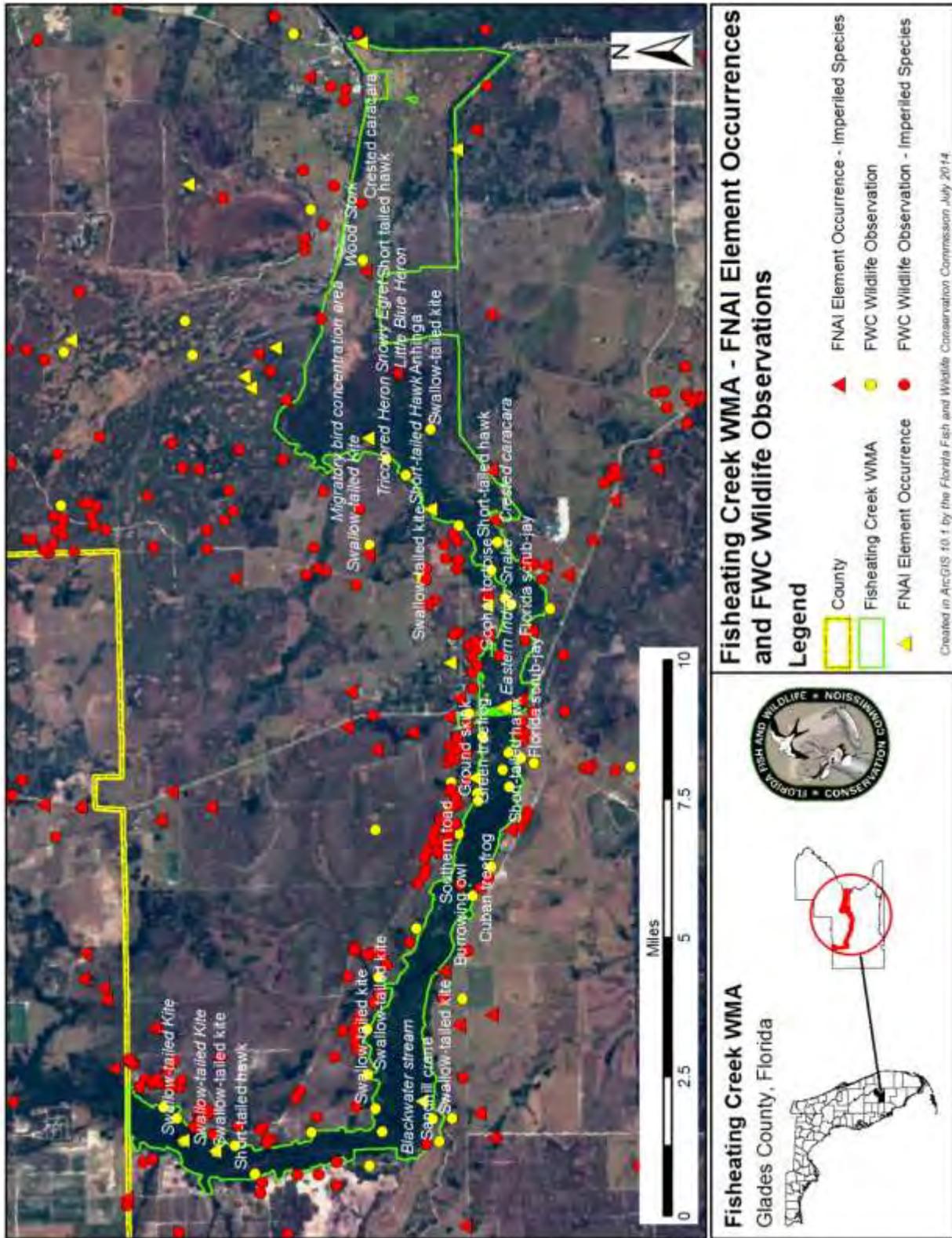


Figure 9. FWC Wildlife Observations and FNAI Element Occurrences

## 2.4 Native Landscapes

The predominant native landscapes on the FCWMA include the blackwater stream of Fisheating Creek, floodplain swamp, floodplain marsh, hydric hammock, and mesic hammock. Other significant native landscapes present on the area include baygall, depression marsh, mesic flatwoods, dry prairie, and xeric hammock. Complete descriptions of the natural communities found the FCWMA can be found in Section 2.2.1 of this Management Plan.



## 2.5 Water Resources

Water resources on the FCWMA are among the most prominent features on the area and include blackwater stream, swamps, marshes, and lakes. Fisheating Creek itself is a narrow meandering stream that flows south out of Highlands County into Glades County and then turns east to empty into Lake Okeechobee by way of Gator Slough. Water level in Fisheating Creek varies significantly throughout the year. In the rainy season, during the summer and fall, much of the FCWMA is under water and sheet flow covers the area. Water levels recede in late fall and early winter and remain low throughout the dry season. The Creek basin, which drains 918 square miles, is primarily rangeland with some agricultural areas. As Fisheating Creek nears Lake Okeechobee, the Creek enters Cowbone Marsh. The Herbert Hoover Dike, constructed by the US Army Corps of Engineers (ACOE) to enclose the lake, lines the north and south sides of Cowbone Marsh. Other waterways in the basin include several major canals connected to a network of smaller canals designed to drain land to allow more intensive grazing and agriculture.



According to the 1996 Florida Water-Quality Assessment, prepared in accordance with the Federal Clean Water Act Section 305(b), Fisheating Creek and Gator Slough have generally good water quality and meet their designated use as Class III water bodies intended for recreation and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. However, rangeland and agricultural runoff

have impaired the water quality of the canals. Altered flows and habitats, as well as nutrient enrichment, have produced low biological diversity and declining fisheries. The canals also have problems with odors and noxious weed growth. Slowly flowing streams, such as the upper part of Fisheating Creek and the canals, usually have low dissolved oxygen levels. The basin is one of many sources of nutrient pollution that contribute to the nutrient loading of Lake Okeechobee.

Groundwater within the area is found in the surficial, intermediate and Floridan aquifer systems. The Floridan aquifer is the primary source for water withdrawal, much of which is used to support agriculture in this predominantly rural area of the state. Fisheating Creek is not considered an area of high or prime aquifer recharge land. The FCWMA is not within an Aquatic Preserve, nor is there a proposal for it to be so designated.

## 2.6 Beaches and Dunes

There are no beach or dune resources on the FCWMA.

## 2.7 Mineral Resources

There are no known commercial mineral deposits on the FCWMA.

## 2.8 Historical Resources

There are a total of 48 sites recorded in the Florida Department of State's Division of Historical Resources (DHR) Master Site File within the boundary of the FCWMA. The DHR observations and recorded site files are broken down into five categories: archeological sites, resource groups, historical structures, historic bridges and historic cemeteries. There are 41 archaeological sites, four historic structures, and three resource group sites presently mapped or recorded by the DHR on the FCWMA. There are no historic cemeteries or bridges on the FCWMA.

Seven field surveys have taken place to document historical resources on areas encompassing portions of the FCWMA.

The Fort Center resource group is a very significant site on the area and encompasses several of the historical resources and Florida sites that have been documented on the FCWMA. A significant number of mounds, middens, artifact scatters, and earthworks can be found within the Fort Center site and the area is thought to have been inhabited since at least 500 BC.



Other historical and archaeological resources are scattered throughout the FCWMA, primarily within the hammocks that are spread across the area. Moreover, the discovery of additional sites upon completion of any further archaeological research and surveys on the

area is possible. The FWC will coordinate with the DHR if any additional sites are discovered. All Master Site recordings, assessments and preservation strategies will be coordinated with the DHR.

## **2.9 Scenic Resources**

The FCWMA offers remarkably scenic views of the tea-colored waters of Fisheating Creek as well as the floodplains, marshes, hardwood hammocks, and bald cypress swamps that surround it. As a result, the area has long been valued for its scenic quality unmarred by houses and other human intrusions. Wildlife is abundant year-round throughout the area and Cowbone Marsh, in particular, is an excellent location for observing wading birds. The scenery of the FCWMA can be enjoyed in a variety of ways, including by paddling on the creek itself or by hiking on the area's trails. Some of the scenic sites on the FCWMA have been developed with interpretive signage and wildlife viewing platforms.

## **3 Uses of the Property**

### **3.1 Previous Use and Development**

The area encompassing the FCWMA has a very rich history. The name Fisheating Creek itself is derived from the Creek Thlothlopopka-hatchee meaning "the creek where fish are eaten."

The first known settlement occurred along the banks of Fisheating Creek between 1000 and 500 BC. The early inhabitants, known as the Belle Glade people, began building mounds and other earthworks and subsisted by netting fish and harvesting turtles, snakes and alligators. According to the University of Florida archeologist Jerald Milanich, who worked on the area as a student in the 1960s, perforations found on turtle shells indicate turtles were tethered to be eaten as needed. The Creek was more than a source of food and water; it was also a canoe highway leading both to Lake Okeechobee and its resources to the east and other settlements to the west.

The Fort Center site consists of mounds, ponds, circular ditches, and linear embankments built over a period of at least 2000 years. William Sears, director of the excavation and author of *Fort Center: An Archaeological Site in the Lake Okeechobee Basin*, believed that corn pollen found in one of the three overlapping basins indicates that the Belle Glade people grew corn. Sears theorizes that people dug ditches to drain the soil for corn, which will not grow in wet soils, and that this practice may have spread across the Caribbean or around the Gulf from the lowlands of Mexico. However, archaeologists and other scientists no longer believe that the corn found at this site is associated with the Belle Glades culture. Rather, it is much more likely that the corn is a remnant from the Seminole peoples, who occupied the area in the 1800s.

At the site, bundles of human remains were found along with the remnants of a wooden platform decorated with wooden carvings of wildlife including life-size cats, a bear, foxes, eagles, and wading birds. Other objects were preserved in the muck at the bottom of the pond including a wooden carving of an otter running with a fish in its mouth. The site was still occupied, although there was no evidence of agriculture, when the Europeans arrived in the 16th and 17th centuries.

During the Second Seminole War (1835-1842), a cabbage palm palisade at the site was named Fort Center for Lieutenant J.P. Center. Oscan Tustenuggee, who had organized many war parties, and his two brothers Micco Tustenuggee and Old Tustenuggee and their wives lived in villages along the Creek. In 1842, George Henry Preble of the U.S. Navy described the difficulties of a trip up Fisheating Creek in a 30-foot cypress dugout canoe named "Susan" after his sweetheart: "This stream is very tortuous, and sometimes swells into a river, and then dwindles into a brook."

The fort at Fort Center was reactivated at the start of the Third Seminole War in 1855. Lieutenant Henry Benson described Fort Center upon his arrival in April 1855 as "more disagreeable, unhealthy and devoid of interest than I had expected....Mosquitos awful. 1,000,000,000 of them....Hot-hot as fire all day." His diary concludes with "the same in the same. Killed two snakes." At the conclusion of the Third Seminole War in 1858, many Native Americans had been removed from Florida. In 1881, Clay MacCauley at the direction of the federal government found 37 extended families living in 22 campsites in five areas, one of which was Fisheating Creek. By 1930, cultivation of sugar cane, cattle ranching, and establishment of a refinery at Moore Haven forced the remaining Seminoles to move from Fisheating Creek. Some Seminoles went to work for cattle baron Jacob Summerlin.



Much of the land surrounding the Creek came to be owned by the Lykes Brothers. The Lykes cattle ranching and other businesses began in the 1880s when Dr. Howell Tyson Lykes began exporting cattle to Cuba. All seven of his sons went into the family cattle or shipping business, and today Lykes Bros., Inc., is the largest producer of cattle and the biggest meat packer in Florida.

Over the years, the Creek has been the focal point in the lives of the local people. They courted, married, honeymooned, and baptized their children there. Along the banks they colored and hid Easter eggs and celebrated Thanksgiving. They depended on the Creek for subsistence and recreation, hunting, fishing, and camping along its banks.

The Lykes family prohibited development along the creek and ran a campground and a canoeing concession at Palmdale. In 1989, the Lykes Brothers closed the creek to the public, igniting a 10-year legal battle that resulted in the Settlement Agreement and ultimately led to state acquisition of the area and the establishment of the FCWMA, as described in more detail earlier in Section 1.3.2 of this Management Plan.

### **3.2 Current Use of the Property**

Currently, the FCWMA is managed for the conservation and protection of fish and wildlife habitat and fish and wildlife based public outdoor recreation. A wide range of operational and resource management actions are conducted on the FCWMA each year including activities such as prescribed burning; wildlife habitat restoration and improvement; invasive exotic species maintenance and control; road repairs and maintenance; imperiled species management, monitoring and protection; facilities and infrastructure maintenance and repair; conservation acquisition and stewardship activities; archeological and historic resources monitoring and protection; and research related activities. Additionally, cattle grazing will continue to be utilized in the management of the FCWMA in conformance with the Settlement Agreement and the terms and conditions of the Cattle Grazing Agreement as further outlined in Section 5.13.3 of this Management Plan.

Current and anticipated resource uses of the property are diverse. Hunting continues to be a popular recreational activity on the FCWMA. The area also offers excellent opportunities for bird watching, especially for swallow-tailed kites and wading birds. The diversity of vegetation not only harbors a variety of bird species but also provides good opportunities for mammalian wildlife viewing. Other uses include hiking, photography, biking, sightseeing, fishing, boating, and paddling.

#### **3.2.1 Visitation and Economic Benefits**

Public use of the FCWMA can be expected to increase as public awareness of opportunities on the area increases. The FWC administers hunts in the fall and spring for various game species including small game, deer, turkey, and feral hogs, which account for a significant proportion of the area's user-days and visitation.



Visitation and public use of the area for fish and wildlife based public outdoor recreational

opportunities is the primary source of economic benefits from the FCWMA, and contributes to the overall economy for the south region of Florida. In Fiscal Year 2013-14, an estimated 126 people visited the FCWMA per day, for a total of 45,945 visitors over the course of the year. This visitation rate is based on public access point vehicle counters, but may be

underestimated, as visitation to the campground and other areas, as well as access to the area by boat, cannot be accurately counted using this technique. It is likely that visitation to the FCWMA is, in actuality, greater than this number indicates.

Primarily, as a result of this visitation and use of the area, FWC economic analysis estimates indicate that the FCWMA generated an estimated annual economic impact of \$5,781,718 for the State and the south Florida region. This estimated annual economic impact has aided in the support or creation of an estimated 91 jobs.



Further revenue generating potential of the FCWMA will depend upon future uses described in this Management Plan. Additional revenue from environmental lands such as the FCWMA might include sales of various permits and recreational user fees and ecotourism activities, if such projects could be feasibly developed. The annual area regulations can be consulted to clarify

the necessary and required permits, fees, and regulations. Additionally, the long-term value of ecosystem services, including the protection of air and water quality functions, are considered to be significant to local and regional land and water resources, as well as human health.

### **3.3 Single- or Multiple-use Management**

The FCWMA will be managed under the multiple-use concept as a Wildlife Management Area. The FCWMA will provide fish and wildlife resource based public outdoor recreation and educational opportunities, while protecting the natural and historical resources found on the area. Any natural and historical resources of the FCWMA will be managed under the guidance of the ARC and the Conceptual State Lands Management Plan with input from the SAAB, and as outlined in the Settlement Agreement and the original purposes for acquisition.

#### **3.3.1 Analysis of Multiple-use Potential**

The following actions or activities have been considered under the multiple-use concept as possible uses to be allowed on the FCWMA. Uses classified as “Approved” are considered to be in accordance with the purposes for acquisition, as well as with the Conceptual State Lands Management Plan, and with the FWC agency mission, goals and objectives as expressed in the Agency Strategic Plan (Appendix 13.9). Uses classified as “Conditional” indicate that the use may be acceptable but will be allowed only if approved through a

process other than the management plan development and approval process (e.g., special-use permitting, managed-area regulation and rule development). Uses classified as “Rejected” are not considered to be in accordance with the original purpose of acquisition or one or more of the various forms of guidance available for planning and management:

	<u>Approved</u>	<u>Conditional</u>	<u>Rejected</u>
Apiaries		✓	
Astronomy		✓	
Bicycling	✓		
Boating	✓		
Cattle grazing	✓		
Citrus or other agriculture			✓
Ecosystem services and maintenance	✓		
Ecotourism		✓	
Environmental Education	✓		
First-responder training		✓	
Fishing		✓	
Full facility camping	✓		
Geocaching		✓	
Hiking	✓		
Horseback riding			✓
Hunting		✓	
Linear facilities			✓
Military training		✓	
Paddling	✓		
Preservation of historical sites	✓		
Preservation of historical sites	✓		
Primitive camping	✓		
Protection of imperiled species	✓		
Off-road vehicle use			✓
Shooting sports park			✓
Soil and water conservation	✓		
Timber harvest	✓		
Wildlife observation	✓		

### **3.3.2 Incompatible Uses and Linear Facilities**

Consideration of incompatible uses and linear facilities on the FCWMA are made in accordance with the requirements of Section 253.034(10) FS, the Settlement Agreement, and other applicable Florida constitution, statute, rule, and policy requirements, as well as other provisions governing applications for proposed incompatible uses or linear facilities on state-owned conservation lands. Upon approval and implementation of this management plan, any proposed future uses that have been classified herein as Rejected, or other proposed future uses that are determined to be incompatible with the purposes of acquisition or other management authorizations and guidance, will be forwarded for review and approval consideration to the DSL, the ARC, and the Board of Trustees, as well as to the SAAB for consultation, prior to any incompatible use or linear facility being authorized on the FCWMA.

### **3.3.3 Assessment of Impact of Planned Uses of the Property**

To communicate FWC's planned uses and activities, specific management intentions, long- and short-term goals and with associated objectives, identified challenges, and solution strategies have been developed for the FCWMA (Sections 5 -8). A detailed assessment of the benefits and potential impacts of planned uses and activities on natural and historical resources was an integral part of the development of the management activities and intent, goals, objectives, challenges, and strategies sections of this Management Plan.

## **3.4 Acreage That Should Be Recommended for Surplus Review**

On conservation lands where FWC is the lead manager, FWC evaluates and identifies recommended areas for a potential surplus designation by DSL, ARC, and the Board of Trustees. This evaluation consists of GIS modeling and analysis, aerial photography interpretation, analysis of fish and wildlife resources, a review of resource and operational management needs, and a review of public access and recreational use of the area. Also, FWC considers recommendations for surplus lands as they relate to Florida's "No Net Loss of Hunting Lands" legislation (Ch. 379.3001 FS), as well as surplus restrictions for lands acquired through the Federal Aid in Wildlife Restoration Act (Pittman-Robertson) or through other federal grant programs.

The evaluation of the FCWMA by FWC has determined that all portions of the area are being managed and operated for the original purposes of acquisition, and remain integral to the continued conservation of important fish and wildlife resources, and continue to provide good fish and wildlife resource based public outdoor recreational opportunities. Therefore, no portion of the FCWMA is recommended for a potential surplus designation.

## 4 Accomplished Objectives from the FCWMA Management Plan 2003 – 2013

This section is dedicated to reporting the extent to which the Objectives described in the FCWMA Management Plan 2003 – 2013 (pages 40 - 45) were successfully completed. Accomplishments for the FCWMA during the previous planning timeframe are further discussed in more comprehensive detail throughout **Section 5 Management Activities and Intent** of this Management Plan.

The following **Resource Management Goals and Objectives** from the 2003 – 2013 FCWMA Management Plan describe the planned activities for the FCWMA during this period. The degree to which FWC was able to accomplish the planned activities during this period is reflected as **Percent Accomplished** for each associated Objective.

<b>Objectives Accomplished from the 2003 -2013 Fisheating Creek WMA Management Plan</b>	
<b>Goals and Objectives</b>	<b>Percent Accomplished</b>
<b>Goal 1: Implement control measures for exotic and / or invasive plants and animals.</b>	
Objective 1: Submit annual project proposals to DEP’s Bureau of Invasive Plant Management for funding to control exotic plant species including, but not limited to, melaleuca, wetland nightshade, climbing ferns, Australian pine, Brazilian pepper, tropical soda apple, water lettuce, water hyacinth and various exotic grasses (ongoing).	100%
Objective 2: To supplement DEP’s exotic plant control effort, commit FWC resources annually for control of exotic plants including melaleuca, wetland nightshade, climbing ferns, Australian pine, Brazilian pepper, tropical soda apple, water lettuce, water hyacinth and exotic grasses (ongoing).	100%
Objective 3: Provide liberal feral hog hunting opportunities west of U.S. 27, consistent with the Settlement Agreement (ongoing).	100%
Objective 4: By 2003, implement an aggressive feral hog control program east of U.S. 27, consistent with the Settlement Agreement.	100%
Objective 5: Using GIS technologies, establish baseline exotic plant species maps by 2004.	100%

<b>Objectives Accomplished from the 2003 -2013 Fisheating Creek WMA Management Plan</b>	
Objective 6: Use cattle, mechanical, and prescribed fire treatments to control invasive wax myrtle and buttonbush on 1,500 acres at the head of Cowbone Marsh by 2004.	100%
Objective 7: By 2004, establish a protocol with DEP's Aquatic Plant Contract manager for treatment of any vegetation blockages within the creek channel.	100%
Objective 8: By 2008, treat 80% of existing melaleuca and 60% of existing wetland nightshade.	100%
Objective 9: In order to supplement FWC staff efforts and increase efficiency, utilize volunteers to assist in eliminating exotic species (esp. aquatic soda apple) (ongoing). <i>Comment: FWC determined that it is not feasible to pursue use of volunteers for the treatment of exotic plant species due to the need for plant identification training, inaccessibility of treatment areas, and staff oversight requirements. FWC will continue to evaluate the feasibility to using volunteers if appropriate. Currently, FWC contracts for invasive exotic species treatments.</i>	0%
<b>Goal 2: Ensure that the management of natural resources, cultural resources, and recreational opportunities are compatible with the purposes for acquisition.</b>	
Objective 1: To provide economic development, educational and recreational opportunities, assist with coordination of bird watching events including the Big "O" Birding Festival, National Wild Turkey Federation Jakes Day, and the Audubon Christmas Bird Count (ongoing).	100%
Objective 2: To protect the swallow-tailed kite communal roost, maintain a disturbance-buffer zone around the site, with buffer widths to be determined by biological research and / or consistency with the Settlement Agreement (ongoing).	100%
Objective 3: Continue to provide quota hunt opportunities for archery, muzzleloading gun, general gun and spring turkey seasons, consistent with the Settlement Agreement (ongoing).	100%
Objective 4: Cooperate with the Glades County Economic Development Council to develop and promote hunting and fishing opportunities, especially spring turkey hunting for the Osceola subspecies of wild turkey (ongoing).	100%
Objective 5: By 2003, establish signage along the creek to facilitate and direct navigation by watercraft.	100%

<b>Objectives Accomplished from the 2003 -2013 Fisheating Creek WMA Management Plan</b>	
Objective 6: To provide economic development and recreational opportunities, complete the campground re-development / enhancement project and publicize the re-opening by 2003.	100%
Objective 7: To provide economic development and recreational opportunities, develop a contract with a campground concessionaire to provide a canoe rental and livery service by 2003.	100%
Objective 8: To provide protection for featured wildlife such as short-tailed hawk, crested caracara, bald eagle and others, implement resource management actions consistent with published state and federal guidelines for these species by 2003.	100%
Objective 9: By 2003, develop strategies for improvement of fishing opportunities, including enhanced boat ramp access, improvement of the creek fishery and development of fishing guide services.	100%
Objective 10: Request assistance from the DHR to complete a cultural resource survey by 2003.	100%
Objective 11: Request assistance from the DHR to develop management and protection strategies for the Ft. Center site by 2003.	100%
Objective 12: By 2003, contact the Loxahatchee Chapter of the Florida Trail Association for assistance with design and implementation of hiking trails.	100%
<b>Goal 3: Enhance public access, management access, and recreational opportunities consistent with the Settlement Agreement.</b>	
Objective 1: By 2003, establish signage along the creek to facilitate and direct navigation by watercraft.	100%
Objective 2: Develop a contract with a campground concessionaire to provide a canoe rental and livery service to Burnt Bridge and Ingram's Crossing by 2003.	100%
Objective 3: Upgrade the boat launch area at the campground to a hard-bottom ramp by 2003.	100%
Objective 4: To provide better foot traffic and canoe access, complete a crossover, parking area, and road repairs on Palmdale Main St. by 2004.	100%

<b>Objectives Accomplished from the 2003 -2013 Fisheating Creek WMA Management Plan</b>	
Objective 5: By 2004, enhance the day-use area by installing picnic tables, trash receptacles, and additional restroom facilities.	100%
Objective 6: By 2004, contact the Loxahatchee Chapter of the Florida Trail Association for assistance in design and implementation of hiking trails.	100%
Objective 7: Using GPS and GIS technologies, locate and map reference points within the area to facilitate search and rescue efforts and management access by 2004.	100%
Objective 8: To provide better management access, create hard-bottom low-water crossings at certain problem locations along the boundary fence by 2005. <i>Comment: FWC determined that due to the potential impacts on wetland resources and associated wildlife, boundary low-water crossings were not feasible at the time. However, FWC continues to work with adjoining landowners and explore options for cooperative management on prescribed burning activities and will continue to explore feasibility of developing better access.</i>	0%
Objective 9: Develop interpretive signage along hiking trails describing vegetation communities and associated management actions by 2005.	100%
<b>Goal 4: Maintain and enhance the native upland and wetland communities.</b>	
Objective 1: Implement the recently developed Grazing Agreement with adjacent landowners, using cattle grazing as a management tool to reduce understory fuel loads and to improve wildlife habitat conditions (ongoing).	100%
Objective 2: Control exotic, invasive plant species through the use of fire, as well as mechanical and chemical means (ongoing).	100%
Objective 3: In order to supplement FWC staff efforts and increase efficiency, utilize volunteers to assist in eliminating exotic species (esp. aquatic soda apple) (ongoing). <i>Comment: FWC determined that it is not feasible to pursue use of volunteers for the treatment of exotic plant species due to the need for plant identification training, inaccessibility of treatment areas, and staff oversight requirements. FWC will continue to evaluate the feasibility to using volunteers if appropriate. Currently, FWC contracts for invasive exotic species treatments.</i>	0%
Objective 4: Implement a contract for a detailed native plant community survey by 2003.	100%

<b>Objectives Accomplished from the 2003 -2013 Fisheating Creek WMA Management Plan</b>	
Objective 5: By 2003, develop a prescribed fire plan that includes coordination of burning efforts with local governments and adjacent landowners.	100%
Objective 6: Using GIS technologies, establish baseline exotic plant species maps by 2004.	100%
Objective 7: Use cattle, mechanical, and prescribed fire treatments to control invasive wax myrtle and buttonbush on 1,500 acres at the head of Cowbone Marsh by 2003.	100%
Objective 8: By 2008, complete an evaluation of plant community conditions necessary to develop vegetative management objectives.	100%
Objective 9: By 2008, treat 80% of existing melaleuca and 60% of existing wetland nightshade.	100%
<b>Goal 5: Protect natural and cultural resources, and provide for public safety through appropriate levels of law enforcement.</b>	
Objective 1: Maintain the area boundary and airboat zone sign posting (ongoing).	100%
Objective 2: Maintain high-visibility and a high level of public contact with recreational users throughout the expanded corridor (ongoing).	100%
Objective 3: Implement the existing search and rescue protocol (ongoing).	100%
Objective 4: By 2003, using GPS and GIS technologies, locate and map reference points within the area to facilitate search and rescue efforts and management access.	100%
<b>Goal 6: Protect, manage and enhance the Fisheating Creek watershed.</b>	
Objective 1: Use established best management practices and monitoring consistent with the Grazing Agreement to ensure watershed protection (ongoing).	100%
Objective 2: Cooperate with the SFWMD, ACOE, SWCD, NRCS, Glades County, Highlands County, adjacent landowners, and others to monitor conditions in, and assure the long-term well-being of, the creek and its watershed (ongoing).	100%

<b>Objectives Accomplished from the 2003 -2013 Fisheating Creek WMA Management Plan</b>	
Objective 3: Consistent with the Settlement Agreement, maintain navigation throughout the expanded corridor by use of aquatic weed control and removal of fallen logs or similar obstructions (ongoing).	100%
<b>Goal 7: Assure an optimum boundary for FCWMA by continuing to identify and pursue acquisition needs.</b>	
Objective 1: Maintain a GIS shapefile, acreage, ownerships and other data to facilitate nominations for the FWC Inholdings and Additions Program (ongoing).	100%
Objective 2: Consistent with the Settlement Agreement, maintain close communication with inholding and adjacent landowners in order to acquire first right of refusal to purchase lands contained within the conservation easement and / or CARL project boundaries (ongoing).	100%
Objective 3: Explore options available through the Florida Forever acquisition process, the FWC Inholdings and Additions Program, and the SFWMD Save Our Rivers Program to acquire lands around the Fisheating Creek headwaters in order to protect the Creek's water quality (ongoing).	100%
<b>Goal 8: Coordinate and establish control over human use activities to avoid conflicts.</b>	
Objective 1: As necessary, provide spatial and / or temporal separation of uses to improve the quality of recreational and educational experiences for all user groups (ongoing).	100%

## 5 Management Activities and Intent

The following section provides a description of agency plans to locate, identify, protect, preserve, or otherwise use fragile natural resources and nonrenewable historical resources. In general, the FWC management intent for the FCWMA is to restore and maintain natural communities in a condition that sustains ecological processes and conserves biological diversity, especially fish and wildlife resources. In conjunction with this primary emphasis, and pursuant to the Settlement Agreement, it is the FWC's intent to provide quality fish and wildlife resource based public outdoor recreational opportunities on the FCWMA. The FWC will utilize the best available data, guidelines, natural resource

management practices, and recreational management practices to achieve these outcomes in accordance with the original purposes for acquisition. Furthermore, as noted earlier, the management activities described in this section are in compliance with those of the Conceptual State Lands Management Plan.

## 5.1 Land Management Review

The 2012 Land Management Review of the FCWMA (Appendix 13.6) found that the FWC was managing the area in accordance with the purpose(s) for acquisition. The recommendations of the Land Management Review were considered and addressed in the development of this Management Plan, including the development of management intent language, goals and objectives, and the identification of management challenges and the development of solution strategies (Sections 5 – 8).

## 5.2 Adaptive Management

Adaptive management is "learning by doing";<sup>1</sup> it is the adjustment or modification of conservation actions to achieve a desired conservation goal. In practice, adaptive management is a rigorous process that includes sound planning and experimental design with a systematic evaluation process that links monitoring to management.<sup>1,2</sup> Adaptive management requires flexibility for implementation, but should be fitted over a fundamentally sound, well-planned design.

An adaptive management process produces the strongest inference and most reliable results when experimental design components are incorporated into the monitoring process. Adaptive management is most rigorously applied in an active format when components of experimental design (i.e., controls, replication, and randomization) are included in the monitoring process.<sup>2,3</sup> Incorporating valid statistical analyses of results will further enhance the value of the adaptive management process. However, in some situations, rigorous experimental design procedures can be relaxed without invalidating monitoring results. In a passive format, adaptive management can involve applying a conservation action at a site, observing the results and adjusting the action in the future if warranted.<sup>2,3</sup>



Proposed adaptive management, monitoring and performance measures are developed through literature reviews and FWC staff meetings. Overall, a results-based approach is incorporated into this Management Plan, for which effective monitoring is an integral component. FWC will monitor conservation actions, species, habitats, and major threats to the conservation of the natural and historical resources of the FCWMA.

### **5.2.1 Monitoring**

A well-developed monitoring protocol is also one of the principal, required criteria for the management of the FCWMA. Monitoring and performance measures are important, but often overlooked elements of conservation planning. Monitoring provides the critical link between implementing conservation actions and revising management goals.

Monitoring is the systematic, repeated measurement of environmental characteristics to detect changes, and particularly trends, in those characteristics. Monitoring provides essential feedback, the data needed to understand the costs, benefits, and effectiveness of planned conservation actions and the management projects undertaken to address them.<sup>2</sup>

For natural communities, monitoring protocols are established through the FWC's Objective-Based Vegetation Management (OBVM, Section 5.3.1) program, which monitors how specific vegetative attributes are responding to FWC management. For imperiled and focal species, monitoring protocols are established through the FWC's Wildlife Conservation Prioritization and Recovery (WCPR, Section 5.4.2) program. FWC staff may monitor additional fish and wildlife species when deemed appropriate. Exotic and invasive plant and animal species (Section 5.5) are also monitored as needed and appropriate. Recreational uses are monitored through the FWC's Public Access and Wildlife Viewing program, and work in conjunction with the establishment and adjustment of public access carrying capacities (Section 5.6.3). Historical resources (Section 5.9) are monitored with guidance from the DHR.

### **5.2.2 Performance Measures**

Performance measures include qualitative or quantitative measures used to provide an estimate or index of the characteristic of interest, and to chart the overall progress of conservation actions towards specific goals. Successful monitoring programs and their associated performance measures provide natural resource professionals with valuable feedback on the effectiveness of conservation actions and make it possible to implement a more flexible adaptive management approach. An adaptive management approach ultimately will be more efficient and effective when it tracks inputs, incorporates an effective monitoring program that integrates performance measures, and evaluates results against desired goals.

### **5.2.3 Implementation**

The FCWMA Management Plan serves as the guiding framework to implement this adaptive management process. It serves as the underpinning for the integration of management programs (OBVM, WCPR, Public Access and Wildlife Viewing, Recreation Master Plans, etc.) underway to accomplish needed conservation actions that are planned to manage the natural resources of the FCWMA, and resolve conservation threats to fish and wildlife and the habitats they occupy. Based on evaluations of project results, the

conservation actions are revised as necessary, and the adaptive management process is repeated.

### **5.3 Habitat Restoration and Improvement**

On the FCWMA, the FWC will focus on managing for native habitat diversity, emphasizing maintenance of high-quality natural communities, and restoration of disturbed areas. Restoration may be achieved on disturbed areas by the re-introduction of fire, restoring historic hydrological conditions, and/or the use of mechanical or chemical forest management techniques as is appropriate and compatible with the Settlement Agreement. Retention of the native old growth component of forests, while also providing for natural regeneration, remains an important consideration. The FCWMA has high-quality native communities including mesic hammock, blackwater stream, hydric hammock, floodplain swamp, and floodplain marsh that the FWC will continue to manage and protect. On disturbed upland sites, the FWC intends to initiate natural community restoration where feasible except on areas that are designated for public use or that contain operational and resource management facilities.

As described above, the FNAI has conducted surveys and mapped the current vegetative communities and historic vegetation communities on the FCWMA. This information will be used to guide and prioritize management and restoration efforts on the area.

#### **5.3.1 Objective-Based Vegetation Management**

The FWC uses a comprehensive resource management approach to managing FWC-managed areas. Restoring the form and function of Florida's natural communities is the foundation of this management philosophy. The FWC uses OBVM to monitor how specific vegetative attributes are responding to FWC management.

The first step in implementing OBVM is to map the current, and in most cases the historic natural communities, on the managed area using the FNAI Natural Community Classification. The FWC contracts with FNAI to provide these mapping services, and plans to have natural community maps recertified on most areas on a five-year basis. A natural community, as defined by FNAI, is a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment.

After natural communities have been mapped, management units are delineated. Delineating management units takes into account the distribution and extent of the current and/or historic mapped natural communities, existing and proposed infrastructure, and other management considerations. FWC land managers then identify the predominant current or historic natural community within each management unit that guides the type and frequency of management activities that should be applied. Through OBVM monitoring, the FWC collects data on a number of specific vegetation attributes that provide insight about the condition of the natural community. Because the FWC is

interested in the overall effect of management on the natural communities, OBVM data is analyzed at the natural community level.

Measurable habitat management objectives referred to as ‘desired future conditions’ are established for each actively managed natural community. Desired future conditions are the acceptable range of values for quantifiable vegetation attributes, such as basal area, shrub height and cover, and ground cover. FWC collaborated with the FNAI to identify ‘reference sites’ for each actively managed natural community and applied the OBVM monitoring methodology at these reference sites to determine what attribute values occur in a high-quality community (<http://www.fnai.org/reference-natural-communities.cfm>).

FWC staff considers the reference site attribute values when setting area-specific desired future conditions for natural communities.



Vegetation monitoring samples the selected attributes, with the results being compared to the established desired future conditions. All monitoring performed under OBVM is completed using the program’s Standard Operating Procedures.

Consistent, long-term monitoring of managed natural communities will quantify changes in habitat conditions, provide information on the cumulative effects of management activities, and measure progress towards meeting management objectives for desired habitat conditions. Measured changes in vegetation condition are intended to be used to inform future land management actions.

Initial mapping and vegetation sampling at the FCWMA provides FWC staff with baseline data indicating natural community structure, distribution, and condition on the area. Comparing the subsequent monitoring results on the area to desired future conditions provides important operational information on a natural community’s vegetation structural status at a given point in time and trend over time. Using this information, managers can evaluate, adjust and modify their management practices to meet the stated objectives. By comparing natural community mapping products on the area through the years, managers can track progress in moving altered communities to functioning natural communities.

### **5.3.2 Prescribed Fire and Fire Management**

Periodic spring and summer fires occurred in fire-adapted communities under natural conditions. Plant species composition reflects the frequency and intensity of these fires. In the absence of fire, fallow fields on former longleaf sites follow a successional pattern through mixed pine-hardwood forests to an exclusively hardwood community rather than to the original plant community. The plant species composition may differ slightly on poorer

soils of the slash pine flatwoods, but the dominant role of fire in controlling hardwoods is equally important in either ecosystem.

Timber removal, site preparation, drainage, and lack of fire have all combined to alter the plant species composition of the area resulting in a loss of fuel and inhibiting the return to a more “natural” fire management regime. Site-specific combinations of prescribed fire, mechanical and chemical vegetation control, reforestation, and restoration of natural water regimes are important actions for restoring the area to its historic natural communities.



The FWC employs a fire management regime to increase both species and habitat diversity and will continue a prescribed burning program on the FCWMA in accordance with vegetative management objectives. As fire moves across a landscape, some areas carry fire better than others. Areas with higher vegetative fuel loads typically burn more evenly and with greater intensity. Areas with lower vegetative fuel loads or wetland areas inundated with water typically will not carry fire as evenly, and usually burn at a lower intensity. Employing a burning program with different burning frequencies, intensities, and seasonality (dormant season vs. growing season) of prescribed burns create habitat diversity and a mosaic of vegetation patterns. This mosaic is designed to have both frequently burned and infrequently burned aspects.

On some areas, prescribed burning is limited by the buildup of mid-story brush and a lack of pyrogenic groundcover fuels. This condition creates unsuitable habitat for many wildlife species. Mechanical control of brush on upland sites by roller chopping, logging, shredding, or incidentally by equipment during commercial thinning operations, can reduce shading and encourage the grasses and forbs that are necessary to sustain prescribed fire.

Single drum (with standard, not offset blades), one-pass roller chopping can be a valuable management tool, enabling the use of prescribed fires in areas heavily invaded by dense woody vegetation. However, roller chopping may damage the herbaceous ground cover, especially wiregrass. Therefore, its application will be limited to situations where burning can only be accomplished by first reducing woody vegetation by mechanical means.

Whenever possible, existing firebreaks such as roads and trails, as well as natural breaks such as creeks and wetlands, will be used to define burning compartments. Disk harrows, mowing, and foam lines will be used as necessary to minimize disturbance and damage

created by fire plows. On the FCWMA, some of the less-used roads are utilized as firebreaks but have become re-vegetated over time, so disking or grading is required annually to maintain them as functional firebreaks.

The transitional areas between two adjacent but different vegetative cover types, such as forests and wetlands, are known as ecotones. With the possible exception of wildfire suppression, mechanical soil disturbance in ecotones will be avoided in order to protect habitats for important rare species that often occur between flatwoods and riparian drainages. Silvicultural site preparation and creation of firebreaks are avoided when possible in these zones. Additionally, fires are allowed to burn into the edges of marshes,



swamps and other wetlands in order to maintain these habitats. Once fuel loads have been reduced and a more open appearance has returned, vegetative management objectives will likely dictate a fire return interval that averages 1-4 years, preferably during the spring and early summer months.

In addition to the general prescribed fire management guidelines described above, an area-specific Prescribed Fire Plan (Appendix 13.12) has been developed and implemented for the FCWMA. This plan will include, but not be limited to, delineation of burn management units, detailed descriptions of prescribed fire methodology, safety, and smoke management guidelines.

On the FCWMA, the hydroperiod of the area is a significant factor influencing the application of prescribed fire. The water levels of Fisheating Creek are determined by rainfall and the water levels of Lake Okeechobee, with the area generally being characterized by sheet flow and significant surface water levels from July to December of each year. As a result, prescribed fire is most frequently applied on the FCWMA during the dormant season, from January to April, when water levels in the creek are low and the area is generally dry enough to sustain fire. However, burns are also conducted during the growing season when weather and water levels are appropriate.

Additionally, due to the nature of the area and the conditions described above, some patches of fire-adapted natural communities on the FCWMA are very difficult to access, particularly with the equipment necessary to conduct a prescribed burn. As a result, the ability of management staff to maintain all of the fire-adapted natural community acreage on the FCMWA within a target fire return interval can vary depending on the conditions of the area and the ability to access certain areas of the property. Many of the small, disjunct, and hard to access sites are located along the boundary of the FCWMA and it is therefore

important for FWC staff to coordinate with the Lykes Bros., Inc., in order to apply fire to those sites.

### **5.3.3 Habitat Restoration**

Significant habitat restoration activities have taken place within many of the natural communities of the FCWMA over the course of the previous management planning period beginning in 2003. Since 2003, 15,273 acres of fire-adapted natural communities have been burned on the area, which has aided in the restoration of native ground cover and improved wildlife habitat throughout the FCWMA. An additional 2,148 acres have been mowed and 368 acres roller chopped in order to improve wildlife habitat. In 2011, approximately 23 acres were mulched in order to improve habitat for the imperiled Florida scrub-jay.

Continuing habitat restoration activities on the area will focus on restoring natural communities, maintaining recommended fire return intervals for fire adapted communities, treating and removing exotic plant species, and controlling vegetation through mowing and roller chopping as needed. Exotic species control is more extensively discussed in Section 5.5, below. Further habitat restoration and improvement objectives planned for the area are delineated in Section 6 below.

## **5.4 Fish and Wildlife Management, Imperiled and Focal Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

### **5.4.1 Fish and Wildlife**

As noted above, due to the variety of natural communities, a diversity of associated wildlife, including rare, imperiled, common game, and non-game species, can be found on the FCWMA. In managing for wildlife species, an emphasis will be placed on conservation, protection and management of natural communities. As noted above, natural communities important to wildlife include mesic hammock, hydric hammock, floodplain swamp, and floodplain marsh. Natural communities that are less represented on the FCWMA, but are also important to wildlife, include baygall, scrub, depression marsh, dry prairie, dome swamp, and blackwater stream.

The size and natural community diversity of the FCWMA creates a habitat mosaic for a wide variety of wildlife species. Resident wildlife will be managed for optimum richness, diversity and abundance. In addition to resident wildlife, the FCWMA provides resources critical to many migratory birds including waterfowl, passerines, raptors, and others. In particular, the FCWMA is a critically important staging area for swallow-tailed kites before their migration to South America in August. In April and May, they nest and raise young in the vicinity of the Creek, and the communal roosting area in the vicinity of Cowbone Marsh may at times be used by half of the U.S. population of swallow-tailed kites. Habitats important to such migratory species will be protected, maintained, or enhanced.

The FWC intends to manage game populations on a sustained-yield basis to assure healthy game populations and a high-quality recreational experience. In general, game wildlife populations will be managed to provide continued recreational sport hunting and wildlife viewing opportunities. However, due to the limited size of the area and limited accessibility, hunting opportunities will be regulated through a limited entry hunt program to ensure the persistence of viable game species populations, as well as hunter safety and satisfaction. The potential for conflicts among recreational activities and user groups will also be considered and continually monitored.

Wildlife monitoring emphasis is placed on documenting the occurrence and abundance of rare and imperiled species on the property. The FWC will continue to update inventories for certain species, with emphasis on rare and imperiled fish and wildlife species. Monitoring of wildlife species will continue as an ongoing effort for the area.

Concurrent with ongoing species inventory and monitoring activities, management practices are designed to restore, enhance or maintain rare and imperiled species, and their habitats. This will be further augmented by following approved Federal and FWC species recovery plans, guidelines, and other scientific recommendations for these species. Guided by these recommendations, land management activities including prescribed burning and timber stand improvements will address rare and imperiled species requirements and habitat needs. Section 5.4.2 below provides further information on FWC's comprehensive species management strategy for rare and imperiled wildlife and their respective habitats.

#### **5.4.2 Imperiled Species: Wildlife Conservation Prioritization and Recovery**

The FWC has identified the need to: 1) demonstrate optimal wildlife habitat conservation on FWC-managed lands; 2) develop science-based performance measures to evaluate management; 3) recover imperiled species; and 4) prevent future imperilment of declining wildlife species. To help meet these needs, the FWC uses a comprehensive resource management approach to managing FWC-managed areas. Restoring the form and function



of Florida's natural communities is the foundation of this management philosophy. The FWC uses OBVM to monitor how specific vegetative parameters are responding to FWC management, and uses the WCPR program to ensure management is having the desired effect on wildlife.

The goal of WCPR is to provide assessment, recovery, and planning

support for the FWC-managed areas to enhance management of focal species and the recovery of imperiled species. WCPR program objectives include prioritizing what FWC does for imperiled and focal species on FWC-managed areas; ensuring the actions taken on these areas are part of statewide conservation programs and priorities; and informing others about the work accomplished on lands FWC manages.

The WCPR program helps FWC take a proactive, science-based approach to species management on FWC-managed lands. This approach assesses information from statewide potential habitat models and Population Viability Analysis, and in conjunction with input from species experts and people with knowledge of the area, creates site-specific wildlife assessments for imperiled wildlife species and a select suite of focal species. Staff combines these assessments with area-specific management considerations to develop a wildlife management strategy for the area. Each strategy contains area-specific measurable objectives for managing priority species and their habitat, prescribes management actions to achieve these objectives, and establishes monitoring protocols to verify progress towards meeting the objectives. By providing FWC managers with information on actions they should undertake, the FWC intends for the strategy to assure the presence and persistence of Florida's endangered and threatened fish and wildlife species (see [http://myfwc.com/media/1515251/Threatened\\_Endangered\\_Species.pdf](http://myfwc.com/media/1515251/Threatened_Endangered_Species.pdf)), as well as select focal species found on the area.

In summary, for FWC-managed areas, the WCPR program helps assess imperiled and focal wildlife species needs and opportunities, prioritize what FWC does for imperiled and focal species, prescribe management actions to aid in species recovery, prescribe monitoring protocols to allow evaluation of the species' response to management, and ensure the information is shared with others. Through the actions of this program, FWC will facilitate fulfilling the needs of focal and imperiled wildlife species on the FCWMA. In the long-term, by implementing these strategies on FWC-managed lands and continuing to assess wildlife species' needs, FWC will continue to play an integral role in aiding the recovery of imperiled species and preventing the future imperilment of declining wildlife species.



A FWC WCPR Species Management Strategy (WCPR Strategy) was completed for the FCWMA in February 2015 (see Appendix 13.13 for more detailed information). Using statewide landcover-based habitat models, the WCPR Strategy identifies 21 focal species and one group of species (wading birds) as having potential habitat on the FCWMA (Table 13).

Not all of the focal species modeled to have potential habitat on the FCWMA occur on the area or are in need of specific management actions. Therefore, of the focal species identified, Florida pine snake, Bachman’s sparrow, crested caracara, Florida scrub-jay, swallow-tailed kite, and wading birds (multiple species) are recommended for some level of monitoring. The WCPR Strategy includes measurable objectives for Bachman’s sparrow, crested caracara, and swallow-tailed kite. Brown-headed nuthatch and Florida grasshopper sparrow were identified as limited opportunity species, indicating that the FCWMA was modeled to have potential habitat for those species but that the area presents only limited opportunities to manage for those species.

The WCPR Strategy for the FCWMA also recommends opportunistic monitoring for the southern Florida rainbow snake, which is a subspecies of the Florida rainbow snake that has historically resided in the Fisheating Creek area. There are three documented and confirmed sightings from the 1950s of the southern Florida rainbow snake on the area encompassed by the FCWMA. Presently, the southern Florida rainbow snake is not listed at the state or federal level due to the fact that it has not been observed since the 1950s and is considered potentially extinct. However, the FCWMA contains suitable habitat for this species and if it is documented on the area in the future, FWC staff will coordinate with the USFWS on further any monitoring and management of the species.

**Table 13. Focal Species Identified as Having Potential Habitat on the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Bachman's sparrow	<i>Peucaea aestivalis</i>
Brown-headed nuthatch	<i>Sitta pusilla</i>
Burrowing owl	<i>Athene cunicularia</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Crested caracara	<i>Caracara cheriway</i>
Florida black bear	<i>Ursus americanus floridanus</i>
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>
Florida mottled duck	<i>Anas fulvigula</i>
Florida panther	<i>Puma concolor coryi</i>
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>
Florida sandhill crane	<i>Grus canadenses pratensis</i>
Florida scrub-jay	<i>Aphelocoma coerulescens</i>
Gopher tortoise	<i>Gopherus polyphemus</i>
Limpkin	<i>Aramus guarana</i>
Northern bobwhite	<i>Colinus virginianus</i>
Short-tailed hawk	<i>Buteo brachyurus</i>
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>
Southeastern American kestrel	<i>Falco sparverius paulus</i>

**Table 13. Focal Species Identified as Having Potential Habitat on the FCWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Southern bald eagle	<i>Haliaeetus leucocephalus</i>
Swallow-tailed kite	<i>Elanoides forficatus</i>
Wading birds	<i>Multiple spp.</i>

## 5.5 Exotic and Invasive Species Maintenance and Control

The FWC will continue efforts to control the establishment and spread of Florida Exotic Pest Plant Council (FLEPPC) Category I or II plants on the FCWMA. Control technologies may include mechanical, chemical, biological, and other appropriate treatments.

Treatments utilizing herbicides will comply with instructions found on the herbicide label and employ the Best Management Practices for their application.

Exotic and invasive plant species known to occur on the FCWMA and treated annually by the FWC include Australian pine, Brazilian pepper, cogongrass, creeping oxeye, guinea grass, old world climbing fern, melaleuca, West Indian marsh grass, and water hyacinth. Exotic and invasive plant species have been identified as occurring at varying densities on approximately 18,380 acres of the FCWMA. However, the FWC’s methodology for determining the number of acres “infested” with invasive exotic plants only represents a cumulative acreage, and does not reflect the degree of the invasive exotic occurrence. The degree of infestation among areas identified with invasive exotic plant occurrences often varies substantially by species, level of disturbance, environmental conditions, and the status of ongoing eradication and control efforts.

The FWC will continue to focus treatments on areas identified as having invasive exotic plant occurrences, as well as treating any new occurrences as they are identified through continued monitoring.



An aggressive exotic plant control program was also implemented over the previous planning period.

During that time, FWC contracted to chemically treat exotic and invasive plants on approximately 3,889 acres per year, with a cumulative total of 38,891 acres being treated since 2003. Although the entire area encompasses 18,380 acres, this cumulative total of acres treated includes the continuing retreatment of many parts of the area to control exotic and invasive plants. Mechanical treatments were also applied to an additional 152 acres over the same period.

Additionally, the FWC will continue efforts to control the introduction of exotic and invasive species, as well as pests and pathogens, on the FCWMA by inspecting any vehicles and

equipment brought onto the area by contractors and requiring that they be free of vegetation and dirt. If vehicles or equipment used by contractors are found to be contaminated, they will be referred to an appropriate location to clean the equipment prior to being allowed on the area. This requirement is included in every contract for contractors who are conducting any operational or resource management work on the area. In this way, FWC implements a proactive approach to controlling the introduction of exotic pests and pathogens to the area.

An exotic animal species of concern on the FCWMA is the feral hog. These animals have high reproductive rates, and when populations reach high densities, feral hogs can significantly degrade natural communities through foraging activity (rooting). The FWC



will consult with other regional natural resource managing agencies and private landowners to coordinate feral hog control measures as necessary. Hog populations are controlled by hunts during the wild hog-still hunt season, archery, small game, general gun, and muzzleloading gun seasons. Trapping is another measure that is utilized to augment ongoing feral hog control efforts and to further reduce the natural

community damage and degradation caused by this species. The FWC currently maintains a contract for hog removal on the FCWMA. Currently, hog trapping is only utilized east of U.S. Highway 27 on the portion of the FCWMA where hunting is prohibited.

Other exotic animal and fish species known to occur on the FCWMA include African jewelfish, Burmese python, Mediterranean gecko, and Nile monitor. A full list of exotic species known to occur on the FCWMA can be found in Table 11. The FWC will continue to monitor for exotic animal species on the FCWMA and to implement control measures on these species as necessary and feasible.

## **5.6 Public Access and Recreational Opportunities**

### **5.6.1 Americans with Disabilities Act**

When public facilities are developed on areas managed by FWC, every effort is made to comply with the Americans with Disabilities Act (Public Law 101-336). As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions. Recreation facilities in semi-primitive or primitive zones will be planned to be universally accessible to the degree possible except as allowed by the ADA<sup>4</sup> where:

1. Compliance will cause harm to historic sites, or significant natural features and their characteristics.

2. Compliance will substantially alter the nature of the setting and therefore the purpose of the facility.
3. Compliance would not be feasible due to terrain or prevailing construction practices.
4. Compliance would require construction methods or materials prohibited by federal or state statutes, or local regulations.

### **5.6.2 Recreation Master Plan**

The FWC has adopted a comprehensive approach to the planning and administration of fish and wildlife resource based public outdoor recreational opportunities for the FCWMA. To accomplish this, in January 2005, the FWC worked with recreational stakeholders and the general public to develop a Recreation Master Plan for the FCWMA (Appendix 13.14) that is used to further guide the design and development of appropriate infrastructure that will support the recreational use of the area by the general public. This Recreation Master Plan includes planning for parking, trail design, and area resource interpretation. Additionally, the Recreation Master Plan will be updated in this planning cycle as described in Section 6.

### **5.6.3 Public Access Carrying Capacity**

Baseline carrying capacities for users on FWC-managed lands are established by conducting a site specific sensitivity analysis using available data for the site. The intent of the carrying capacity analysis is to minimize wildlife and habitat disturbance and provide the experience of being “immersed in nature” that visitors to FWC-managed areas desire. Carrying capacities are just a first step; management of recreational use requires a means of monitoring visitor impacts. Responding to these impacts may require adjusting the carrying capacities as necessary. The carrying capacities generated through this process are used as a tool to help plan and develop public access, wildlife viewing, and fish and wildlife resource based public outdoor recreation opportunities.

Based on an analysis of the overall approved uses and supported public access user opportunities, and the anticipated proportional visitation levels of the various user groups, the FWC has determined that the FCWMA can currently support 1,140 visitors per day. An objective is included in Section 6.5 of this Management Plan to continue to maintain the public access carrying capacity at its current level.

It is important to note that public access carrying capacities are not developed to serve as a goal for expanding the public use of a particular area to match the established carrying capacity. Rather, they are developed to establish maximum thresholds for public use of the respective area in order to protect the natural and historical resources on the FCWMA and to ensure that visitors will have a high-quality visitor experience. The public access carrying capacity will be periodically reevaluated, and additional capacity may be contemplated as the Recreation Master Plan is updated.

#### **5.6.3.1 Public Access Guidelines in the Fisheating Creek Settlement Agreement**

The Fisheating Creek Settlement Agreement provides specific guidelines regarding the public access and recreational uses of the FCWMA. The Settlement Agreement states that “the general public has the right to access the Expanded Corridor for boating and other recreational activities, other than hunting, from the Palmdale Campground and by the Main Street right-of-way in Palmdale.” The general public may also enter the east sector via Banana Grove Road located two miles south of Lakeport on Highway 78. Boaters may enter the eastern sector of the management area at the boat ramp located on Highway 78, one mile south of Lakeport.

Public access for hunting on the FCWMA is also limited due to the stipulations contained within the Settlement Agreement. All hunters must enter and exit the FCWMA through the Palmdale Campground entrance, with the exception of hunters participating in the two special opportunity spring turkey hunts who may access the area via the U.S. Highway 27 right of way entrance. Hunters may only access the area by boat, bicycle, or on foot.

The Settlement Agreement also provides specific guidelines as to the recreational activities that are permitted on the FCWMA. Those guidelines and the permitted uses are discussed below.

#### **5.6.4 Wildlife Viewing**

As described earlier, the FCWMA is an excellent place to view a wide variety of native wildlife species, both resident and seasonally migratory. The quality of habitat found on the FCWMA, and the managed wildlife openings and food plots on the area, attract a suite of rare and common wildlife species including various birds, mammals, reptiles and amphibians. The FCWMA is part of the Great Florida Birding Trail and offers excellent opportunities for viewing wading birds of all types, including ibis, herons, egrets, wood storks, and roseate spoonbills, as well as other bird species such as warblers, hawks, and swallow-tailed kites. River otters and alligators can also be commonly seen in and around the Creek.

#### **5.6.5 Hunting**

Hunting opportunities on the FCWMA include archery, muzzleloading gun, general gun, migratory bird, small game, wild hog, and spring turkey seasons. Frogging is permitted year round, though shooting of frogs is restricted to listed open hunting seasons. Special youth hunts and special opportunity hunts are also offered. Hunting on the FCWMA is by permit only and is limited to small, high-quality hunts. Except for the special-opportunity spring turkey hunts, hunting is only permitted on the area west of U.S. Highway 27. An evaluation of the hunting opportunities on the FCWMA is performed periodically by the FWC.

### **5.6.6 Fishing**

Fishing is permitted anywhere on Fisheating Creek within the FCWMA. Visitors can fish from canoe, kayak, boat, or along the banks of the creek. Popular game species include largemouth bass, catfish, and bream. Anglers can access the Creek via the boat ramp at the campground.

### **5.6.7 Boating**

Boating is permitted on Fisheating Creek and is a very popular activity on the FCWMA. Boaters can access the creek via the boat ramp at the campground or the public boat ramp located off of Highway 78 just east of the FCWMA. Airboats are also permitted, but may only be operated in the designated airboating area on the eastern portion of the FCWMA, extending from Lake Okeechobee into part of Cowbone Marsh. A no-cost airboat use permit issued by the FWC is required for all airboats operating on the area. The use of personal watercraft, or jet skis, is prohibited throughout the area. It is also important to note that water levels in Fisheating Creek vary widely throughout the year, as a result the Creek is not necessarily accessible by boat year round.

### **5.6.8 Paddling**

Paddling is also permitted on the FCWMA and canoeing and kayaking are very popular activities on the area. A canoe/kayak rental and livery service is available at the campground and there are boat ramps at the campground and at the Main Street entrance where users can launch their canoes and kayaks. The upper section of the FCWMA, west of U.S. Highway 27, is most popular for paddling trip. There is also a designated paddling trail that runs through much of Fisheating Creek from the northwest end of the FCWMA down to the western edge of Cowbone Marsh.

### **5.6.9 Trails**

Currently, 24 miles of multi-use trails are available for public recreation on the FCWMA. These trails include the approximately four-mile Paradise Lake Trail that runs from U.S. Highway 27 eastward to Paradise Lake as well as the Knobby Knee Trail that extends west of U.S. Highway 27 for just over one mile.



Additionally, the four-mile Fort Center interpretive trail provides visitors with information on the history and natural resources of Fisheating Creek. As part of the FCWMA RMP update process, the FWC will continue to evaluate the potential for additional trails, as well as trail connectivity opportunities to other regional public conservation areas. The FWC will also continue to monitor existing and new trails for user impacts to natural communities.

#### **5.6.9.1 Hiking**

Hiking is a popular activity on the designated trails and roads throughout the FCWMA, many of which have magnificent views of Cowbone Marsh and Fisheating Creek as well as the various natural communities that surround them. Hiking opportunities exist throughout the area but are best on the east side of the FCWMA off of Highway 78. Many of the trails on the area are prone to seasonal flooding, so hiking is generally easiest during the dry months from January through May. The FWC will continue to maintain trails for recreational use by hikers.

#### **5.6.9.2 Bicycling**

Bicycling is permitted on the trails and roads throughout the FCWMA. Off-road bicycles are most appropriate on the area's unpaved roads and trails. As with hiking, bicycling is best during the dry season from January to May.

#### **5.6.9.3 Equestrian**

Horseback riding is currently prohibited on the FCWMA.

#### **5.6.10 Camping**

Primitive camping is permitted year-round throughout the FCWMA, except in designated closed areas. Additionally, recreational vehicle sites and primitive campsites are available at the campground. Outside of the campground, there are seven designated primitive campsites along the creek, though the availability of these sites is highly dependent on water levels.

#### **5.6.11 Geocaching**

Geocaching, also known as Global Positioning System (GPS) Stash Hunt and GeoStash, is a contemporary combination of orienteering and scavenger hunting generally utilizing a GPS receiver unit. Geocache websites routinely promote good stewardship. However, the potential exists for resource damage, user conflicts, or safety issues caused by inappropriately placed caches and/or links that do not provide adequate information about the area.

It is the policy of the FWC to allow placement of geocaches only in those locations that do not present the potential for resource damage, user conflicts, or threats to the safety of the activity participants. The placement of geocaches on FWC-managed lands is governed by specific guidelines. These guidelines may be found on the following FWC website: [http://myfwc.com/media/1074886/FWC\\_Geocache\\_Guidelines.pdf](http://myfwc.com/media/1074886/FWC_Geocache_Guidelines.pdf).

#### **5.6.12 Environmental Education**

The FWC will assess the need for and pursue research and environmental education partnership opportunities as appropriate. The FWC will develop and conduct periodic environmental education and outreach programs and will continue to identify opportunities to provide and/or expand as feasible interpretive and educational programs. The FWC will

continue to identify partnerships that could provide for environmental educational programs and outreach opportunities. Currently, private vendors provide guided paddling tours of the area, as well.

#### **5.6.12.1 Interpretation**

Interpretive facilities on the FCWMA include ten kiosks that provide information on the wildlife, natural communities, history, and archaeological resources of the area. These kiosks are located at the campground, along the Fort Center trail, and at other strategic locations throughout the FCWMA. The FWC also provides a bird list, recreation guide, rack card, website, and trail maps for the FCWMA.



### **5.7 Hydrological Preservation and Restoration**

Hydrological preservation and restoration is an important aspect of the ongoing management of the FCWMA. The FWC manages, maintains, and enhances the lakes, creeks, wetlands, and other water resources on the area as appropriate and feasible. Consistent with the Settlement Agreement, navigation of Fisheating Creek throughout the expanded corridor will be maintained by the use of aquatic weed control and the removal of fallen logs and similar obstructions.

The FWC will also cooperate with landowners inside the Fisheating Creek watershed to maintain water quality and to minimize pollution and other hydrological disturbances. To maintain and enhance the natural hydrological functions of the area, FWC will maintain and install low-water crossings and culverts as appropriate.



To enhance wetland resources, the FWC uses mechanical, chemical, and prescribed fire treatments to control exotic vegetation, including wax myrtle and buttonbush, in Cowbone Marsh and the other marshes and seasonal wetlands throughout the FCWMA. The FWC will continue to cooperate with the ACOE on restoration projects within Cowbone Marsh. The FWC also cooperates with the SFWMD, the ACOE, and other public and private entities on the implementation of the Comprehensive Everglades Restoration Plan (CERP). Additionally, the FWC cooperates with the NRCS with the design and implementation of the Wetland Reserve Program (WRP) activities in the area.

### 5.7.1 Hydrological Assessment

The FWC will conduct or obtain a site-specific Hydrological Assessment to identify potential hydrology restoration needs on the FCWMA. Based on the results of the Hydrological Assessment, the FWC will develop a Conceptual Hydrological Restoration Plan which will guide the management, preservation, and restoration of hydrological resources on the area, as feasible.

### 5.7.2 Water Resource Monitoring

Currently, the FWC cooperates with the DEP and the SFWMD for ground and surface water monitoring, including maintaining and sampling from a ground water monitoring well. In addition, the FWC will continue to cooperate with the DEP and the SFWMD to develop and implement any necessary surface water quality and quantity monitoring protocols for the FCWMA. In this capacity, the FWC will primarily rely on the expertise of the DEP and the SFWMD to facilitate these monitoring activities. Also, the FWC will request a stream condition index assessment from the DEP. As necessary, the FWC may independently conduct or contract for water resource monitoring under the guidance of the DEP and the SFWMD.

## 5.8 Forest Resource Management

A Timber Assessment of the timber resources of the FCWMA was been conducted by the FFS in 2002. The management of timber resources will be considered in the context of the Timber Assessment and the overall land management goals and activities.

Thinning of the forest over-story, hydrological restoration, exotic plant control, and reintroduction of prescribed burning are the most important factors in re-establishment of



natural communities and the enhancement of wildlife habitats in communities that have been altered through fire suppression, agriculture, silviculture, or other means. Though such areas are rare on the FCWMA, any upland pine forest that is planted with off-site pines will be reforested with on-site species as appropriate. Degraded or disturbed bottomland hardwood sites will be encouraged to reforest naturally with native wetland oaks, hardwoods, and other appropriate native plant species.

Pursuant to OBVM management goals, the FWC will continue to manage timber resources for wildlife benefits and natural community restoration. Management activities including the use of timber thinning and harvesting may be

utilized. The primary management technique for encouraging reforestation is protection of young trees and seedlings on these sites from damage. However, where natural regeneration is lacking, artificial reforestation may be implemented. Planting trees on these selected sites is used to increase the rate of reforestation and to ensure diversity. Forested wetlands are managed for stands with old growth characteristics. Snags will be protected to benefit cavity-nesting species.

### **5.8.1 Timber Management Plan**

As previously mentioned, the FFS conducted a timber assessment of the FCWMA in 2002 to evaluate the area's timber resources and to explore the feasibility of utilizing silvicultural techniques as a management activity on the area. The FWC has requested an update of the FCWMA timber assessment and it will be incorporated into this Management Plan as an appendix once it is received.

However, given the limited amount of timber resources on the area, a timber management plan is not necessary for management of the timber resources on the FCWMA due to the fact that the FWC only develops timber management plans on those areas where the extent and type of timber resources warrant development of such a plan.

## **5.9 Historical Resources**

Procedures outlined by the DHR will be followed to preserve historical resources on the FCWMA. If determined to be necessary, the FWC will consult with the DHR in an attempt to locate features on the area. As appropriate, the FWC will contact professionals from DHR for assistance prior to any ground-disturbing activity on the area.

As discussed in Section 2.8, the DHR Master Site File indicates 48 known historical sites on the FCWMA. These sites include 41 archaeological sites, four historic structures (Tom Gaskins Jr. house, GL415; Tom Gaskins Sr. house, GL414; Cypress Museum Shop, GL412; Cypress Woodworking Shop, GL413), and three resource groups (Fort Center, GL13; Fort Center Military Trail, GL482; Lake Okeechobee Dike, GL421). A full listing of these sites can be found in Appendix 13.11.1. As recommended by the DHR, the FWC will continue to monitor, preserve, and protect as necessary all 48 of these sites.

In cooperation with DHR, 37 of the overall known historical sites on the FCWMA have been identified as meeting the DHR's special criteria for annual monitoring and reporting; FWC will continue to monitor and report on these sites annually.



Additionally, the FWC will also continue to monitor the remaining eleven sites that are located on the area on a rotating, regular basis.

The FWC will submit subsequently located historical sites on the FCWMA to the DHR for inclusion in their Master Site file. In addition, the FWC will ensure management staff has completed DHR Archaeological Resources Monitoring training. Furthermore, the FWC will refer to and follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (Appendix 13.11) for management of these resources and prior to any facility development or other ground disturbing activities.

### **5.10 Capital Facilities and Infrastructure**

FWC's land management philosophy is designed to conserve the maximum amount of wildlife habitat while providing the minimal number of capital facilities and infrastructure necessary to effectively conduct operational and resource management activities, and provide ample opportunities for fish and wildlife resource based public outdoor recreation. For these reasons, planned capital facilities and infrastructure will focus on improving access, recreational potential, hydrology, or other resource and operational management objectives.



Current capital facilities and infrastructure on the FCWMA are depicted in Figure 10, below, and include over 2 miles of roads, 24 miles of trails, ten kiosks, two boat ramps, one canoe launch, one checkstation, one office, and a maintenance and FWC Law Enforcement evidence compound. Additionally, the campground on the FCWMA includes a parking area, water treatment plant, waste water treatment plant, maintenance shed, storage shed,

store, and two bathhouses.

Also, currently, FWC is in the process of building a previously authorized new equipment storage and office facility to replace the existing facility by relocating it on a more suitable site.

As described in Section 5.6.1 of this Management Plan, for any public facilities that are developed on areas managed by the FWC, every effort is made to comply with the Americans with Disabilities Act (Public Law 101-336).

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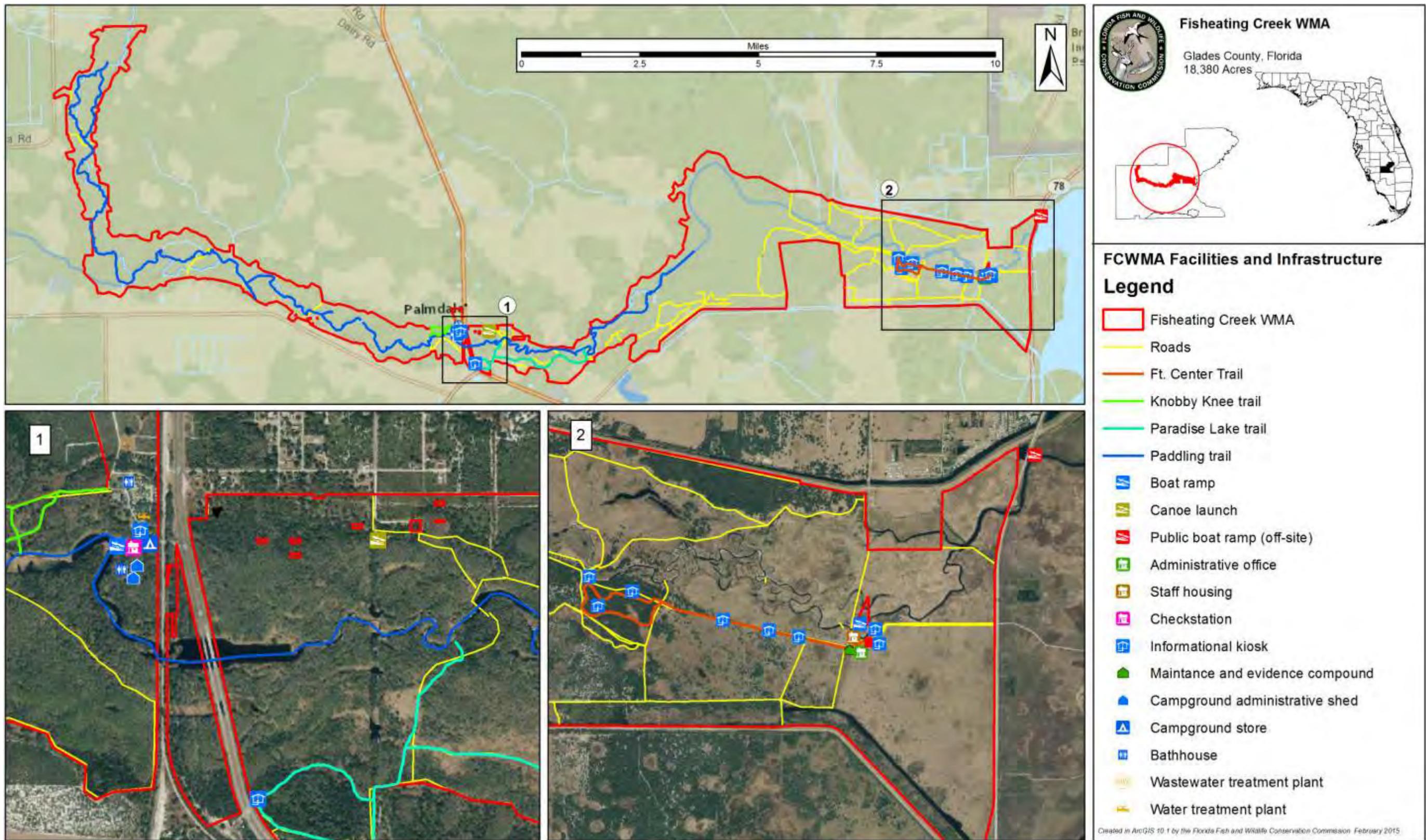


Figure 10. FCWMA Capital Facilities and Infrastructure

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## **5.11 Land Conservation and Stewardship Partnerships**

The FWC utilizes a three-tiered approach to identifying, acquiring or otherwise protecting important conservation lands adjacent to or in proximity to existing FWC-managed areas. This involves development of an Optimal Resource Boundary (ORB), Optimal Conservation Planning Boundary (OCPB) and associated Conservation Action Strategy (CAS).

Increasingly, cooperative land steward partnership efforts with private landowners plays an integral role in this effort as does ongoing land conservation, either through fee-simple or less-than-fee conservation easements. In combination, this tiered model helps FWC to further the regional conservation of important fish and wildlife habitats through a proactive, comprehensive, and cooperative approach towards conservation.

### **5.11.1 Optimal Resource Boundary**

This three tiered model begins with the development of an ORB, which is a resource-based analysis on a regional scale that integrates important FWC conservation research and analysis into practical planning, acquisition, and management efforts through GIS analysis. The ORB focuses on critical and important wildlife species or habitat considerations such as rare and imperiled species habitat within a particular region or ecosystem-like area on a landscape scale within which an FWC managed area is contained while eliminating urban areas or lands that have already been conserved or protected.

### **5.11.2 Optimal Conservation Planning Boundary**

The second tier is known as the OCPB. The OCPB combines the regional natural resources identified in the ORB, as well as regional and local area conservation planning, including habitat conservation and restoration, habitat linkages, management challenges, land use and zoning issues, infrastructure including roads and developments, improving access, eliminating inholdings, providing prescribed burn buffers, resolving boundary irregularities, water resource protection, and conserving other important natural and historical resources.

The OCPB provides the basis for development of a broader CAS for the FCWMA. Although the OCPB provides the basis for potential future voluntary, willing-seller conservation acquisitions, it is designed to function primarily as a conservation planning boundary. The OCPB identifies surrounding lands and natural resources that may be important to the continued viability of fish and wildlife populations in the region. As they are currently managed, these lands appear to contribute to regional conservation and may support conservation landscape linkages.

### **5.11.3 Conservation Action Strategy**

The CAS is the third tier, and implements the results of the ORB and OCPB tiers. This element of the process incorporates the conservation planning recommendations into an action strategy that prioritizes conservation needs. The CAS is integral to the development

of conservation stewardship partnerships and also implements the current approved process for establishing the FWC Florida Forever Inholdings and Additions acquisition list.

Primary components of the CAS may include:

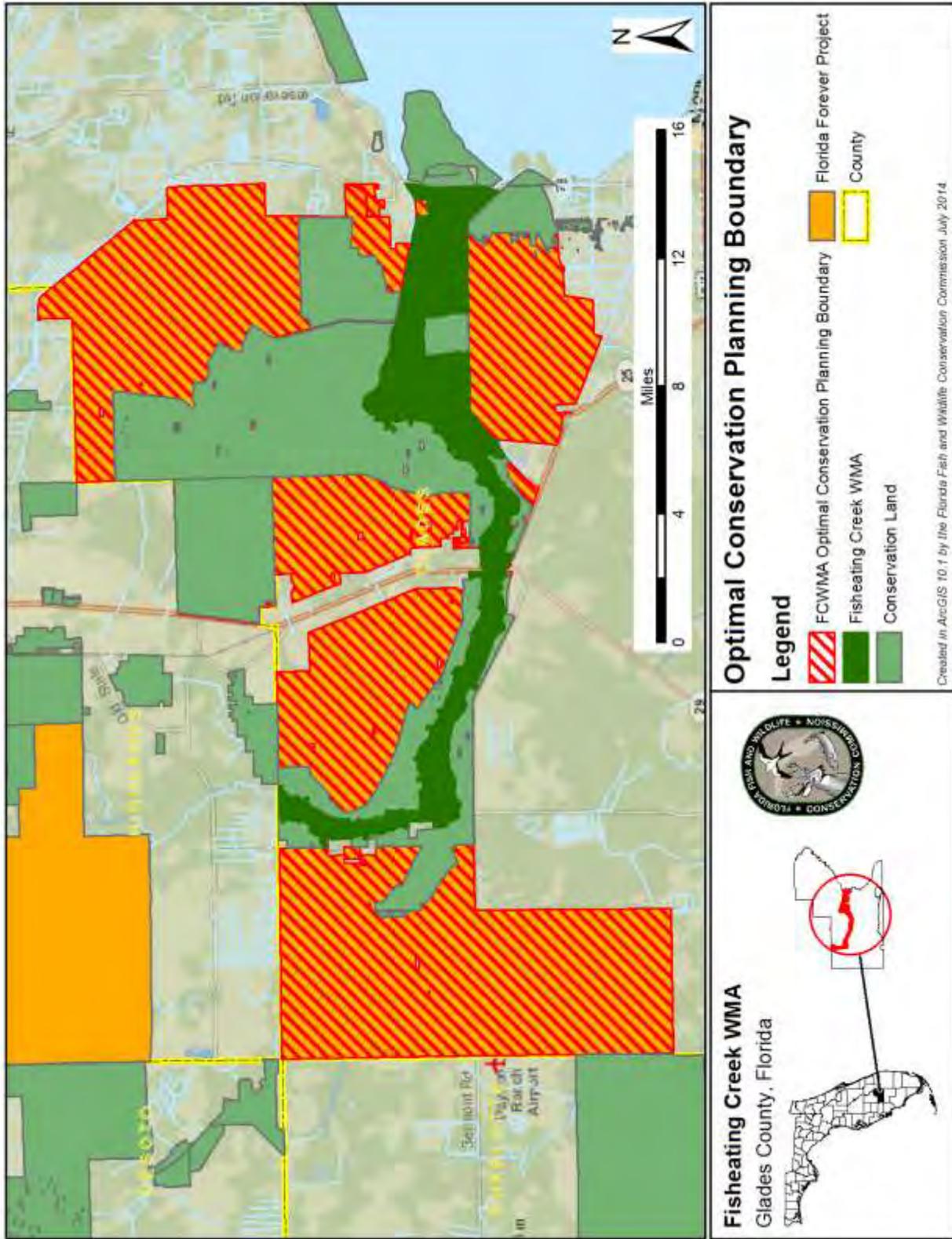
- FWC Landowner Assistance Program
- FWC conservation planning
- FWC Additions and Inholdings Program Land Conservation Work Plan
- Forest Stewardship Program proposals
- Florida Forever project proposals and boundary modifications
- Conservation easements
- Federal or State grant conservation proposals
- Regional or local conservation proposals
- Local, state, and federal planning proposals
- Non-governmental organization conservation proposals

Continued conservation of these lands may be aided by available voluntary landowner stewardship programs, conservation easements, and in some cases, potential voluntary conservation acquisitions. Participation in any FWC conservation effort is entirely voluntary and at the sole choice of willing landowners.

Private landowners seeking assistance with habitat management will likely find it offered within FWC's Landowner Assistance Program (LAP). The FWC employs biologists who are available to provide wildlife-related assistance with land-use planning and habitat management. There are many forms of assistance that include technical, financial, educational, and various forms of recognition that seek to award landowners who manage their wildlife habitat responsibly. More information on FWC's LAP program and online habitat management tools are available online at: <http://myfwc.com/conservation/special-initiatives/lap/> .

#### **5.11.4 FWC Florida Forever Additions and Inholdings Acquisition List**

Currently, the FWC has not identified any potential additions or privately held inholdings for the FCWMA. However, approximately 109,043 acres of the Fisheating Creek Ecosystem Florida Forever project remain to be acquired in either fee or less-than-fee and remain essential to conserving and protecting the larger Fisheating Creek Ecosystem and its associated fish and wildlife resources. Upon completion of the CAS, additions to the FWC Florida Forever Additions and Inholdings acquisition list may be recommended.



**Figure 11. FCWMA Optimal Conservation Planning Boundary**

## **5.12 Research Opportunities**

The FWC intends to cooperate with researchers, universities, and others as feasible and appropriate. For the FCWMA, the FWC will continue to assess and identify research needs, and pursue research and environmental education partnership opportunities as appropriate. Research proposals involving the use of the area are evaluated on an individual basis. All research activities on the FCWMA must have prior approval by FWC.

## **5.13 Cooperative Management and Special Uses**

### **5.13.1 Cooperative Management**

The FWC is responsible for the overall management and operation of the FCWMA as set forth in Lease 4257 with the Board of Trustees. In keeping with the lease agreements, and in order to conduct its management operations in the most effective and efficient manner, the FWC cooperates with other agencies to achieve management goals and objectives described in this Management Plan. These include cooperating with DHR to ensure the requirements of the Management Procedures Guidelines - Management of Archaeological and Historical Resources document (Appendix 13.11) are followed with regard to any ground-disturbing activities. In addition, the FFS assists FWC by providing technical assistance on forest resource management. Also, the FWC cooperates and consults with the SFWMD and the DEP for the monitoring and management of both ground and surface water resources and the overall management of the FCWMA.

As mentioned above, the FWC cooperates extensively with the ACOE on the ongoing restoration of Cowbone Marsh within the FCWMA. The FWC also cooperates with the ACOE and the SFWMD on implementing the CERP as well as with the NRCS on implementing WRP efforts.

Additionally, FWC continues to cooperate with the SAAB for input on management of the area in keeping with the requirements of the Settlement Agreement.

The FWC also continues to cooperate extensively with the Lykes Bros., Inc., on the overall management of the area in conformance with the Settlement Agreement as well as specifically on implementation of the Cattle Grazing Agreement (Appendix 13.3.3). The FWC continues to cooperate with the Lykes Bros., Inc., regarding land management activities such as prescribed burning and exotic species treatments that occur along shared property boundaries as well as regarding the ongoing monitoring of the Fisheating Creek Conservation Easement. Specifically, the FWC cooperates with the Lykes Bros., Inc., in order to conduct prescribed burns on the numerous small, disjunct, and hard to access areas of fire-adapted natural communities that are spread along the boundary lines of the FCWMA. Coordinating burns with the Lykes Bros., Inc., enables FWC staff to feasibly apply prescribed fire to all of the FCWMA's fire-adapted natural communities. Additionally, as stated above, the FWC will also continue to cooperate with the Lykes Bros.,

Inc., on cattle grazing on the area pursuant to the Cattle Grazing Agreement, which is discussed in greater detail in Section 5.13.3, below.

### **5.13.2 First Responder and Military Training**

First-responder (public governmental police department or agency, fire and emergency medical service personnel) training and military training are conditionally allowed on the FCWMA. Such activities are considered allowable uses only when undertaken intermittently for short periods of time, and in a manner that does not impede the management and public use of the FCWMA, and causes no measurable long-term impact to the natural resources of the area. Additionally, FWC staff must be notified and approve the training through issuance of a permit prior to any such training taking place on the FCWMA. Any first-responder or military training that is not low-impact, intermittent and occasional would require an amendment to this management plan, and therefore will be submitted by the FWC to the DSL and the ARC for approval consideration prior to authorization.

### **5.13.3 Cattle Grazing**

As noted above, cattle grazing took place on the FCWMA for a long time prior to state acquisition of the property. The Settlement Agreement stipulates that the Lykes Bros., Inc., retains grazing rights on the FCWMA subject to an agreement with the FWC that ensures that the permitted level of grazing is compatible with the protection of the natural resources of the area. Pursuant to the Settlement Agreement, the FWC and the Lykes Bros., Inc., have entered into a cattle grazing agreement (Contract #6283, Appendix 13.3.3). This agreement states that prescribed grazing will be implemented on the FCWMA cooperatively by both the Lykes Bros., Inc., and the FWC and that management decisions



will be based upon on-site vegetative indicators, rather than by animal numbers. As a result, the number of cattle present on the area may vary from year to year depending on vegetation and weather conditions.

This prescribed grazing is designed to help maintain open areas and create a mosaic of habitats. By maintaining open areas, succession of woody plants and palmettos is dramatically decreased. This has been proven to be beneficial for deer, turkey, and other wildlife. Prescribed grazing occurs predominantly in the semi-improved pasture communities present on the FCWMA and exotic grasses, including bahiagrass and paragrass, are the primary source of forage.

A key component of the Cattle Grazing Agreement and associated best management practices is the implementation of vegetative management, including the control or

eradication of noxious, invasive, and woody plant species, in order to provide sufficient forage for continued cattle grazing on designated areas of the FCWMA. The FWC will continue to cooperate with Lykes Bros., Inc., to provide and select Key Grazing Areas based on vegetative indicators, including sufficient forage for continued cattle grazing, in conformance with the best management practices outlined in the Cattle Grazing Agreement. The FWC will also continue to coordinate and cooperate with the Lykes Bros., Inc., when implementing vegetation management practices that impact grazing productivity, in order to allow for the timely movement of cattle if necessary.

#### **5.13.4 Apiaries**

Currently, there are no apiaries operating on the FCWMA. However, use of apiaries is conditionally approved for the FCWMA, and is deemed to be consistent with purposes for acquisition, is in compliance with the Conceptual State Lands Management Plan, and is consistent with the FWC agency mission, goals, and objectives as expressed in the agency Strategic Plan and priorities document (Appendix 13.9). Location, management, and administration of apiaries on the FCWMA will be guided by the FWC Apiary Policy (Appendix 13.10.1).

However, the FWC has conducted an analysis of apiary feasibility on the FCWMA and found that there are currently no appropriate sites for apiaries on the area (Appendix 13.10.2). The FWC Apiary Policy states that apiaries should be situated at least one-half of a mile from the WMA property lines, but the vast majority of the FCWMA is less than a mile wide. The portions of the FCWMA that are more than one-half of a mile from the property boundary are either wetlands or uplands that are prone to flooding, and are therefore unsuitable sites for apiaries.

### **5.14 Climate Change**

Because of Florida's unique ecology and topography, any potential impacts as a result of climate change may be particularly acute and affect multiple economic, agricultural, environmental, and health sectors across the state. The impact of climate change on wildlife and habitat may already be occurring, from eroding shorelines and coral bleaching to increases in forest fires and saltwater intrusion into inland freshwater wetlands.

The Intergovernmental Panel on Climate Change (IPCC), a multi-national scientific body, reports that climate change is likely proceeding at a rate where there will be unavoidable impacts to humans, wildlife, and habitat. Given current levels of heat-trapping greenhouse gas emissions, shifts in local, regional, and national climate patterns including changes in precipitation, temperature, increased frequency and intensity of extreme weather events, rising sea levels, tidal fluctuations, and ocean acidification are projected. The current trend of global temperature increase has appeared to accelerate in recent decades, and continued greenhouse gas emissions may result in projected global average increases of 2 –11.5° F by the end of the century.<sup>5</sup>

This apparent change in global climate has the potential to disrupt natural processes; in some areas, climate change may cause significant degradation of ecosystems that provide services such as clean and abundant water, sustainable natural resources, protection from flooding, as well as hunting, fishing and other recreational opportunities. Consequently, climate change is a challenge not only because of its likely direct effects, but also because of its potential to amplify the stress on ecosystems, habitats, and species from existing threats such as exponential increases in surface and ground water use, habitat loss due to increased urbanization, introduction of invasive species, and fire suppression.

Potential impacts that may be occurring as a result of climate change include: change in the timing of biological processes, such as flowering, breeding, hibernation, and migration;<sup>6, 7, 8</sup> more frequent invasions and outbreaks of exotic invasive species;<sup>9</sup> and loss of habitat in coastal areas due to sea level rise.<sup>10</sup> Some species are projected to adjust to these conditions through ecological or evolutionary adaptation, whereas others are projected to exhibit range shifts as their distributions track changing climatic conditions. Those species that are unable to respond to changing climatic conditions are projected to go extinct. Some estimates suggest that as many as 20% - 30% of the species currently assessed by the IPCC are at risk of extinction within this century if global mean temperatures exceed increases of 2.7 – 4.5° F.<sup>11</sup> A number of ecosystems are projected to be affected at temperature increases well below these levels.

At this time, the potential effects of climate change on Florida's conservation lands are just beginning to be studied and are not yet well understood. For example, FWC has begun a process for currently developing climate change adaptation strategies for monitoring, evaluating, and determining what specific actions, if any, may be recommended to ameliorate the projected impacts of climate change on fish and wildlife resources, native vegetation, and the possible spread of exotic and invasive species. Currently, FWC is continuing its work on the development of these potential adaptation strategies. However, as noted above, the effects of climate change may become more frequent and severe within the time period covered by this Management Plan.

For these reasons, there is a continuing need for increased information and research to enable adaptive management to cope with potential long-term climate change impacts. The most immediate actions that FWC can take are to work with partners to gather the best scientific data possible for understanding natural processes in their current state, model possible impacts and subsequent changes from climate change, develop adaptive management strategies to enhance the resiliency of natural communities to adapt to climate change, and formulate criteria and monitoring for potential impacts when direct intervention may be necessary to protect a species. To this end, when appropriate, FWC will participate in organizations such as the Peninsular Florida Land Conservation

Cooperative or similar organizations so that FWC continues to gain understanding and share knowledge of key issues related to potential climate change. In addition, FWC will consider the need for conducting vulnerability assessments to model the potential effects of climate change, especially sea level rise and storm events, on imperiled species and their habitats on FWC managed land.

Elements of climate change that may potentially affect the FCWMA include saltwater intrusion from sea level rise, more frequent and more potent storm events, alteration of vegetation reproductive cycles, changes in migratory bird patterns, and changes in the fire regime. Though not likely to affect the FCWMA directly, the results of a Sea Level Affecting Marsh Model for conservation lands along the Gulf and Atlantic coasts of Florida indicates a variety of habitats that may potentially be impacted. Low-lying coastal habitats, such as salt marsh and hardwood swamp natural communities are projected to face the most direct and dramatic impacts of climate change, particularly from a projected rising sea level and from the projected increased frequency and intensity of coastal storms.<sup>12, 13, 14, 15</sup> The effects of sea level rise in the recent past have been observed on publically-owned conservation lands located along the coast where cabbage palms have been dying on coastal islands due to salinity increases. The potential loss of habitat may result in the loss of species using that habitat, including migrating and nesting birds. Storm events also cause considerable physical damage to native vegetation along vulnerable shorelines, impacting nesting habitat for sea life and shorebirds. The projected rise in sea levels may decrease the availability and abundance of prey for wading birds that forage in shallow waters on the expansive tidal flats of the Gulf and Atlantic coasts. Climate change may amplify and hasten these effects, potentially at rates that exceed the normal resiliency of plant communities to recover, shift or adapt accordingly.<sup>16, 17</sup> Projected salt water intrusion into the subsurface freshwater lens from potential sea level rise and saltwater inundation of surface freshwaters from storm surges may alter coastal ecosystems and freshwater marshes, possibly resulting in more salt-tolerant aquatic plant communities.

To address the potential impacts of climate change on the FCWMA, Goals and Objectives have been developed as a component of this Management Plan (Section 6.11). Depending on the recommendations of the adaptive management strategies described above, additional specific goals and objectives to mitigate potential climate change impacts may be developed for the FCWMA Management Plan in the future.

### **5.15 Soil and Water Conservation**

Soil disturbing activities will be confined to areas that have the least likelihood of experiencing erosion challenges. On areas that have been disturbed prior to acquisition, an assessment will be made to determine if soil erosion is occurring, and if so, appropriate measures will be implemented to stop or control the effects of this erosion.

## **6 Resource Management Goals and Objectives**

The management goals described in this section are considered broad, enduring statements designed to guide the general direction of management actions to be conducted in order to achieve an overall desired future outcome for the FCWMA. The objectives listed within each management goal offer more specific management guidance and measures, and are considered the necessary steps to be completed to accomplish the management goals. Many of the objectives listed have specific end-of-the-calendar-year target dates for completion and all of them are classified as having either short-term (less than two years) or long-term (up to ten years) timelines for completion.

### **6.1 Habitat Restoration and Improvement**

**Goal: Improve extant habitat and restore disturbed areas.**

#### **Short-term**

- 6.1.1 Conduct prescribed burning on 800 acres of fire-adapted natural communities per year.
- 6.1.2 Implement the Prescribed Fire Plan.
- 6.1.3 Conduct habitat/natural community improvement, including mowing and rollerchopping, on 200 acres per year (Figure 12).
- 6.1.4 Continue to implement the OBVM program for the area.

#### **Long-term**

- 6.1.5 Contract to update the GIS mapping of historic and current natural communities.
- 6.1.6 Continue to conduct prescribed burning on 800 acres of fire-adapted natural communities per year.
- 6.1.7 Continue to maintain 5,783 acres (100%) of fire-adapted natural communities within a 3 - 20 year overall target fire return interval, including target fire return intervals of 20 years for scrub, three years for dry prairie, four years for mesic and wet flatwoods, and five years for depression marsh, floodplain marsh, and seepage slope.
- 6.1.8 Continue to implement the Prescribed Fire Plan.
- 6.1.9 Continue to conduct habitat/natural community improvement, including mowing and rollerchopping, on 200 acres per year (Figure 12).
- 6.1.10 Continue implementing the OBVM program for the area.

## **6.2 Imperiled and Focal Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

**Goal: Maintain, improve, or restore imperiled species populations and habitats.**

### **Short-term**

- 6.2.1 Implement the WCPR strategy for the area.
- 6.2.2 As guided by the area's WCPR Strategy, monitor Florida scrub-jay, wading bird species, Bachman's sparrow, crested caracara, swallow-tailed kite, and other identified imperiled and focal species.
- 6.2.3 Continue to cooperate and provide technical assistance with adjacent landowners on the gopher tortoise recipient site.
- 6.2.4 Continue to collect opportunistic wildlife species occurrence data.
- 6.2.5 Continue to conduct crested caracara nest surveys as necessary for the Cowbone Marsh restoration project.
- 6.2.6 Continue to conduct annual monitoring surveys for the swallow-tailed kite communal roost site.
- 6.2.7 Conduct Bachman's sparrow survey once to determine presence or absence of Bachman's sparrows.
- 6.2.8 In cooperation with other public and private entities, conduct aerial wading bird surveys as feasible.

### **Long-term**

- 6.2.9 Continue to implement the WCPR strategy for the area.
- 6.2.10 As guided by the area's WCPR Strategy, continue to monitor Florida scrub-jay, wading bird species, Bachman's sparrow, crested caracara, swallow-tailed kite, and other identified imperiled and focal species.
- 6.2.11 Continue to cooperate and provide technical assistance with adjacent landowners on the gopher tortoise recipient site.
- 6.2.12 Continue to collect opportunistic wildlife species occurrence data.
- 6.2.13 Continue to conduct crested caracara nest surveys as necessary.
- 6.2.14 Continue to conduct annual monitoring surveys for the swallow-tailed kite communal roost site.

6.2.15 In cooperation with other public and private entities, continue to conduct aerial wading bird surveys as feasible.

6.2.16 Revise and update the WCPR strategy as necessary and appropriate.

### **6.3 Other Wildlife (Game and Non-game) Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

**Goal: Monitor, maintain, improve, or restore game and non-game species populations and habitats.**

#### **Short-term**

6.3.1 Continue to conduct annual spotlight monitoring surveys for white-tailed deer.

6.3.2 Continue to collect biological game species harvest data at the check station.

6.3.3 Continue to collect opportunistic wildlife occurrence data.

6.3.4 Continue to conduct migratory bird point count surveys as necessary for the Cowbone Marsh restoration project.

#### **Long-term**

6.3.5 Install wood duck boxes around select wildlife viewing platforms on the FCWMA, as feasible.

6.3.6 Continue to conduct annual monitoring surveys for white-tailed deer.

6.3.7 Continue to collect biological game species harvest data at the check station.

6.3.8 Continue to collect opportunistic wildlife occurrence data.

6.3.9 Continue to conduct migratory bird point count surveys as necessary for the Cowbone Marsh restoration project.

### **6.4 Exotic and Invasive Species Maintenance and Control**

**Goal: Remove exotic and invasive plants and animals and conduct needed maintenance- control.**

#### **Short-term**

6.4.1 Annually conduct maintenance treatments on at least 2,000 acres for EPPC Category I and Category II invasive exotic plant species.

6.4.2 Continue to implement control measures, including trapping and hunting opportunities, for feral hogs.

- 6.4.3 Continue opportunistic monitoring for invasive and exotic animal species, including Nile monitor and Burmese python, and implement control measures as necessary.

### **Long-term**

- 6.4.4 Continue to annually conduct maintenance treatments on at least 2,000 acres for EPPC Category I and Category II invasive exotic plant species.
- 6.4.5 Continue to implement control measures, including trapping and hunting opportunities, for feral hogs.
- 6.4.6 Continue opportunistic monitoring for invasive and exotic animal species, including Nile monitor and Burmese python, and implement control measures as necessary.

## **6.5 Public Access and Recreational Opportunities**

**Goal: Provide public access and recreational opportunities.**

### **Short-term**

- 6.5.1 Continue to maintain public access and recreational opportunities to allow for a recreational carrying capacity of 1,140 visitors per day on the FCWMA.
- 6.5.2 Continue to maintain 24 miles of trails, including the FCWMA paddling trail.
- 6.5.3 Continue to monitor the area's trails annually for visitor impacts.
- 6.5.4 Continue to provide the FCWMA regulations brochure.
- 6.5.5 Continue to provide a website, ten kiosks, a bird list, and a recreation guide for enhanced interpretation and education about the area and its resources.
- 6.5.6 Develop a paddling trail guide.
- 6.5.7 Develop a hiking trail map.
- 6.5.8 Develop a butterfly list for the area.
- 6.5.9 Continue to provide frogging, fishing and hunting opportunities on the FCWMA for white-tailed deer, spring youth turkey hunts, spring turkey, small game, migratory birds, and wild hogs.
- 6.5.10 Continue to provide special opportunity spring turkey hunts on the FCWMA east of U.S. 27.
- 6.5.11 To provide additional hunting opportunities and to control wild hogs, continue to provide Glades and Hendry county residents with wild hog hunts as specified in the

FCWMA Settlement Agreement.

- 6.5.12 Update the FCWMA RMP.
- 6.5.13 Continue to provide hiking, biking, camping, wildlife viewing, fishing, swimming (Depot Lake), paddling, boating, and airboating recreational opportunities as appropriate and feasible
- 6.5.14 Cooperate with other agencies, counties, stakeholders, user groups, and regional landowners to investigate regional recreational opportunities including linking hiking, and multi-use trail systems among regional public areas.
- 6.5.15 Continue to identify partnerships that could provide for environmental educational programs and outreach.

**Long-term**

- 6.5.16 Reassess recreational opportunities every three years.
- 6.5.17 Update and continue to implement the FCWMA RMP.
- 6.5.18 Continue to maintain public access and recreational opportunities to allow for a recreational carrying capacity of 1,140 visitors per day on the FCWMA.
- 6.5.19 Continue to maintain 24 miles of trails, including the FCWMA paddling trail.
- 6.5.20 Continue to monitor trails annually for visitor impacts.
- 6.5.21 Continue to provide the FCWMA regulations brochure.
- 6.5.22 Continue to provide a website, ten kiosks, a bird list, and a recreation guide for enhanced interpretation and education about the area and its resources.
- 6.5.23 Continue to provide a paddling trail guide.
- 6.5.24 Continue to provide a hiking trail map.
- 6.5.25 Continue to provide a butterfly list for the area.
- 6.5.26 Continue to provide frogging, fishing, and hunting opportunities on the FCWMA for white-tailed deer, spring youth turkey hunts, spring turkey, small game, migratory birds, and wild hogs.
- 6.5.27 Continue to provide special opportunity spring turkey hunts on the FCWMA east of U.S. Highway 27.
- 6.5.28 To provide additional hunting opportunities, and to control wild hogs, continue to

provide Glades and Hendry county residents with wild hog hunts as specified in FCWMA Settlement Agreement.

- 6.5.29 Continue to provide hiking, biking, camping, wildlife viewing, fishing, swimming (Depot Lake), paddling, boating, and airboating recreational opportunities as appropriate and feasible.
- 6.5.30 Cooperate with other agencies, counties, stakeholders, user groups, and regional landowners to investigate regional recreational opportunities including linking hiking, and multi-use trail systems among regional public areas.
- 6.5.31 Continue to identify partnerships that could provide for environmental educational programs and outreach.

## **6.6 Hydrological Preservation and Restoration**

**Goal: Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.**

### **Short-term**

- 6.6.1 Request a stream condition index assessment of the area from the DEP.
- 6.6.2 Continue to cooperate with the SFWMD and the DEP for the monitoring of surface and ground water quality and quantity.
- 6.6.3 To maintain and enhance natural hydrological functions, maintain current low-water crossings and culverts as appropriate.
- 6.6.4 Conduct or obtain a FCWMA Hydrology Assessment to identify potential hydrology restoration needs.
- 6.6.5 Develop a Conceptual Hydrological Restoration Plan for the FCWMA.
- 6.6.6 Continue to cooperate with the ACOE on Cowbone Marsh restoration.
- 6.6.7 Continue to cooperate with the SFWMD, the ACOE, and other participants on the implementation of the CERP.
- 6.6.8 Continue to cooperate with the NRCS on the design and implementation of WRP efforts.

### **Long-term**

- 6.6.9 Implement the FCWMA Conceptual Hydrological Restoration Plan as feasible.
- 6.6.10 To maintain and enhance natural hydrological functions, and as recommended by

the FCWMA Hydrology Assessment and Conceptual Hydrological Restoration Plan, continue to install and maintain culverts and low-water crossings as appropriate.

- 6.6.11 Continue to cooperate with the ACOE on Cowbone Marsh restoration.
- 6.6.12 Continue to cooperate with the SFWMD and the DEP for the monitoring of surface and ground water quality and quantity.
- 6.6.13 Continue to cooperate with the SFWMD, the ACOE, and other participants on the implementation of the CERP.
- 6.6.14 Continue to cooperate with the NRCS on the design and implementation of WRP efforts.

## **6.7 Forest Resource Management**

**Goal: Manage timber resources to improve or restore natural communities for the benefit of wildlife.**

### **Short-term**

- 6.7.1 Cooperate with the FFS to complete a Timber Assessment.
- 6.7.2 Consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.

### **Long-term**

- 6.7.3 Continue to consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.

## **6.8 Historical Resources**

**Goal: Protect, preserve and maintain historical resources.**

### **Short-term**

- 6.8.1 If determined to be necessary by the DHR, contract for a historical and archaeological resources survey.
- 6.8.2 Monitor the 48 known recorded sites and submit updates of additional sites to the DHR for inclusion in their Master Site file.
- 6.8.3 In cooperation with the DHR, develop and implement a historical resources monitoring protocol to establish a prioritization of sites for monitoring.
- 6.8.4 Follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of

historical resources.

- 6.8.5 Ensure that FWC management staff has DHR Archaeological Resources Monitoring training.
- 6.8.6 Continue to cooperate with the DHR in designing site plans for the development of infrastructure.

### **Long-term**

- 6.8.7 Continue to monitor the 48 known recorded sites and submit updates of additional sites to the DHR for inclusion in their Master Site file.
- 6.8.8 Continue to follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of historical resources.
- 6.8.9 In cooperation with the DHR, continue to implement the historical resources monitoring protocol.
- 6.8.10 Continue to ensure that FWC management staff has DHR Archaeological Resources Monitoring training.
- 6.8.11 Continue to cooperate with the DHR in designing site plans for the development of infrastructure.
- 6.8.12 In cooperation with the DHR, explore the feasibility of establishing a national historic district designation on the FCWMA.

## **6.9 Capital Facilities and Infrastructure**

**Goal: Develop the capital facilities and infrastructure necessary to meet the goals and objectives of this Management Plan.**

### **Short-term**

- 6.9.1 Continue to maintain 7 facilities.
- 6.9.2 Continue to maintain 2.4 miles of roads.
- 6.9.3 Continue to maintain 24 miles of trails.
- 6.9.4 Continue to monitor trails and infrastructure annually for visitor impacts.
- 6.9.5 Continue to maintain service roads and fire breaks as appropriate.
- 6.9.6 Improve or repair 7 facilities, 2.4 miles of roads, and 4.5 miles of trails within the FCWMA.

## **Long-term**

- 6.9.7 Continue to maintain 7 facilities.
- 6.9.8 Continue to maintain 2.4 miles of roads.
- 6.9.9 Continue to maintain 24 miles of trails.
- 6.9.10 Continue to monitor trails and infrastructure annually for visitor impacts.
- 6.9.11 Continue to maintain service roads and fire breaks as appropriate.
- 6.9.12 Determine the feasibility of expanding the canoe launch site at Burnt Bridge.
- 6.9.13 As guided by the RMP (Section 5.6.2, Appendix 13.14), develop additional trails as appropriate.
- 6.9.14 As guided by the RMP, construct a wildlife viewing structure, boat ramp, one interpretive exhibit/pavilion at Fort Center, one interpretive exhibit at the FCWMA campground, three camping platforms, campground trailhead, trailhead to Paradise Lake, expansion of office complex, and campground pavilion (Figure 12).

## **6.10 Land Conservation and Stewardship Partnerships**

**Goal: Enhance fish and wildlife conservation, resource, and operational management through development of an optimal boundary.**

### **Short-term**

- 6.10.1 Identify potential important wildlife habitat, landscape-scale linkages, wildlife corridors, and operational/resource management needs.
- 6.10.2 Identify and develop conservation stewardship partnerships.
- 6.10.3 Identify and pursue conservation acquisition needs.
- 6.10.4 Develop and maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC OCPB and for FWC's LAP and Land Acquisition Programs.
- 6.10.5 Develop a CAS.
- 6.10.6 Contact and inform adjoining landowners about the FWC LAP to pursue non-acquisition conservation stewardship partnerships.
- 6.10.7 Determine which parcels should be added to the FWC acquisition list.

- 6.10.8 Identify potential non-governmental organization partnerships and grant program opportunities.
- 6.10.9 Determine efficacy of conducting an adjacent landowner's assistance/conservation stewardship partnership workshop.
- 6.10.10 Identify potential conservation easements donations.
- 6.10.11 Cooperate with Department of Defense military branches to allow for training opportunities for military personnel as appropriate and compatible with the conservation of the FCWMA.

**Long-term**

- 6.10.12 To minimize fragmentation of the area, continue to identify strategic parcels to revise the completed OCPB for the FCWMA as appropriate and necessary.
- 6.10.13 Continue to identify and develop conservation stewardship partnerships.
- 6.10.14 Continue to identify and pursue conservation acquisition needs.
- 6.10.15 Continue to maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC OCPB and for the FWC LAP and Land Acquisition Program.
- 6.10.16 Continue to propose nominations of selected properties as additions to the FWC acquisition list.
- 6.10.17 Continue to pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow.
- 6.10.18 As feasible, continue to periodically contact and meet with adjacent landowners for willingness to participate in the CAS, and coordinate landowner assistance/conservation stewardship partnership workshops as deemed appropriate.
- 6.10.19 Coordinate and conduct landowner assistance/conservation stewardship partnership workshop(s) as necessary and appropriate.
- 6.10.20 Continue to identify potential conservation easements donations.
- 6.10.21 Continue to cooperate with Department of Defense military branches to allow for training opportunities for military personnel as appropriate and compatible with the conservation of the FCWMA.

## **6.11 Climate Change**

**Goal: Develop appropriate adaptation strategies in response to projected climate change effects and their potential impacts on natural resources, including fish and wildlife, and the operational management of the FCWMA.**

### **Long-term**

- 6.11.1 Coordinate with FWC-FWRI Climate Change Adaptation Initiative to identify potential impacts of projected climate change on fish and wildlife resources and operational management of the FCWMA.
- 6.11.2 Incorporate appropriate climate change monitoring protocols and management strategies into the OBVM program for the FCWMA.
- 6.11.3 Incorporate appropriate climate change adaptation strategies into the WCPR for FCWMA.
- 6.11.4 As appropriate, update the FCWMA Prescribed Fire Plan to incorporate new scientific information regarding projected climate change, such as increased frequency of drought, on the fire regime of the FCWMA's fire-adapted habitats.
- 6.11.5 As science, technology, and climate policy evolve, educate natural resource management partners and the public about the agency's policies, programs and efforts to study, document and address potential climate change; assess the need to incorporate public education about climate change into FWC's public education curriculum.

## **6.12 Research Opportunities**

**Goal: Explore and pursue cooperative research opportunities.**

### **Short-term**

- 6.12.1 Continue to explore cooperative research needs and opportunities through FWC's Fish and Wildlife Research Institute (FWRI); cooperate with researchers, universities, and others as appropriate.
- 6.12.2 Continue to assess the need for and pursue research and environmental education partnership opportunities as appropriate.
- 6.12.3 Continue to cooperate with the Center for Snake Conservation on rainbow snake research.
- 6.12.4 Continue to facilitate research requests for the Lykes Bros. Inc. Conservation Easement.

### **Long-term**

- 6.12.5 Continue to explore cooperative research needs and opportunities through FWC's FWRI; cooperate with researchers, universities, and others as appropriate.
- 6.12.6 Continue to assess the need for and pursue research and environmental education partnership opportunities as appropriate.
- 6.12.7 Continue to cooperate with the Center for Snake Conservation on rainbow snake research.
- 6.12.8 Continue to facilitate research requests for the Lykes Bros. Inc. Conservation Easement.

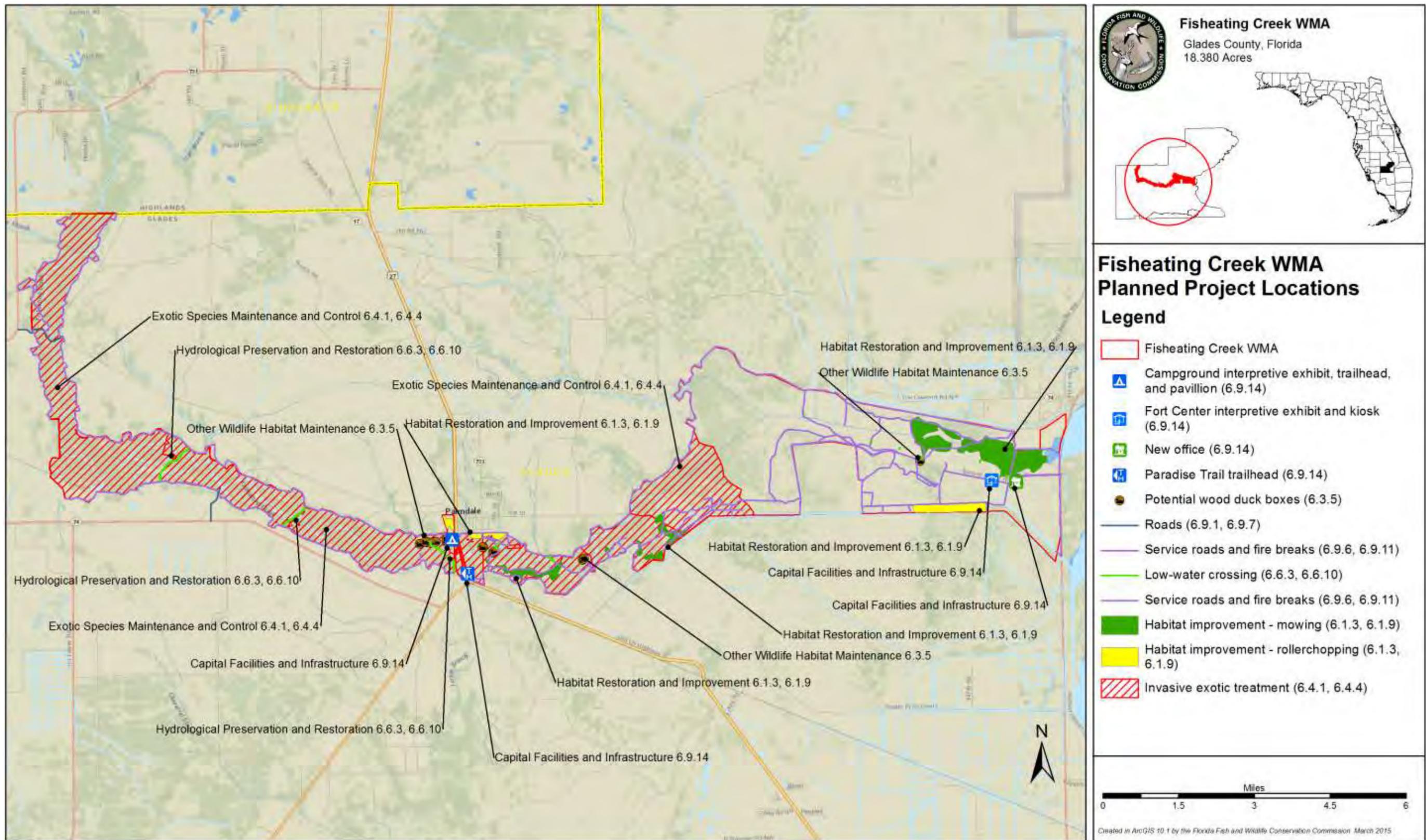
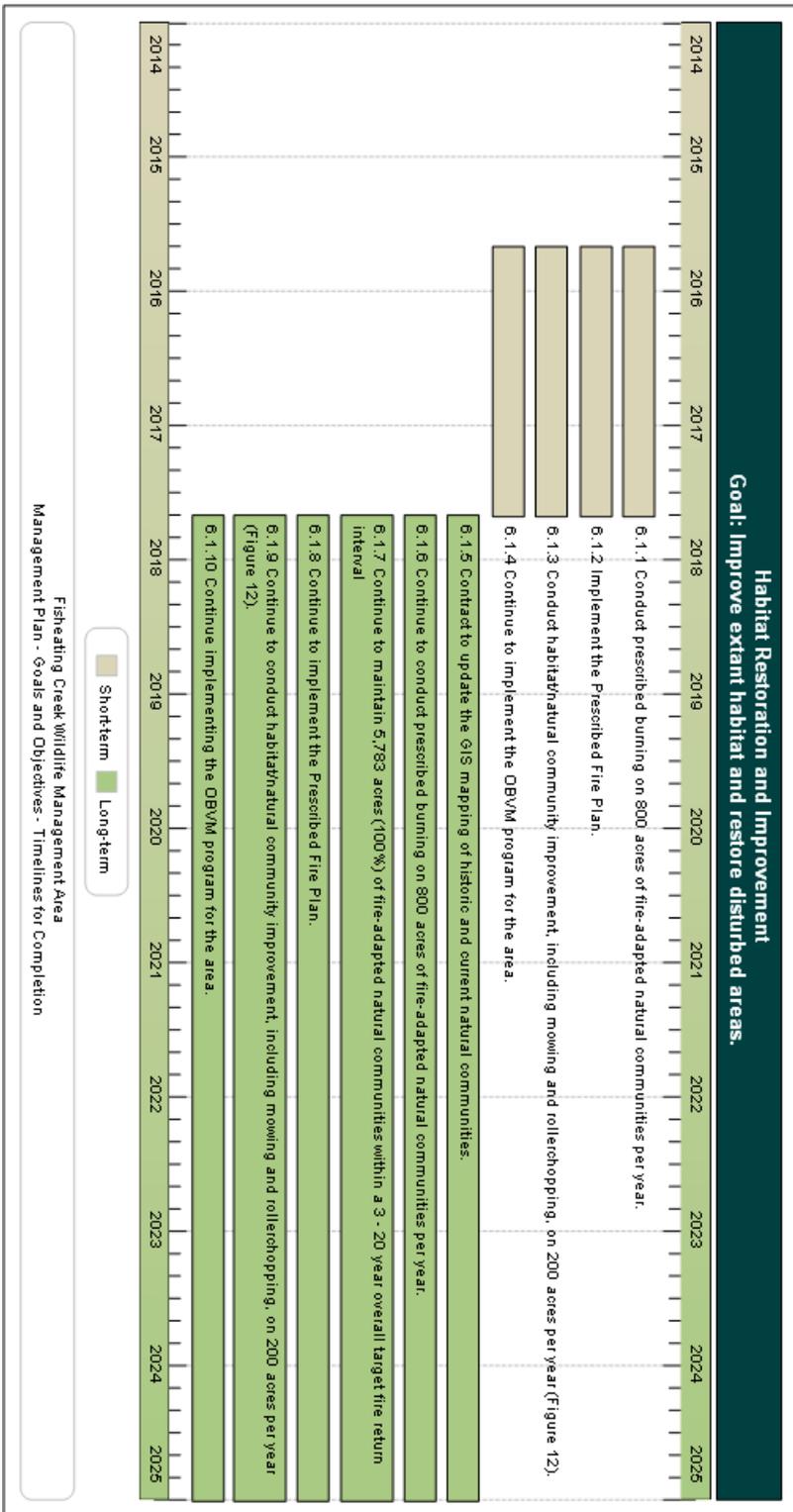


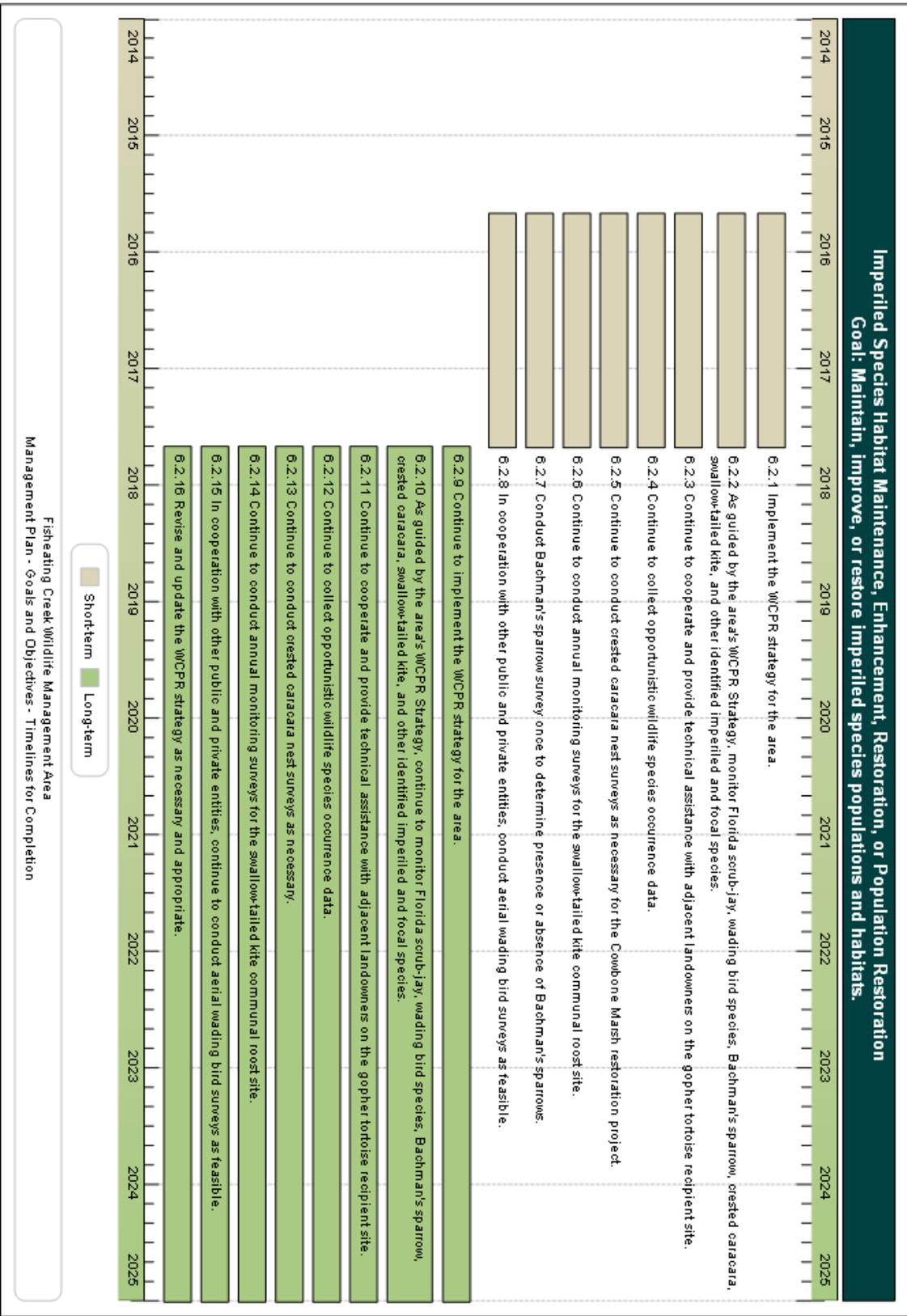
Figure 12. FCWMA Project Locations

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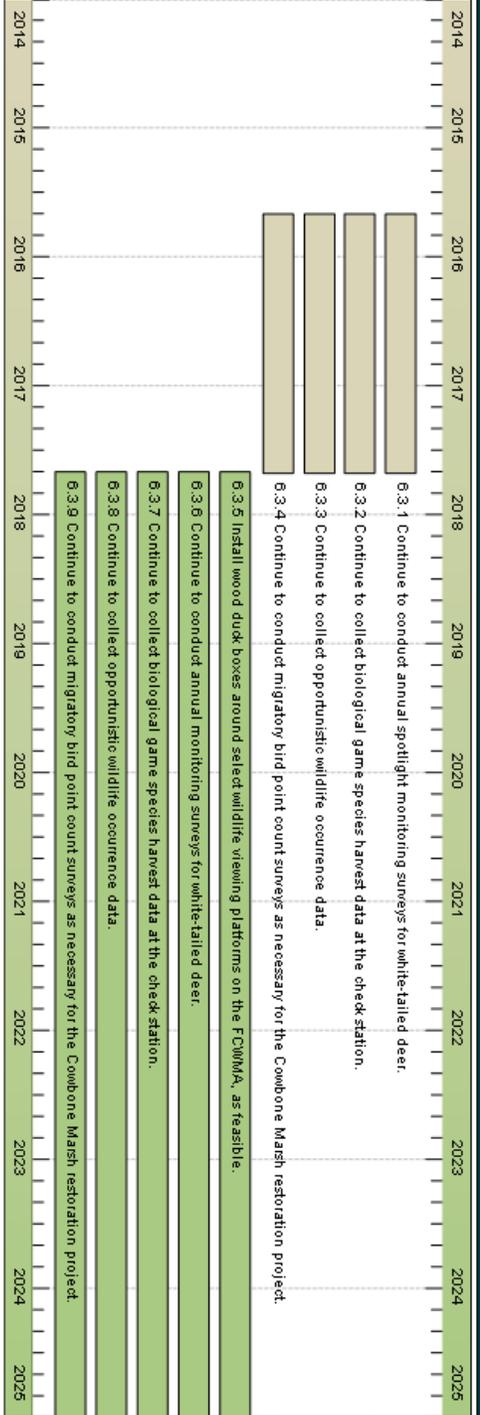
## **7 Schedule: Timelines for Completion of Resource Management Goals and Objectives**

The following section presents the short- and long-term goals and objectives for the management of the FCWMA graphically in a timeline format. These timelines directly reflect the short- and long-term goals and objectives presented above in Section 6.



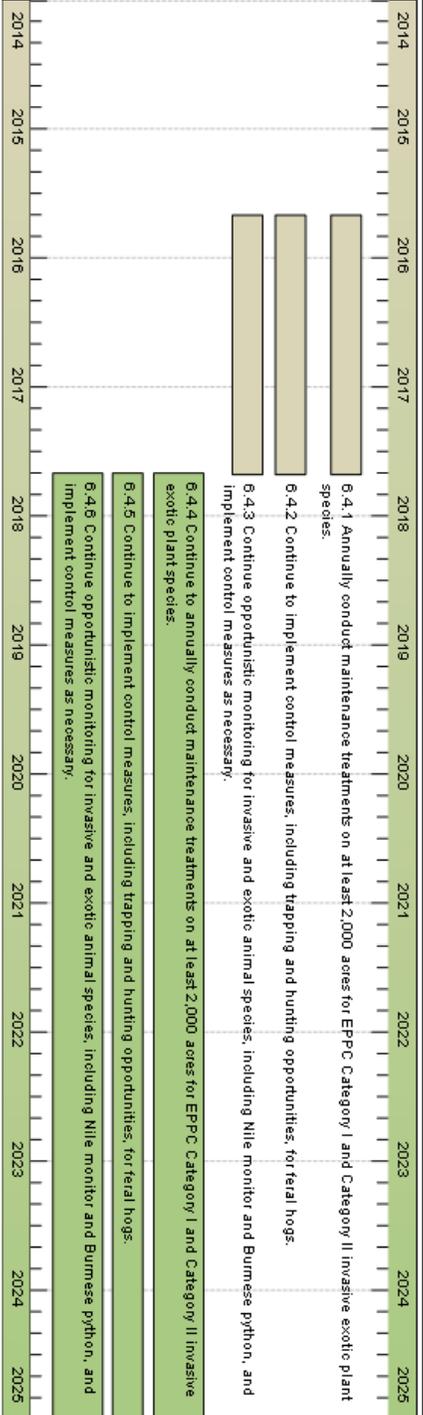


**Other Wildlife (Game and Nongame) Habitat Maintenance, Enhancement, Restoration, or Population Restoration**  
**Goal: Maintain, improve, or restore game and non-game populations and habitats.**

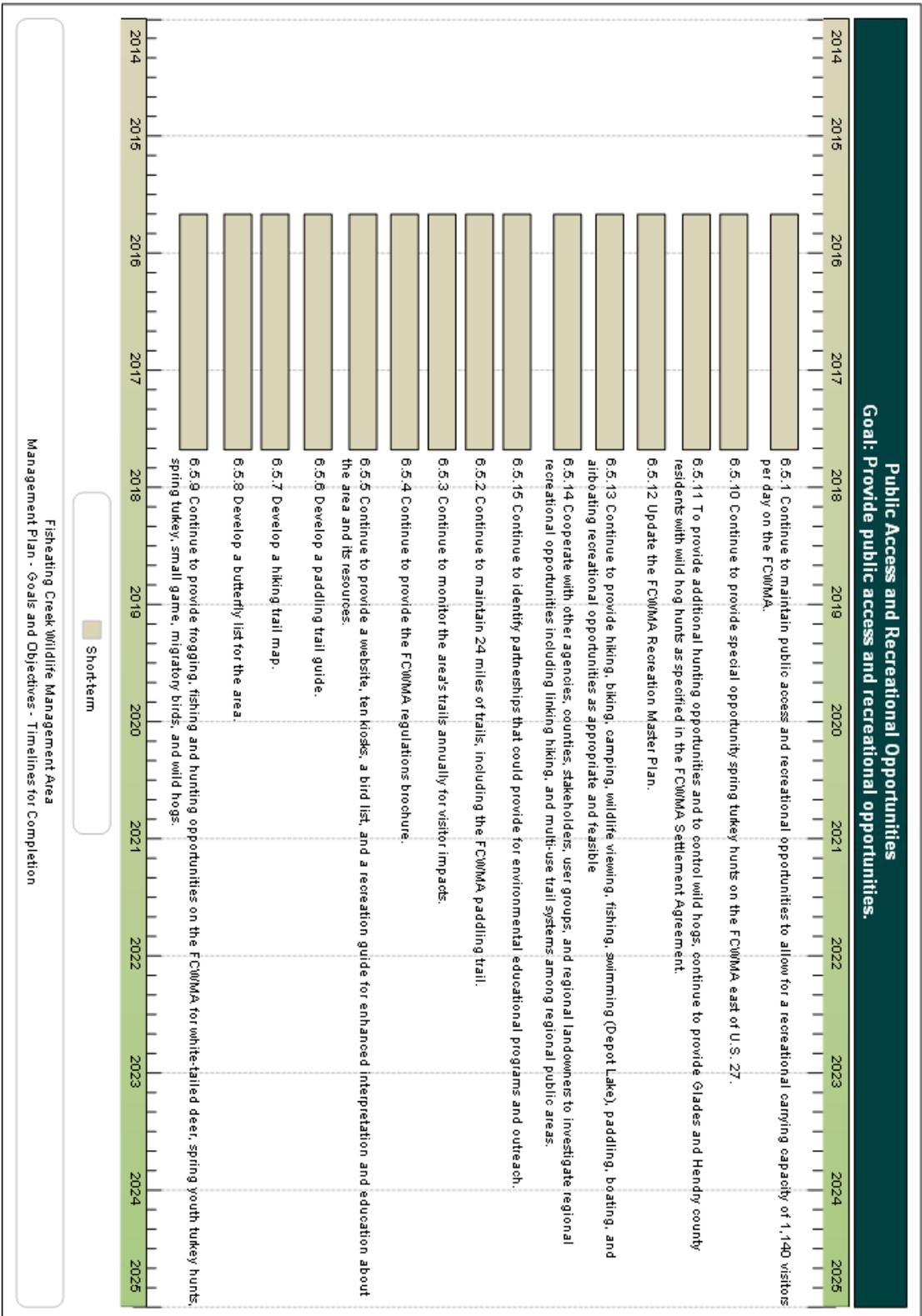


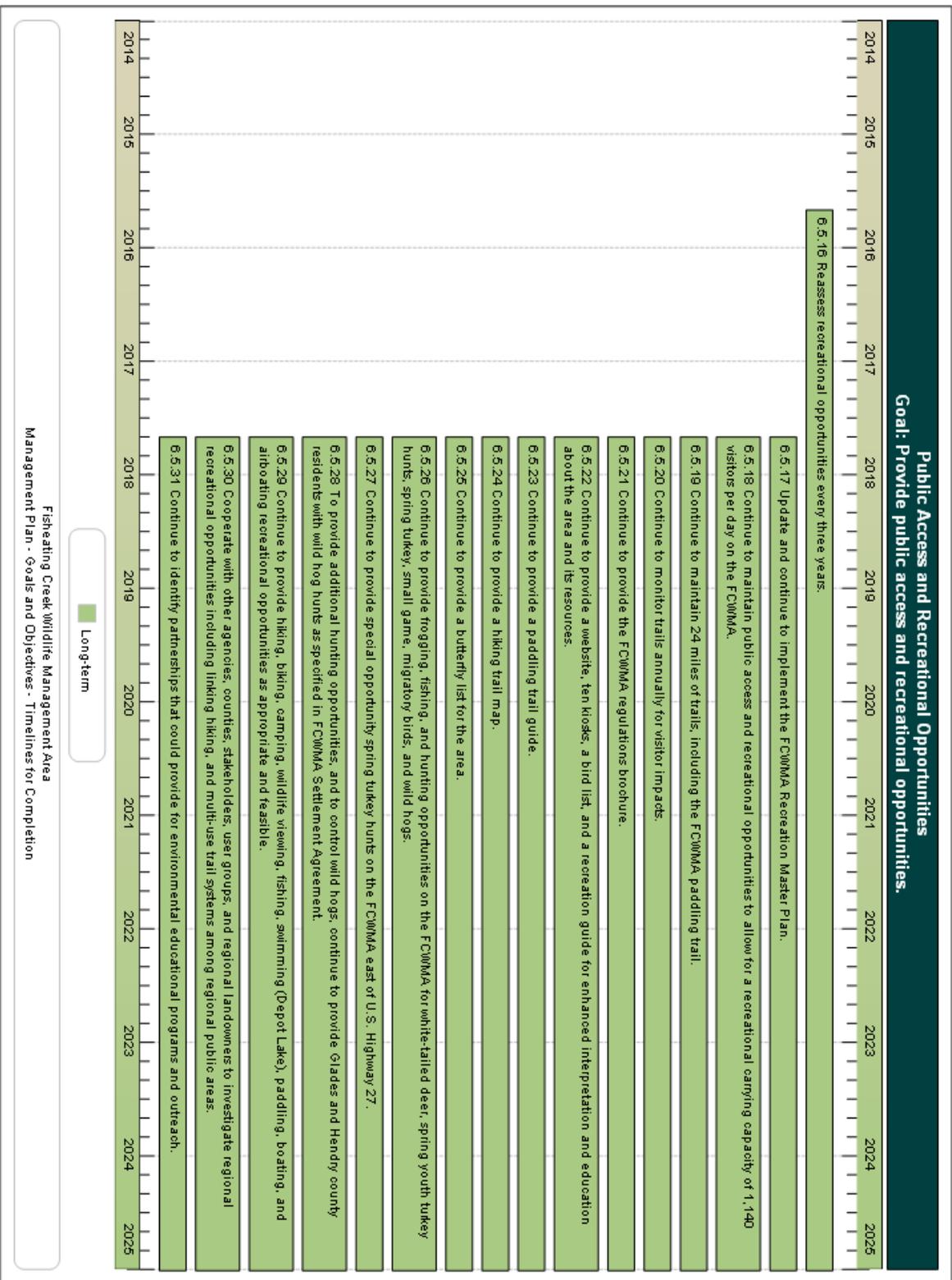
Fisheating Creek Wildlife Management Area  
 Management Plan - Goals and Objectives - Timelines for Completion

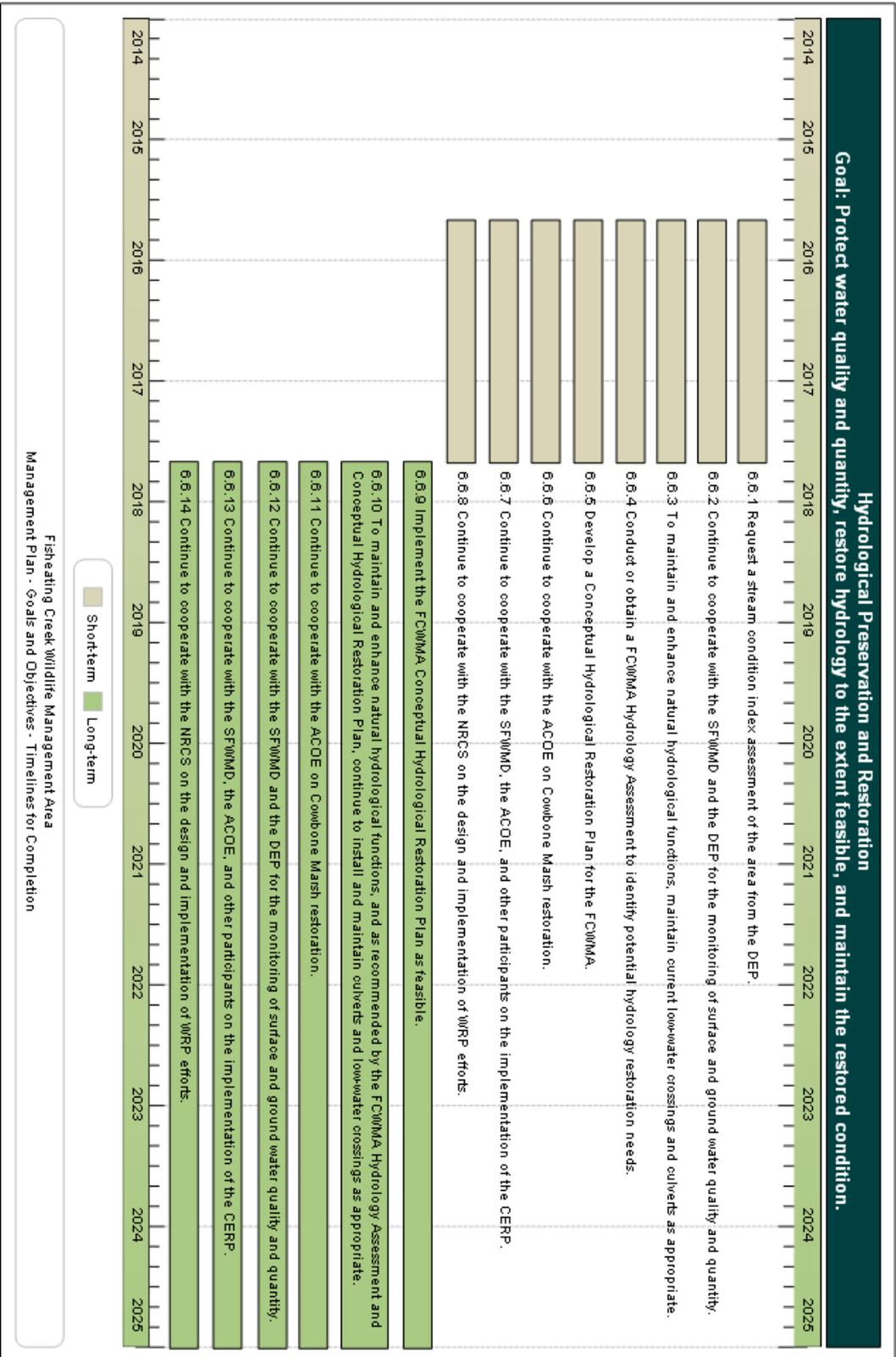
**Exotic and Invasive Species Maintenance and Control**  
**Goal: Remove exotic and invasive plants and animals and conduct needed maintenance - control.**

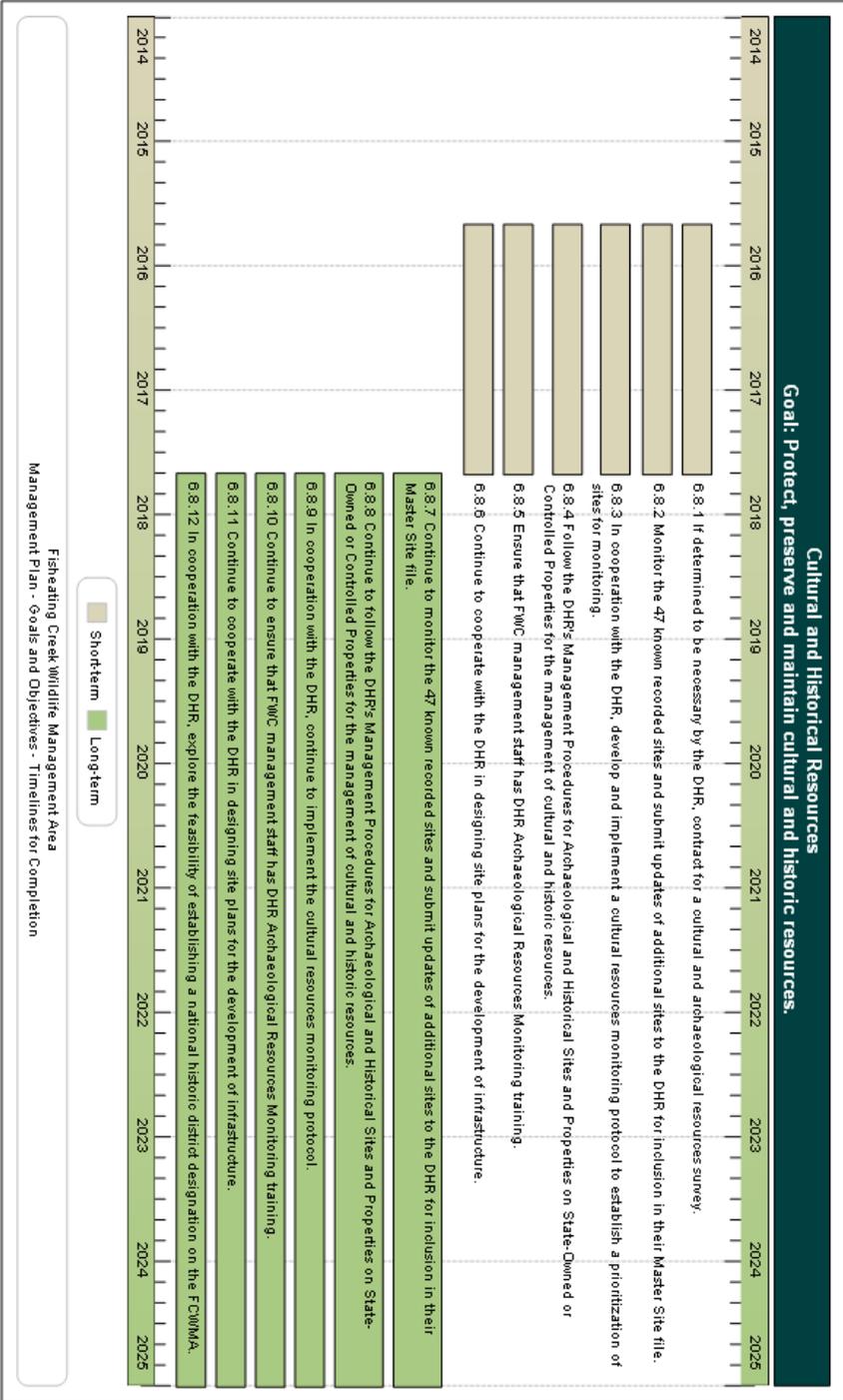
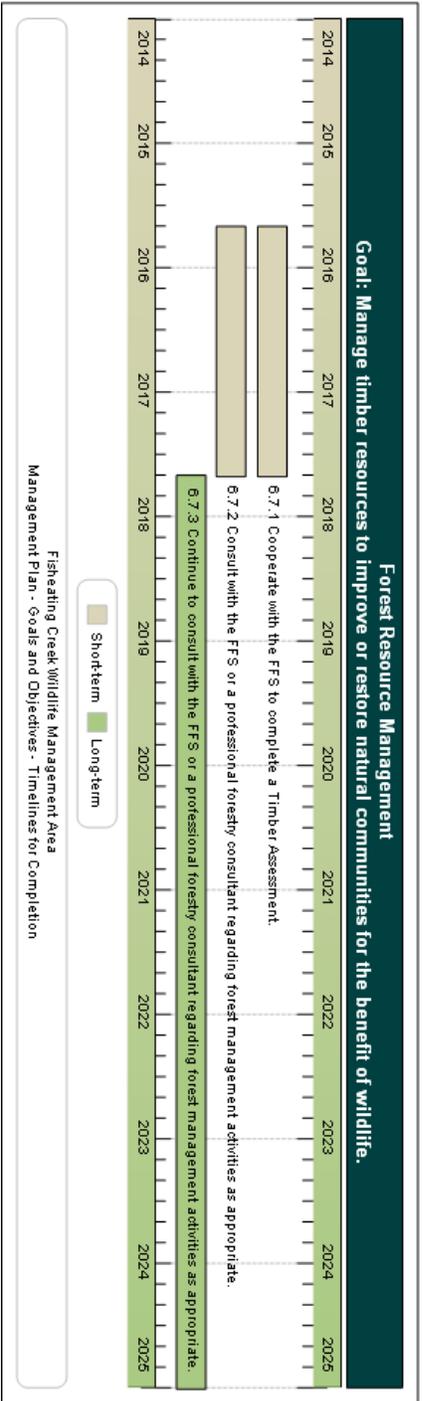


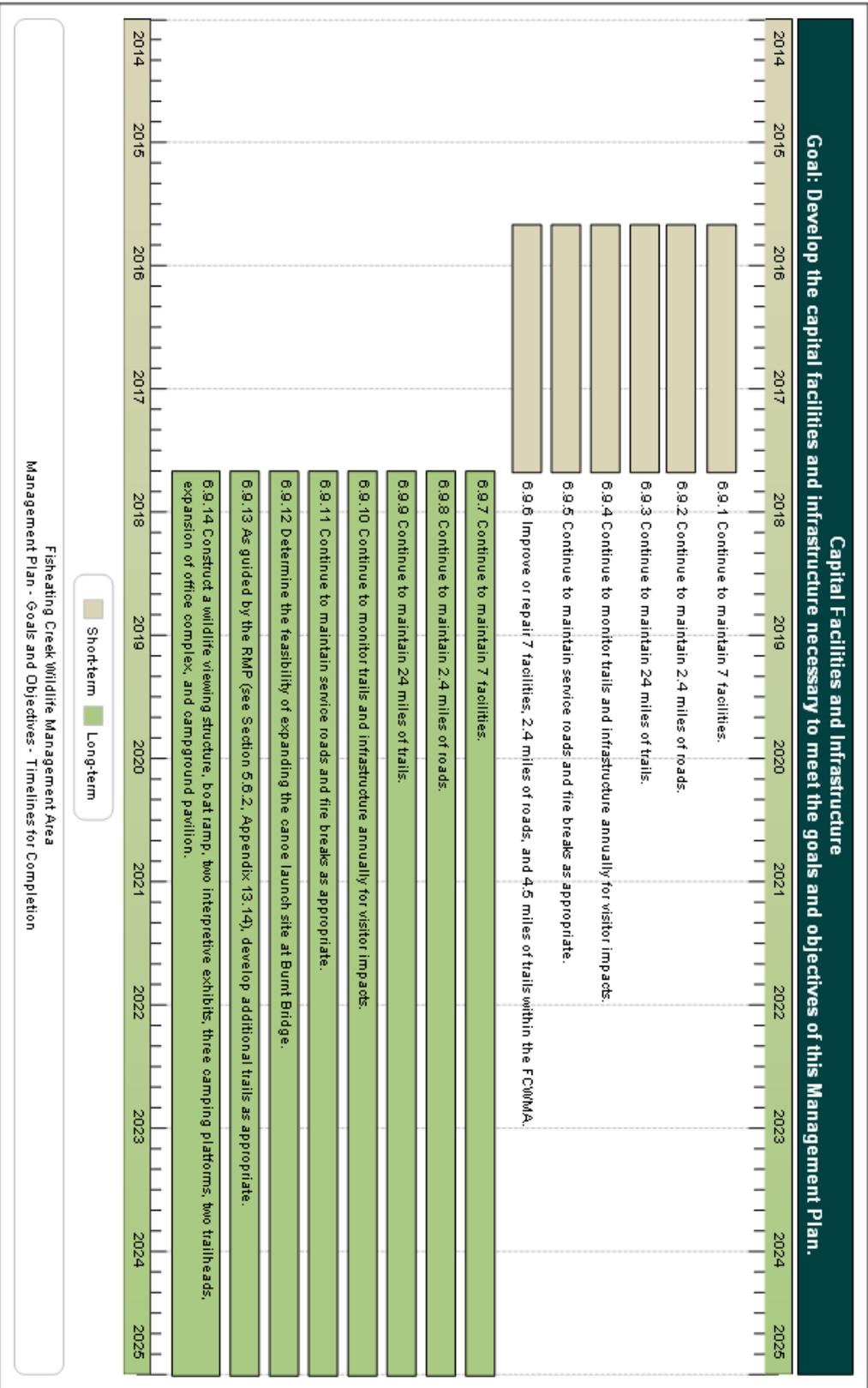
Fisheating Creek Wildlife Management Area  
 Management Plan - Goals and Objectives - Timelines for Completion

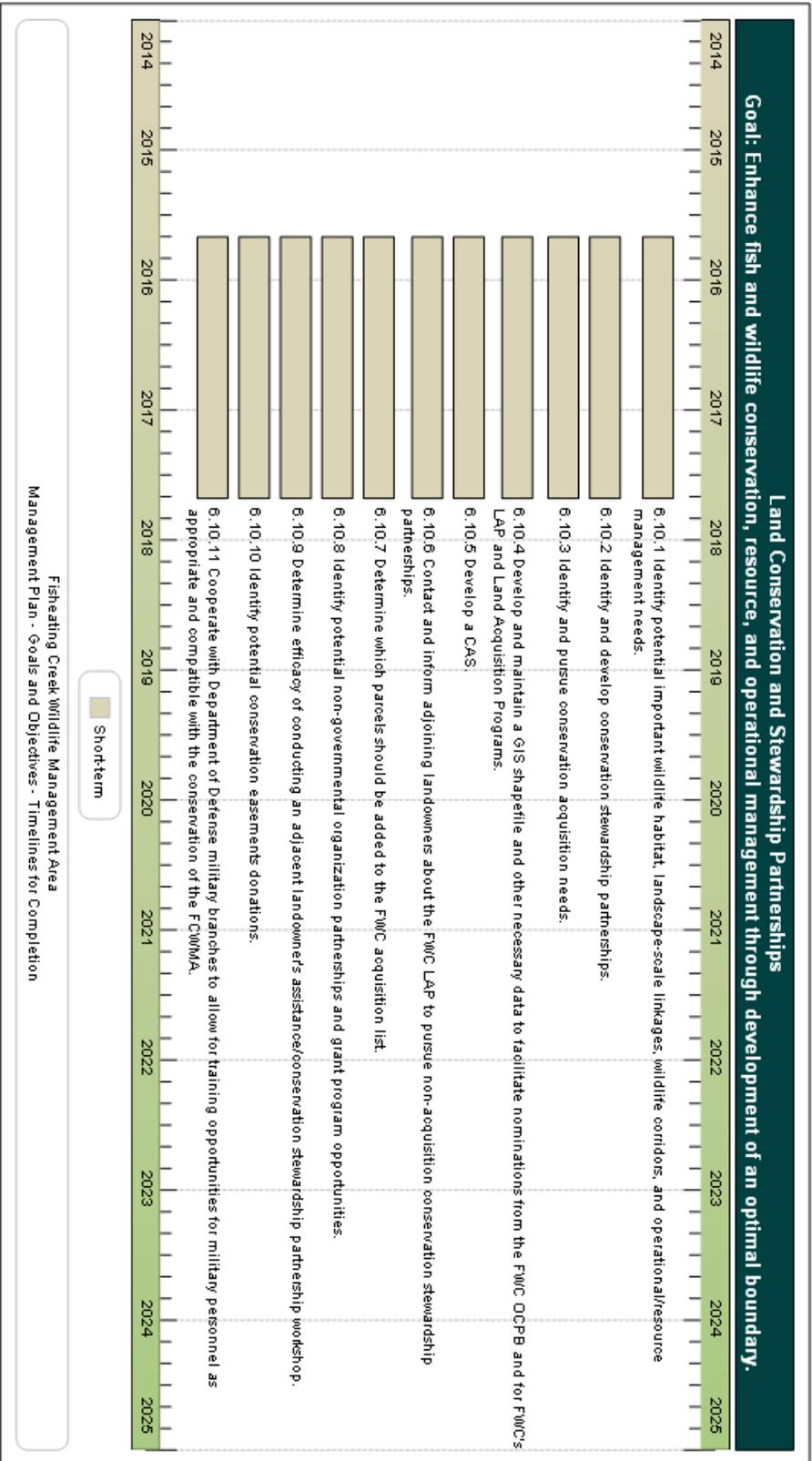


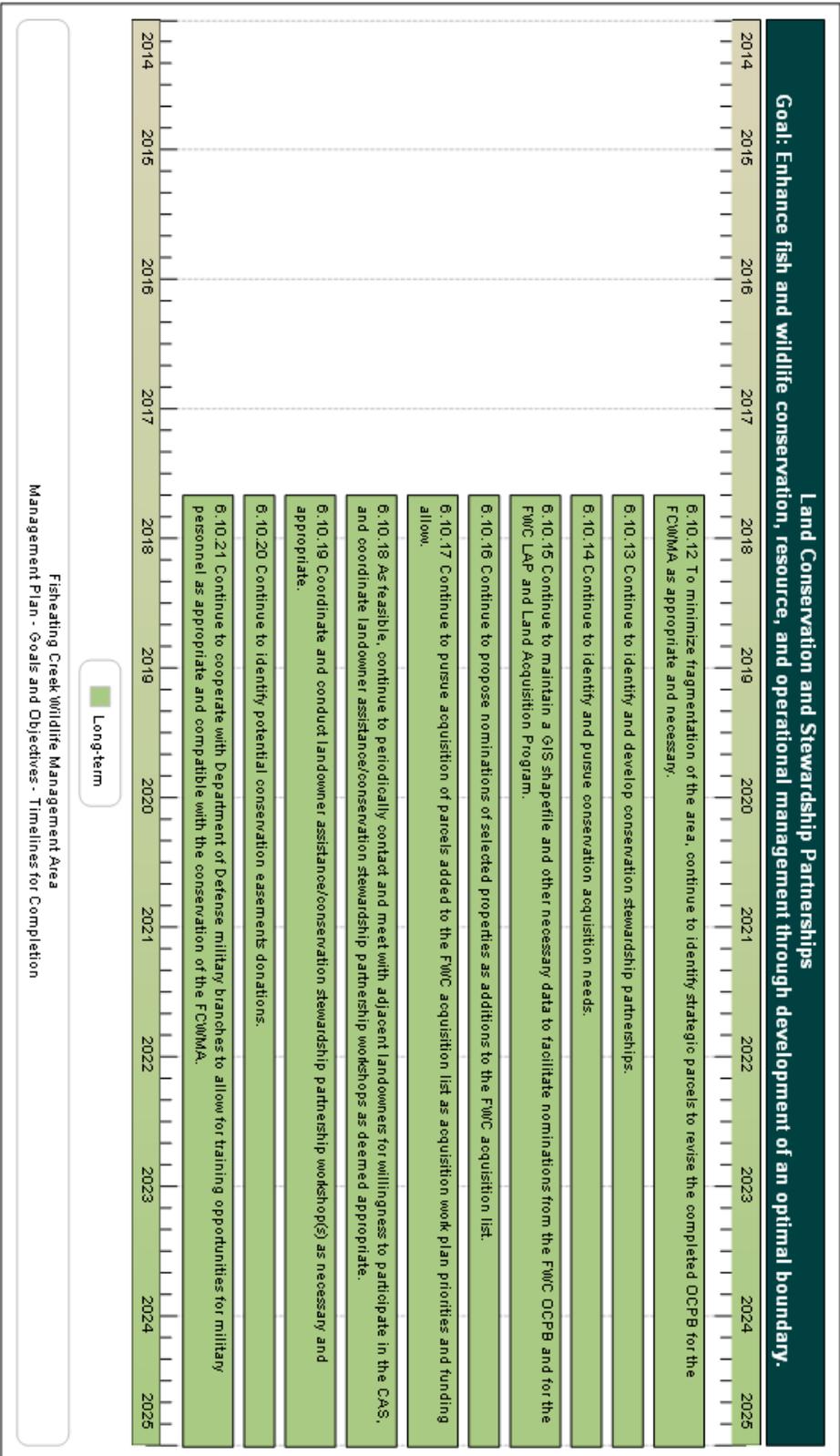


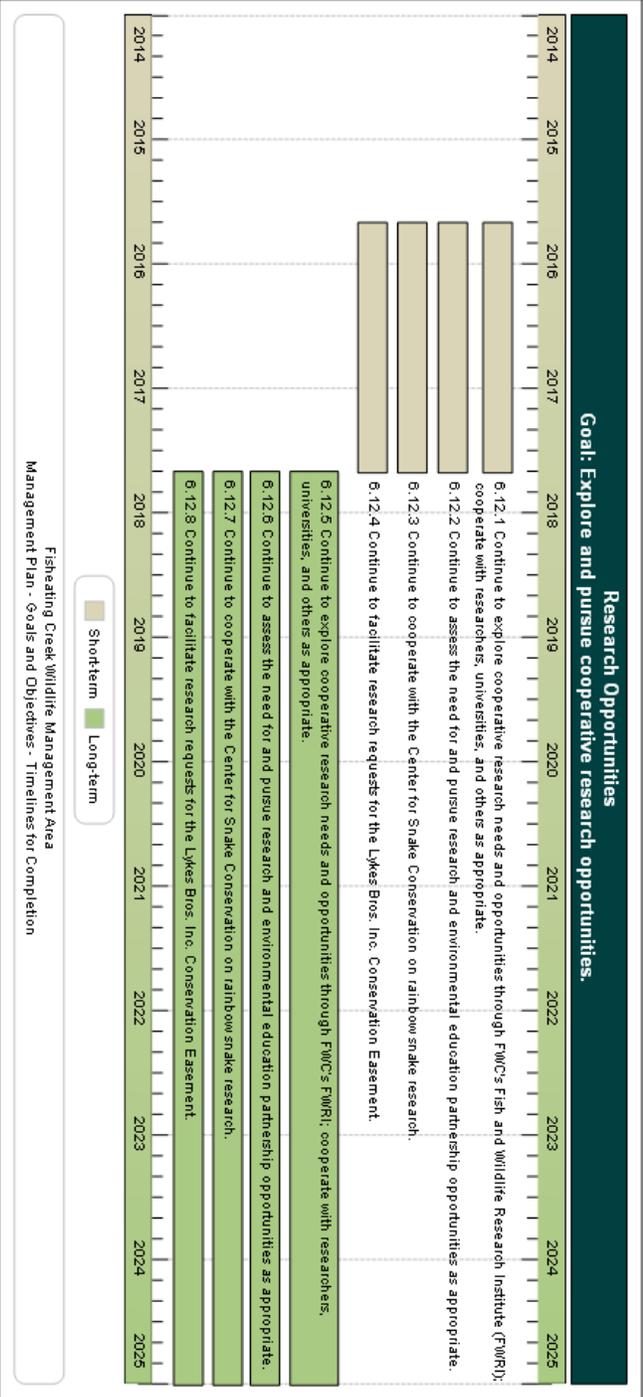
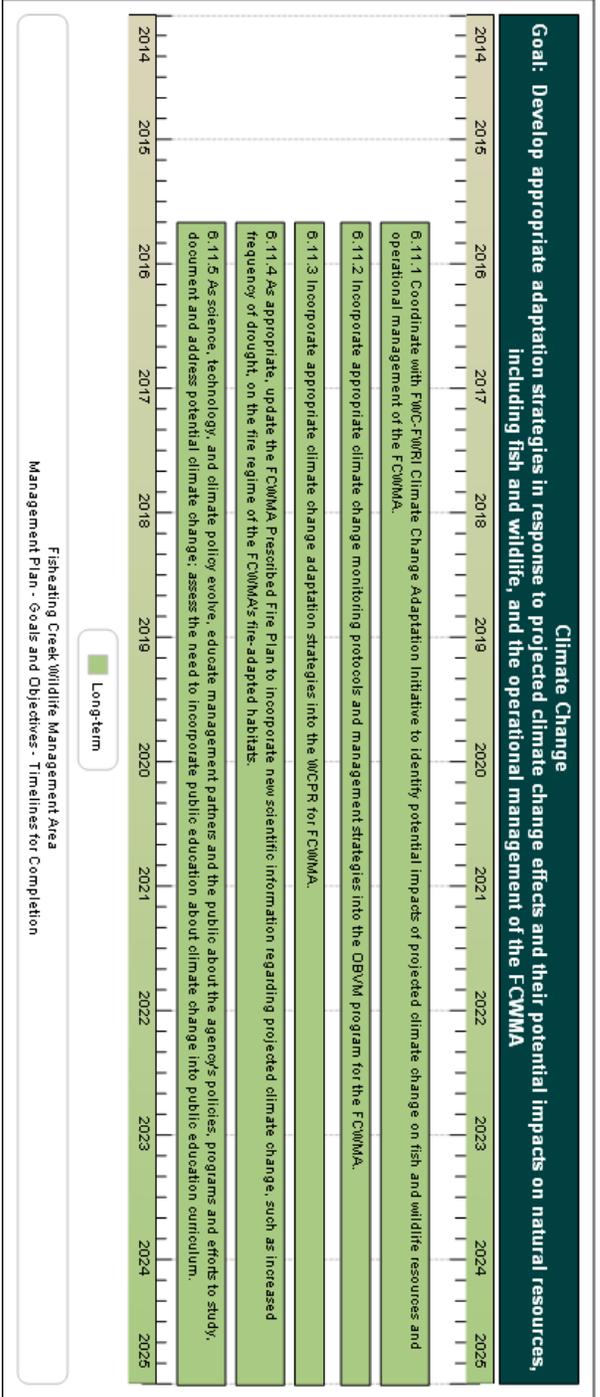












## 8 Resource Management Challenges and Strategies

The following section identifies and describes further management needs and challenges associated with the FCWMA and provides solution strategies that will address these challenges. These specific challenges may not be fully addressed in the broader goals and objectives section above, and are thereby provided here.

### 8.1 Challenge: Currently, the FCWMA has insufficient habitat to sustain certain imperiled species such as the Florida panther, Florida scrub jay, and eastern indigo snake.

8.1.1 Strategy: Pursue conservation efforts, including WCPR, to increase potential viable habitat on surrounding lands for these species.

8.1.2 Strategy: Cooperate and coordinate with surrounding landowners to assist with the resource management activities.

### 8.2 Challenge: Currently, the boundary and interior service/management road system is inadequate to provide access to certain interior portions of the FCWMA for such management purposes as prescribed burning and treatment of invasive exotic plant species.

8.2.1 Strategy: Identify locations where obstructions to access are present. Explore the feasibility of entering into cooperative management with adjacent landowners, or obtaining access easements from adjacent landowners to facilitate management or the potential of developing hard-bottom low water crossings at problem locations along the boundary fence.

### 8.3 Challenge: There are high densities of invasive exotic plant species on adjacent lands, providing an extensive source of seed that disperses onto the FCWMA, including, but not limited to, old world climbing fern, aquatic soda apple, and Brazilian pepper.

8.3.1 Strategy: Coordinate with the local Cooperative Invasive Species Management Area (CISMA), FWC's Uplands Invasive Plant Species Section, and FWC's LAP to work with adjacent landowners to control and manage invasive exotic plants on adjacent properties and the FCWMA.

8.3.2 Strategy: Coordinate with other governmental and private organizations to obtain resources to control and manage invasive exotic species on adjacent properties and the FCWMA.

- 8.4 Challenge: Some inholdings of the FCWMA contribute to land management issues by making it more difficult to conduct resource and operational management activities on the area such as prescribed burning and treatment of invasive exotic plant species.**
- 8.4.1 Strategy: Pursue adding inholdings of willing selling landowners to the FWC Florida Forever Additions and Inholdings Acquisition List for potential acquisition.
- 8.5 Challenge: Numerous historical sites are dispersed throughout the area, presenting FWC management and enforcement personnel with significant challenges with regard to providing protection, management, and interpretation of historical resources on the FCWMA.**
- 8.5.1 Strategy: Continue to work with the DHR to coordinate assistance for the management and protection of the area’s historical resources.
- 8.6 Challenge: A recent 108-acre addition to the FCWMA has resulted in impeded access to the FCWMA for airboats during high water periods.**
- 8.6.1 Strategy: Work with stakeholders, user groups, and other government agencies to design and develop a new boat launch area that is accessible when water levels are high.
- 8.7 Challenge: Currently funding is inadequate to treat all Category I and II invasive exotic plant species, specifically West Indian marsh grass and torpedo grass.**
- 8.7.1 Strategy: Pursue additional funding for ongoing treatment of these species.
- 8.8 Challenge: Currently the zoning of the FCWMA campground does not allow for the construction of cabins.**
- 8.8.1 Strategy: Pursue a zoning change that will allow for the construction of cabins within the current FCWMA campground footprint.
- 8.9 Challenge: The FCWMA is not a widely known recreational destination.**
- 8.9.1 Strategy: Work with the Glades County Tourism Development Council to promote the FCWMA.
- 8.9.2 Strategy: Market and cross-promote the FCWMA with other regional conservation lands.

**8.10 Challenge: Facility vandalism, dumping, and littering on the FCWMA have negative impacts on sensitive plant communities and water quality, degrade aesthetic qualities of the area, inhibit management operations and public use, and damage wildlife species and their habitats.**

8.10.1 Strategy: Coordinate with FWC law enforcement, Glades County, and Glades County Sheriffs' Department to perform directed law enforcement patrols of problem areas to assist with control of litter, dumping, and vandalism on the FCWMA.

8.10.2 Strategy: Through news media outlets, postings at entrance kiosks, and signage, inform the public about these activities and their detrimental effects on the area.

## **9 Cost Estimates and Funding Sources**

Pursuant to the requirements of Chapter 259.037, FS, the following represents the actual and unmet budgetary needs for managing the lands and resources of the FCWMA. This cost estimate was developed using data developed by the FWC and other cooperating entities, and is based on actual costs for land management activities, equipment purchase and maintenance, and for development of fixed capital facilities. Funds needed to protect and manage the property and to fully implement the recommended program are derived primarily from the Land Acquisition Trust Fund and from State Legislative appropriations. However, private conservation organizations may be cooperators with the agency for funding of specific projects. Alternative funding sources, such as monies available through mitigation, may be sought to supplement existing funding.

The cost estimate below, although exceeding what FWC typically receives through the appropriations process, is estimated to be what is necessary for optimal management, and is consistent with the current and planned resource management and operation of the FCWMA. Cost estimate categories are those currently recognized by FWC and the Land Management Uniform Accounting Council. More information on these categories, as well as the Fiscal Year 2014-2015 operational plan showing detailed cost estimates by activity and categories of expenditures, may be found in Appendix 13.16.

## Fisheating Creek WMA Management Plan Cost Estimate

### *Maximum expected one year expenditure*

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	<u>Priority schedule:</u>
<b>Exotic Species Control</b>	\$814,825	(1)	<b>(1) Immediate (annual)</b>
<b>Prescribed Burning</b>	\$34,691	(1)	<b>(2) Intermediate (3-4 years)</b>
<b>Historical Resource Management</b>	\$2,242	(1)	<b>(3) Other (5+ years)</b>
<b>Timber Management</b>	\$0	(1)	
<b>Hydrological Management</b>	\$308,353	(1)	
<b>Other (Restoration, Enhancement, Surveys, Monitoring, etc.)</b>	\$143,134	(1)	
<b>Subtotal</b>	<b>\$1,303,245</b>		
<u>Administration</u>			
<b>General administration</b>	<b>\$37,218</b>	(1)	
<u>Support</u>			
<b>Land Management Planning</b>	\$24,997	(1)	
<i>Land Management Reviews</i>	\$3,673	(3)	
<b>Training/Staff Development</b>	\$8,969	(1)	
<i>Vehicle Purchase</i>	\$190,146	(2)	
<b>Vehicle Operation and Maintenance</b>	\$71,882	(1)	
<b>Other (Technical Reports, Data Management, etc.)</b>	\$4,297	(1)	
<b>Subtotal</b>	<b>\$303,963</b>		
<u>Capital Improvements</u>			
<i>New Facility Construction</i>	\$345,881	(2)	
<b>Facility Maintenance</b>	\$206,534	(1)	
<b>Subtotal</b>	<b>\$552,415</b>		
<u>Visitor Services/Recreation</u>			
<b>Info./Education/Operations</b>	<b>\$44,623</b>	(1)	
<u>Law Enforcement</u>			
<b>Resource protection</b>	<b>\$211,279</b>	(1)	
<b>Total</b>	<b>\$2,452,742</b>	*	

\*Based on the characteristics and requirements of this area, 6 FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.

## Fisheating Creek WMA Management Plan Cost Estimate

### *Ten-year projection*

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	<u>Priority schedule:</u>
Exotic Species Control	\$7,159,138	(1)	(1) Immediate (annual)
Prescribed Burning	\$304,795	(1)	(2) Intermediate (3-4 years)
Historical Resource Management	\$19,700	(1)	(3) Other (5+ years)
Timber Management	\$0	(1)	
Hydrological Management	\$2,709,227	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$1,257,590	(1)	
<b>Subtotal</b>	<b>\$11,450,450</b>		
<u>Administration</u>			
General administration	\$327,000	(1)	
<u>Support</u>			
Land Management Planning	\$219,628	(1)	
Land Management Reviews	\$10,513	(3)	
Training/Staff Development	\$78,800	(1)	
Vehicle Purchase	\$669,132	(2)	
Vehicle Operation and Maintenance	\$631,561	(1)	
Other (Technical Reports, Data Management, etc.)	\$37,753	(1)	
<b>Subtotal</b>	<b>\$1,647,387</b>		
<u>Capital Improvements</u>			
New Facility Construction	\$999,073	(2)	
Facility Maintenance	\$1,814,628	(1)	
<b>Subtotal</b>	<b>\$2,813,700</b>		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$392,060	(1)	
<u>Law Enforcement</u>			
Resource protection	\$1,856,321	(1)	
<b>Total</b>	<b>\$18,486,918</b>	*	

\*Based on the characteristics and requirements of this area, 6 FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.

## 10 Analysis of Potential for Contracting Private Vendors for Restoration and Management Activities

The following management and restoration activities have been considered for outsourcing to private entities. It has been determined that items selected as “approved” below are those that FWC either does not have in-house expertise to accomplish or which can be done at less cost by an outside provider of services. Those items selected as “conditional” items are those that could be done either by an outside provider or by the agency at virtually the same cost or with the same level of competence. Items selected as “rejected” represent those for which FWC has in-house expertise and/or which the agency has found it can accomplish at less expense than through contracting with outside sources:

### Approved Conditional Rejected

- |   |   |   |
|---|---|---|
| • Dike and levee maintenance                            |   | ✓ |
| • Exotic species control                                |   | ✓ |
| • Mechanical vegetation treatment                       |   | ✓ |
| • Public contact and educational facilities development |   | ✓ |
| • Prescribed burning                                    |   | ✓ |
| • Timber harvest activities                             | ✓ |   |
| • Vegetation inventories                                |   | ✓ |

## **11 Compliance with Federal, State, and Local Governmental Requirements**

The operational functions of FWC personnel are governed by the agency's Internal Management Policies and Procedures (IMPP) Manual. The IMPP Manual provides internal guidance regarding many subjects affecting the responsibilities of agency personnel including personnel management, safety issues, uniforms and personal appearance, training, as well as accounting, purchasing, and budgetary procedures.

When public facilities are developed on areas managed by FWC, every effort is made to comply with Public Law 101 - 336, the Americans with Disabilities Act. As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions (e.g., where handicap access is structurally impractical or where providing such access would change the fundamental character of the facility being provided).

Uses planned for the FCWMA are in compliance with the Conceptual State Lands Management Plan and its requirement for "balanced public utilization," and are in compliance with the mission of FWC as described in its Agency Strategic Plan. Such uses also comply with the authorities of the FWC as derived from Article IV, Section 9 of the Florida Constitution as well as the guidance and directives of Chapters 253, 259, 327, 370, 403, 870, 373, 375, 378, 379, 487, and 597, FS.

The FWC is in the process of developing an Arthropod Control Plan for the FCWMA in compliance with Chapter 388.4111, FS. This plan will be developed in cooperation with the local arthropod control agency and will be attached to this Management Plan as Appendix 13.17 when it is completed. This plan is also in conformance with the Local Government Comprehensive Plan as approved and adopted for Glades County, Florida (Appendix 13.18).

## 12 Endnotes

- <sup>1</sup> Aldridge, C. L., M. S. Boyce and R. K. Baydack. 2004. Adaptive management of prairie grouse: how do we get there? *Wildlife Society Bulletin* 32:92-103.
- <sup>2</sup> Wilhere, G. F. 2002. Adaptive management in Habitat Conservation Plans. *Conservation Biology* 16:20-29.
- <sup>3</sup> Walters, C. J. and R. Hilborn. 1978. Ecological optimization and adaptive management. *Annual Review of Ecology and Systematics* 9:157–188.
- <sup>4</sup> Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas, Final Report (1999).
- <sup>5</sup> Karl, T. R., J. M. Melillo, and T. C. Peterson (Eds.). 2009. *Global Climate Change Impacts in the United States*. Cambridge University Press. New York, NY.
- <sup>6</sup> McCarty, J. P. 2001. Ecological consequences of recent climate change. *Conservation Biology* 15:320-331.
- <sup>7</sup> Walther, G. R., E. Post, P. Convey, A. Menzel, C. Parmesan, T. J. . Beebee, J. M. Fromentin, O. Hoegh-Guldberg, and F. Bairlein. 2002. Ecological responses to recent climate change. *Nature* 416:389–395.
- <sup>8</sup> Parmesan, C. 2006. Ecological and evolutionary responses to recent climate change. *Annual Review of Ecology, Evolution, and Systematics* 37:637-669.
- <sup>9</sup> Logan, J. A., and J. A. Powell. 2009. Ecological consequences of climate change altered forest insect disturbance regimes. In *Climate Warming in Western North America: Evidence and Environmental Effects* (F. H. Wagner, Ed.). University of Utah Press, Salt Lake City, UT.
- <sup>10</sup> Stevenson, J. C., M. S. Kearney, and E. W. Koch. 2002. Impacts of sea level rise on tidal wetlands and shallow water habitats: A case study from Chesapeake Bay. *American Fisheries Society Symposium* 32:23-36.
- <sup>11</sup> IPCC. 2007b. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, UK.
- <sup>12</sup> Emanuel, K.A. 1987. The Dependence of Hurricane Intensity on Climate. *Nature* 326: 483-485.

- <sup>13</sup> Emanuel, K.A. 2005. Increasing Destructiveness of Tropical Cyclones Over the Past 30 Years.
- <sup>14</sup> Webster et al. 2005; Webster, P. J., et al. 2005. Changes in Tropical Cyclone Number, Duration, and Intensity, in a Warming Environment. *Science* 309: 1844–1846.
- <sup>15</sup> Mann, M.E. and K.A. Emanuel. 2006. Atlantic Hurricane Trends Linked to Climate Change. *Eos Trans. AGU* 87: 233-244.
- <sup>16</sup> Stanton, E.A. and F. Ackerman. 2007. Florida and Climate Change: The Costs of Inaction. Tufts University Global Development and Environment Institute and Stockholm Environment Institute–US Center, Tufts University, Medford, MA.
- <sup>17</sup> Clough, J.S. 2008. Application of the Sea-Level Affecting Marshes Model (SLAMM 5.0) to Crystal River NWR. Warren Pinnacle Consulting, Inc. for U.S. Fish and Wildlife Service. 46 pp.

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## **13 Appendices**

### **13.1 Lease 4257**

SAL1

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE OF FLORIDA

LEASE AGREEMENT

Lease Number 4257

This lease is made and entered into this 24<sup>th</sup> day of  
March, 2003, between the BOARD OF TRUSTEES OF THE  
INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA,  
hereinafter referred to as "LESSOR", and the FLORIDA FISH AND  
WILDLIFE CONSERVATION COMMISSION, hereinafter referred to as  
"LESSEE" or "Commission" or "Managing Agency."

WITNESSETH:

WHEREAS, the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE OF FLORIDA holds title to certain lands  
and property being utilized by the State of Florida for public  
purposes; and

WHEREAS, the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE OF FLORIDA is authorized in Section  
253.03, Florida Statutes, to enter into leases for the use,  
benefit and possession of public lands by State agencies which  
may properly use and possess them for the benefit of the people  
of the State of Florida.

NOW, THEREFORE, for and in consideration of the mutual  
covenants and agreements hereinafter contained, LESSOR leases

the below described premises to LESSEE subject to the following terms and conditions:

1. DELEGATIONS OF AUTHORITY: LESSOR'S responsibilities and obligations herein shall be exercised by the Division of State Lands, Department of Environmental Protection.

2. DESCRIPTION OF PREMISES: The property subject to this lease, is situated in the County of Glades, State of Florida and is more particularly depicted in Exhibit "A" attached hereto and hereinafter referred to as the "leased premises."

3. TERM: The term of this lease shall be for a period of fifty years, commencing on MARCH 24, 2003, and ending on MARCH 23, 2053, unless sooner terminated pursuant to the provisions of this lease.

4. PURPOSE: LESSEE shall manage the leased premises only for the establishment and operation of the Fisheating Creek Wildlife Management Area, along with other related uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 7 of this lease. Provided, however, that all management activities shall be in strict compliance with the terms and conditions of the Settlement Agreement in Board of Trustees of the Internal Improvement Trust Fund of the State of Florida et al. v Lykes Bros., Inc., No. CA 93-136 (Fla. 20<sup>th</sup> Cir. Ct.), ("Settlement Agreement") attached hereto as Exhibit "B".

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Lease No. 4257

5. QUIET ENJOYMENT AND RIGHT OF USE: LESSEE shall have the right of ingress and egress to, from, and upon the leased premises for all purposes necessary to the full quiet enjoyment by said LESSEE of the rights conveyed herein.

6. UNAUTHORIZED USE: LESSEE shall, through its agents and employees, prevent the unauthorized use of the leased premises or any use thereof not in conformance with this lease.

7. MANAGEMENT PLAN: LESSEE shall prepare and submit a Management Plan for the leased premises, in accordance with the Settlement Agreement, Section 253.034, Florida Statutes, and subsection 18-2.021(4), Florida Administrative Code, within twelve months of the effective date of this lease. The Management Plan shall be in strict compliance with the Settlement Agreement. The Management Plan shall be submitted to LESSOR for approval through the Division of State Lands. The leased premises shall not be developed or physically altered in any way other than what is necessary for security and maintenance of the leased premises without the prior written approval of LESSOR until the Management Plan is approved. The Management Plan shall implement the management concept as approved by LESSOR at the Board of Trustees of the Internal Improvement Trust Fund meeting held on October 12, 1999, which established the primary public purpose for which the leased

premises are to be managed. The management concept provides as follows:

"The primary objectives of the acquisition of the Fisheating Creek CARL project are:

- a. to conserve and protect natural communities along the shores of the Fisheating Creek, and thereby assist in maintaining and possibly improving the status of several rare plant and animal communities. Achieving this objective will help to secure the survival of the Florida panther in this state, as well as protect many other rare and endangered animals and a number of migratory birds. It is recognized that the landowner's management activities have benefited many of the natural communities in this system; and
- b. provide for traditional public uses and recreational activities within the fee lands as specified in the Settlement Agreement.

The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by LESSEE and LESSOR at least every five years. LESSEE shall not use or alter the leased premises except as provided for in the approved Management Plan without the prior written approval of LESSOR. The Management Plan prepared under this lease shall identify management strategies for exotic species, if present. The introduction of exotic species is prohibited, except when specifically authorized by the approved Management Plan. The Management Plan shall specifically provide for a continuing navigation maintenance program for Fisheating Creek from the Glades/Highlands County line down to Lake Okeechobee including Cowbone Marsh as well as the North and South Channels of

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Fisheating Creek which flow through the Head-of-the-Bushes as depicted in Exhibit "C", insofar as Fisheating Creek shall be cleared of aquatic weeds, fallen trees, and overhanging tree limbs so as to allow passage for canoes and motorized vessels, as permissible by natural water level. LESSEE shall impose no restriction on the size of motors allowed on boats using Fisheating Creek. In accordance with the Settlement Agreement, the Management Plan shall provide public access to Fisheating Creek and the Expanded Corridor through the Palmdale Main Street right-of-way. LESSEE shall also provide campsites in the Expanded Corridor for use by the public, in accordance with Rule 68A-15.064(8), F.A.C.

The LESSEE shall abide by the provisions of the Settlement Agreement dated May 25, 1999 and shall manage the leased premises in accordance therewith. The Settlement Agreement, including but not limited to paragraphs 23 and 24, is incorporated herein by reference and is attached hereto.

8. RIGHT OF INSPECTION: LESSOR or its duly authorized agents shall have the right at any and all times to inspect the leased premises and the works and operations thereon of LESSEE, in any matter pertaining to this lease.

9. INSURANCE REQUIREMENTS: LESSEE shall procure and maintain fire and extended risk insurance coverage in accordance with Chapter 284, F.S., for any buildings and improvements located on

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the leased premises by preparing and delivering to the Division of Risk Management, Department of Insurance, a completed Florida Fire Insurance Trust Fund Coverage Request Form and a copy of this lease immediately upon erection of any structures as allowed by paragraph 4 of this lease. A copy of said form and immediate notification in writing of any erection or removal of structures or other improvements on the leased premises and any changes affecting the value of the improvements shall be submitted to the following: Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000.

10. LIABILITY: LESSEE shall assist in the investigation of injury or damage claims either for or against LESSOR or the State of Florida pertaining to LESSEE'S respective areas of responsibility under this lease or arising out of LESSEE'S respective management programs or activities and shall contact LESSOR regarding the legal action deemed appropriate to remedy such damage or claims. LESSEE is responsible for all personal injury and property damage attributable to the negligent acts or omissions of LESSEE per section 768.28, Florida Statutes.

11. ARCHAEOLOGICAL AND HISTORIC SITES: Execution of this lease in no way affects any of the parties' obligations pursuant to Chapter 267, Florida Statutes. The collection of artifacts or

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the disturbance of archaeological and historic sites on state-owned lands is prohibited unless prior authorization has been obtained from the Division of Historical Resources of the Department of State. The Management Plan prepared pursuant to Section 253.034, Florida Statutes, shall be reviewed by the Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archaeological and historic sites and properties on the leased premises.

12. EASEMENTS: All easements including, but not limited to, utility easements are expressly prohibited without the prior written approval of LESSOR. Any easements not approved in writing by LESSOR shall be void and without legal effect.

13. SUBLEASES: This lease is for the purposes specified herein and subleases of any nature are prohibited, without the prior written approval of LESSOR. Any sublease not approved in writing by LESSOR shall be void and without legal effect.

14. ENVIRONMENTAL AUDIT: At LESSOR'S discretion, LESSEE shall provide LESSOR with a current Phase I environmental site assessment conducted in accordance with the Department of Environmental Protection, Division of State Lands' standards prior to termination of this lease, and if necessary a Phase II environmental site assessment.

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Lease No. 4257

15. SURRENDER OF PREMISES: Upon expiration or termination of this lease, LESSEE shall surrender the leased premises, to LESSOR. In the event no further use of the leased premises or any part thereof is needed, LESSEE shall give written notification to the Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, at least six months prior to the release of any or all of the leased premises. Notification shall include a legal description, this lease number and an explanation of the release. The release shall only be valid if approved by LESSOR through execution of a release of lease instrument with the same formality as this lease. Upon release of all or any part of the leased premises or upon expiration or termination of this lease, all improvements, including both physical structures and modifications to the leased premises, shall become the property of LESSOR, unless LESSOR gives written notice to LESSEE to remove any or all such improvements at the expense of LESSEE. The decision to retain any improvements upon termination of this lease shall be at LESSOR'S sole discretion. Prior to surrender of all or any part of the leased premises, a representative of the Division of State Lands shall perform an on-site inspection and the keys to any buildings on the leased premises shall be turned over to the Division. If the leased premises do not meet

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all conditions as set forth in paragraphs 19 and 22 herein, LESSEE shall, at its expense, pay all cost necessary to meet the prescribed conditions.

16. BEST MANAGEMENT PRACTICES: LESSEE shall implement applicable Best Management Practices for all activities conducted under this lease in compliance with paragraph 18-2.018(2)(h), Florida Administrative Code, which have been selected, developed, or approved by LESSOR or other land managing agencies for the protection and enhancement of the leased premises.

17. PUBLIC LANDS ARTHROPOD CONTROL PLAN: LESSEE shall identify and subsequently designate to the respective arthropod control district or districts within one year of the effective date of this lease all of the environmentally sensitive and biologically highly productive lands contained within the leased premises, in accordance with Section 388.4111, Florida Statutes and Chapter 5E-13, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

18. MINERAL RIGHTS: This lease does not cover petroleum or petroleum products or minerals and does not give the right to LESSEE to drill for or develop the same.

19. UTILITY FEES: LESSEE shall be responsible for the payment of all charges for the furnishing of gas, electricity, water and

other public utilities to the leased premises and for having all utilities turned off when the leased premises are surrendered.

20. ASSIGNMENT: This lease shall not be assigned in whole or in part without the prior written consent of LESSOR. Any assignment made either in whole or in part without the prior written consent of LESSOR shall be void and without legal effect.

21. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures, improvements, and signs shall be constructed at the expense of LESSEE in accordance with plans prepared by professional designers and shall require the prior written approval of LESSOR as to purpose location, and design. Removable equipment and removable improvements placed on the leased premises by LESSEE and which do not become a permanent part of the leased premises will remain the property of LESSEE and may be removed by LESSEE upon termination of this lease.

22. MAINTENANCE OF IMPROVEMENTS: LESSEE shall maintain the real property contained within the leased premises and any improvements located thereon, in a state of good condition working order and repair including, but not limited to, maintaining the planned improvements as set forth in the approved Management Plan, meeting all building and safety codes in the location situated, keeping the leased premises free of trash or litter and maintaining any and all existing roads,

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canals, ditches, culverts, risers and the like in as good condition as the same may be on the effective date of this lease.

23. ENTIRE UNDERSTANDING: This lease sets forth the entire understanding between the parties and shall only be amended with the prior written approval of LESSOR.

24. BREACH OF COVENANTS, TERMS, OR CONDITIONS: Should LESSEE breach any of the covenants, terms, or conditions of this lease, LESSOR shall give written notice to LESSEE to remedy such breach within sixty days of such notice. In the event LESSEE fails to remedy the breach to the satisfaction of LESSOR within sixty days of receipt of written notice, LESSOR may either terminate and recover from LESSEE all damages LESSOR may incur by reason of the breach including, but not limited to, the cost of recovering the leased premises or maintain this lease in full force and effect and exercise all rights and remedies herein conferred upon LESSOR.

25. NO WAIVER OF BREACH: The failure of LESSOR to insist in any one or more instances upon strict performance of any one or more of the covenants, terms and conditions of this lease shall not be construed as a waiver of such covenants, terms and conditions, but the same shall continue in full force and effect, and no waiver of LESSOR of any one of the provisions

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hereof shall in any event be deemed to have been made unless the waiver is set forth in writing, signed by LESSOR.

26. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the leased premises is held by LESSOR. LESSEE shall not do or permit anything to be done which purports to create a lien or encumbrance of any nature against the real property contained in the leased premises including, but not limited to, mortgages or construction liens against the leased premises or against any interest of LESSOR therein.

27. CONDITIONS AND COVENANTS: All of the provisions of this lease shall be deemed covenants running with the land included in the leased premises, and construed to be "conditions" as well as "covenants" as though the words specifically expressing or imparting covenants and conditions were used in each separate provision.

28. DAMAGE TO THE PREMISES: (a) LESSEE shall not do, or suffer to be done, in, on or upon the leased premises or as affecting said leased premises or adjacent properties, any act which may result in damage or depreciation of value to the leased premises or adjacent properties, or any part thereof. (b) LESSEE shall not generate, store, produce, place, treat, release or discharge any contaminants, pollutants or pollution, including, but not limited to, hazardous or toxic substances, chemicals or other agents on, into, or from the leased premises or any adjacent

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lands or waters in any manner not permitted by law. For the purposes of this lease, "hazardous substances" shall mean and include those elements or compounds defined in 42 USC Section 9601 or which are contained in the list of hazardous substances adopted by the United States Environmental Protection Agency (EPA) and the list of toxic pollutants designated by the United States Congress or the EPA or defined by any other federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning any hazardous, toxic or dangerous waste, substance, material, pollutant or contaminant. "Pollutants" and "pollution" shall mean those products or substances defined in, Chapters 376 and 403, Florida Statutes, and the rules promulgated thereunder, all as amended or updated from time to time. In the event of LESSEE'S failure to comply with this paragraph, LESSEE shall, at its sole cost and expense, promptly commence and diligently pursue any legally required closure, investigation, assessment, cleanup, decontamination, remediation, restoration and monitoring of (1) the leased premises, and (2) all off-site ground and surface waters and lands affected by LESSEE'S such failure to comply, as may be necessary to bring the leased premises and affected off-site waters and lands into full compliance with all applicable federal, state or local statutes, laws, ordinances, codes,

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rules, regulations, orders and decrees, and to restore the damaged property to the condition existing immediately prior to the occurrence which caused the damage. LESSEE'S obligations set forth in this paragraph shall survive the termination or expiration of this lease. Nothing herein shall relieve LESSEE of any responsibility or liability prescribed by law for fines, penalties and damages levied by governmental agencies, and the cost of cleaning up any contamination caused directly or indirectly by LESSEE'S activities or facilities. Upon discovery of a release of a hazardous substance or pollutant, or any other violation of local, state or federal law, ordinance, code, rule, regulation, order or decree relating to the generation, storage, production, placement, treatment, release or discharge of any contaminant, LESSEE shall report such violation to all applicable governmental agencies having jurisdiction, and to LESSOR, all within the reporting periods of the applicable governmental agencies. The use of the leased premises as a wildlife management area and legal hunting thereon shall not be considered a breach of this paragraph.

29. PAYMENT OF TAXES AND ASSESSMENTS: LESSEE shall assume full responsibility for and shall pay all liabilities that accrue to the leased premises or to the improvements thereon, including any and all drainage and special assessments or taxes of every kind and all mechanic's or materialman's liens which may be

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Lease No. 4257

hereafter lawfully assessed and levied against the leased premises.

30. RIGHT OF AUDIT: LESSEE shall make available to LESSOR all financial and other records relating to this lease and LESSOR shall have the right to audit such records at any reasonable time. This right shall be continuous until this lease expires or is terminated. This lease may be terminated by LESSOR should LESSEE fail to allow public access to all documents, papers, letters or other materials made or received in conjunction with this lease, pursuant to Chapter 119, Florida Statutes.

31. NON-DISCRIMINATION: LESSEE shall not discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, handicaps, or marital status with respect to any activity occurring within the leased premises or upon lands adjacent to and used as an adjunct of the leased premises.

32. COMPLIANCE WITH LAWS: LESSEE agrees that this lease is contingent upon and subject to LESSEE obtaining all applicable permits and complying with all applicable permits, regulations, ordinances, rules, and laws of the State of Florida or the United States or of any political subdivision or agency of either.

33. TIME: Time is expressly declared to be of the essence of this lease.

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Lease No. 4257

34. GOVERNING LAW: This lease shall be governed by and interpreted according to the laws of the State of Florida.

35. SECTION CAPTIONS: Articles, subsections and other captions contained in this lease are for reference purposes only and are in no way intended to describe, interpret, define or limit the scope, extent or intent of this lease or any provisions thereof.

36. ADMINISTRATIVE FEE: LESSEE shall pay LESSOR an annual administrative fee of \$300. The initial annual administrative fee shall be payable within thirty days from the date of execution of this lease agreement and shall be prorated based on the number of months or fraction thereof remaining in the fiscal year of execution. For purposes of this lease agreement, the fiscal year shall be the period extending from July 1 to June 30. Each annual payment thereafter shall be due and payable on July 1 of each subsequent year.

37. LEASE MODIFICATIONS: Modifications of this lease require written notice to the parties to the Settlement Agreement, written agreement by the parties to the Settlement Agreement to the proposed modification, and action by the LESSOR. Authorization to modify the lease shall not be delegated to staff of the Florida Department of Environmental Protection.

38. POST CLOSING RESPONSIBILITIES: In an effort to define responsibilities of the LESSOR and LESSEE with regard to

resolving post closing management issues, the parties agree to the following:

- a. After consultation with the LESSEE, LESSOR agrees to provide the LESSEE with the title, survey and environmental products procured by the LESSOR, prior to closing.
- b. LESSOR shall initiate surveying services to locate and mark boundary lines of specific parcels when necessary for immediate agency management and shall provide a boundary survey of the entire acquisition project at the conclusion of all acquisition within the project boundary. Provided, however, the LESSEE may request individual parcel boundary surveys, if necessary, prior to the conclusion of acquisition activities within the project boundaries.
- c. Unless otherwise agreed to by LESSEE, LESSOR shall, at its sole cost and expense, make a diligent effort to resolve all issues pertaining to all title defects, survey matters or environmental contamination associated with the leased premises, including but not limited to trash and debris, which were either known or should have been reasonably known by LESSOR at the time LESSOR acquired the leased premises. Notwithstanding the foregoing, LESSOR shall not be responsible for any of LESSEE'S attorney's fees, costs, or liability or damages incurred by the LESSEE in resolving any issue in which the LESSEE is named as a party in any litigation or other legal or administrative proceeding.
- d. With regard to all title defects, survey matters, or environmental contamination associated with the leased premises which were not known or could not have been reasonably known by LESSOR at the time LESSOR acquired the leased premises, LESSOR and LESSEE agree to cooperate in developing an appropriate strategy for jointly resolving these matters. LESSOR acknowledges and understands that LESSEE is unable to commit any substantial amount of its routine operating funds for the resolution of any title defect, survey matter, or environmental contamination associated with the leased premises. Notwithstanding the foregoing, LESSOR will not be responsible for any of LESSEE'S attorney's fees, costs, or liability or damages incurred by the LESSEE in resolving any issue in which the LESSEE is named as

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Lease No. 4257

a party in any litigation or other legal or administrative proceeding.

IN WITNESS WHEREOF, the parties have caused this lease to be executed on the day and year first above written.

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

Tracy Peters  
Witness  
Tracy Peters  
Print/Type Witness Name

Judy Woodard  
Witness  
Judy Woodard  
Print/Type Witness Name

By: Gloria C. Nelson (SEAL)  
GLORIA C. NELSON, OPERATIONS AND MANAGEMENT CONSULTANT MANAGER, BUREAU OF PUBLIC LAND ADMINISTRATION, DIVISION OF STATE LANDS, DEPARTMENT OF ENVIRONMENTAL PROTECTION

"LESSOR"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 24th day of March, 2005, by Gloria C. Nelson, as Operations and Management Consultant Manager, Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida.

Florence L. Davis  
Notary Public, State of Florida

Approved as to Form and Legality

By: Sup. Dein  
DEP Attorney

Print/Type Notary Name

Commission Number:

Commission Expires:



Florence L. Davis  
MY COMMISSION # CC94568 EXPIRES  
October 11, 2004  
BONDED THROUGH FAIR INSURANCE, INC.

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FLORIDA FISH AND WILDLIFE  
CONSERVATION COMMISSION

Brenda Collins  
Witness  
BRENDA COLLINS  
Print/Type Witness Name

BY: Victor J. Heller (SEAL)

Victor J. Heller  
Print/Type Name Assistant Executive Director

Rosemary Mara  
Witness  
Rosemary Mara  
Print/Type Witness Name

Title: \_\_\_\_\_

"LESSEE"

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY  
[Signature]  
Commission Attorney

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this  
18<sup>th</sup> day of March, 2005 by Victor J. Heller,  
as Assistant Executive Director, of the Florida Fish and  
Wildlife Conservation Commission. She/he is personally known to  
me or produced \_\_\_\_\_ as identification.

(SEAL)

Jimmie C. Bevis  
Notary Public, State of Florida

JIMMIE C. BEVIS

Print/Type Notary Name

 Jimmie C. Bevis  
MY COMMISSION # DD077239 EXPIRES  
December 28, 2005  
BONDED THRU TROY FAIR INSURANCE, INC.

Commission Number: \_\_\_\_\_  
Commission Expires: \_\_\_\_\_  
Jimmie C. Bevis  
MY COMMISSION # DD077239 EXPIRES  
December 28, 2005  
BONDED THRU TROY FAIR INSURANCE, INC.

### **13.1.1 Amendment 1 to the Lease 4257, 108.8 Acre Addition**

ATL1

108.80 Acres

BOARD OF TRUSTERS OF THE INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE OF FLORIDA

AMENDMENT NUMBER ONE TO LEASE NUMBER 4257  
FISHEATING CREEK WILDLIFE MANAGEMENT AREA

THIS LEASE AMENDMENT is entered into this 4<sup>th</sup> day of JUNE  
2012, by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE OF FLORIDA, hereinafter referred to as "LESSOR" and  
the FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, successor in  
interest to the FLORIDA GAME AND FRESH WATER FISH COMMISSION, referred to  
as "LESSEE";

W I T N E S S E T H

WHEREAS, LESSOR, by virtue of Section 253.03, Florida Statutes, holds  
title to certain lands and property for the use and benefit of the State of  
Florida; and

WHEREAS, on March 24, 2003, LESSOR and LESSEE entered into Lease  
Number 4257; and

WHEREAS, LESSOR and LESSEE desire to amend the lease to add land to  
the leased premises.

NOW THEREFORE, in consideration of the mutual covenants and  
agreements contained herein, the parties hereto agree as follows:

1. The legal description of the leased premises set forth in Exhibit "A"  
of Lease Number 4257 is hereby amended to include the real property  
described in Exhibit "A," attached hereto, and by reference made a part  
hereof.
2. It is understood and agreed by LESSOR and LESSEE that in each and  
every respect the terms of the Lease Number 4257, except as amended, shall  
remain unchanged and in full force and effect and the same are hereby  
ratified, approved and confirmed by LESSOR and LESSEE as of the date of  
this amendment.
3. It is understood and agreed by LESSOR and LESSEE that this Amendment  
Number ONE to Lease Number 4257 is hereby binding upon the parties hereto  
and their successors and assigns.

Rev.3/07

ement Plan

IN WITNESS WHEREOF, the parties have caused this Lease Amendment to be executed on the day and year first above written.

BOARD OF TRUSTEES OF THE INTERNAL  
IMPROVEMENT TRUST FUND OF THE  
STATE OF FLORIDA

By: [Signature] (SEAL)

SCOTT E. WOOLAM, CHIEF  
BUREAU OF PUBLIC LAND  
ADMINISTRATION, DIVISION OF  
STATE LANDS, STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

[Signature]  
Witness

DAVE FEWELL  
Print/Type Witness Name

[Signature]  
Witness

VICTORIA F. THOMPSON  
Print/Type Witness Name

\*LESSOR\*

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 4<sup>th</sup> day of JUNE, 2012, by Scott E. Woolam, Chief, Bureau of Public Land Administration, Division of State Lands, State of Florida Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. She is personally known to me.

[Signature]  
Notary Public, State of Florida

Print/Type Notary Name

Commission Number:

Commission Expires:



Approved as to Form and Legality

By: [Signature]  
DEP Attorney

FLORIDA FISH AND WILDLIFE  
CONSERVATION COMMISSION

Robin P. Stettler  
Witness

Robin P. Stettler  
Print/Type Witness Name

K. Amoah  
Witness

K. Amoah  
Print/Type Witness Name

By: Gregory L. Holder (SEAL)

Gregory L. Holder  
Print/Type Name

Title: Asst. Exec. Dir.

"LESSEE"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 1<sup>st</sup> day of June, 2012, by Gregory L. Holder as Assistant Executive Director on behalf of the FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION. He/she is personally known to me.

Jo Ann M. Fain  
Notary Public, State of Florida

Jo Ann M. Fain  
Print/Type Notary Name

Commission Number:

Commission Expires:



APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY  
[Signature]  
Commission Attorney

**FISHEATING CREEK - LEASE TO FWC  
SECTION 28, TOWNSHIP 40 SOUTH, RANGE 32 EAST  
GLADES COUNTY, FLORIDA**

**NOT A SURVEY**

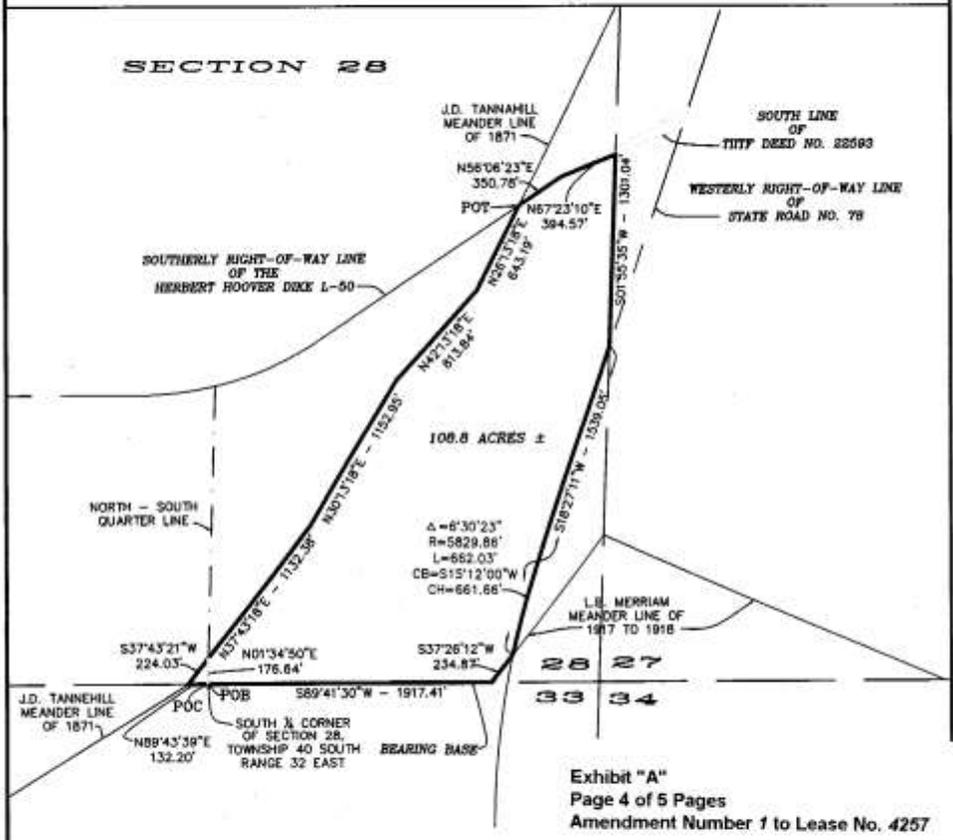
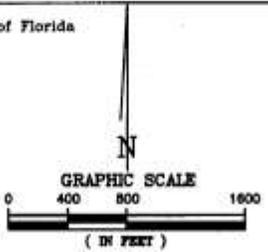


Exhibit "A"  
Page 4 of 5 Pages  
Amendment Number 1 to Lease No. 4257

THTF - Trustees of the Internal Improvement Trust Fund of the State of Florida  
 POC = Point of Commencement  
 POB = Point of Beginning  
 POT = Point of Terminus  
 Δ = Delta Angle  
 R = Radius  
 L = Length  
 CB = Chord Bearing  
 CH = Chord Length

**NOTES:**  
 BEARINGS ARE BASED ON THE NORTH LINE OF SECTION 33, TOWNSHIP 40 SOUTH, RANGE 32 EAST, BEING N89°41'30\"/>



 DEPT. of ENVIRONMENTAL PROTECTION BUREAU of SURVEYING and MAPPING 3600 CONGRESSVILLE BLVD. TALLAHASSEE, FL 32309 (904) 249-9000	PROJECT: FISHEATING CREEK FWC LEASE	COUNTY: GLADES SCALE: 1" = 800' SHEET 1 OF 1 LAYOUT: BSL4p	DATE: 10-21-2011 DRAWN BY: S.W.C.	REVISION:	DATE:
	W:\Comptroller\Glades\Fish Heating Creek - Lease to FWC\Gwg				

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Those sovereignty submerged lands located in Glades County, Florida, lying Easterly of the J. D. Tannehill Meander Line of 1871, lying South of the Southerly right-of-way of the Herbert Hoover Dike L-50, lying South of the South line of Trustees of the Internal Improvement Trust Fund of the State of Florida Deed No. 22593, lying West of the Westerly right-of-way line of State Road No. 78, and lying north of the South line of Section 28, Township 40 South, Range 32 East, being more particularly described as follows:

BEGIN at the South 1/4 corner of Section 28, Township 40 South, Range 32 East; thence run N 01°34'50" E along the North-South quarter section line of said Section 28 a distance of 176.64 feet to a point of intersection with said J. D. Tannehill Meander Line of 1871 and the POINT OF BEGINNING; thence run in a Northeasterly direction along said Meander Line the following four courses; (1) N 37°43'18" E, 1,132.38 feet; (2) N 30°13'18" E, 1,152.95 feet; (3) N 42°13'18" E, 813.84 feet (4) N 26°13'18" E, 643.19 feet to a point of intersection with the Southerly right-of-way of the Herbert Hoover Dike L-50 and the POINT OF TERMINUS of the four courses; thence N 56°06'23" E, 350.78 feet along the Southerly right-of-way of the Herbert Hoover Dike L-50 to an intersection with the South boundary of Trustees of the Internal Improvement Trust Fund of the State of Florida Deed No. 22593; thence N 67°23'10" E, 394.57 feet along the South boundary said Deed No. 22593 to its intersection with the East boundary of said Section 28; thence S 01°55'35" W, 1301.04 feet along the East boundary of said Section 28 to its intersection with the Westerly right-of-way line State Road No. 78; thence S 18°27'11" W, 1539.05 feet along the Westerly right-of-way line of said road to the P.C. of a curve being concave to the Southeast; said curve having a radius of 5829.86 feet; a central angle of 6°30'23"; a chord bearing of S 15°12'00" W; a chord distance of 661.66 feet; thence continue along the Westerly right-of-way of said road and along said curve, an arc distance of 662.03 feet to an intersection with the L.B. Merriam Meander Line of 1917 to 1918; thence S 37°26'12" W, 234.87 feet along said L.B. Merriam Meander Line of 1917 to 1918 to its intersection with the South line of said Section 28; thence S 89°41'30" W along the South line of said Section 28, 1917.41 feet to the POINT OF BEGINNING;

and

BEGIN at the South 1/4 corner of Section 28, Township 40 South, Range 32 East; thence run N 01°34'50"E along the North-South quarter section line of said Section 28, 176.64 feet to a point of intersection with said J. D. Tannehill Meander Line of 1871; thence run S 37°43'21" W, 224.03 feet along said Meander Line to a point of intersection with the South line of the Southwest quarter of said Section 28; thence run N 89°43'39"E along said South line of the Southwest quarter of said Section 28, 132.20 feet to the POINT OF BEGINNING.

BOA APPROVED  
By *HA* Date *10-21-2011*

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ement Plan

## 13.2 Settlement Agreement

SETTLEMENT AGREEMENT

This Settlement Agreement is dated as of May 25, 1999, by and among the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA (hereinafter the "Trustees"), SAVE OUR CREEKS, INC., ENVIRONMENTAL CONFEDERATION OF SOUTHWEST FLORIDA, INC. (hereinafter "ECOSWF"), and LYKES BROS. INC. (hereinafter "Lykes").

RECITALS

WHEREAS, the Trustees, Save Our Creeks, Inc., ECOSWF, and Lykes are currently parties to litigation in Glades County styled Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, Plaintiff and Save Our Creeks, Inc. and Environmental Confederation of Southwest Florida, Intervenor vs. Lykes Bros. Inc., a Florida Corporation (Case No. CA93-136, Circuit Court, 20th Judicial Circuit, Glades County, Florida) (hereinafter "the Litigation");

WHEREAS, on June 2, 1997, a Glades County jury determined that Fisheating Creek throughout Glades County, Florida is a navigable stream, and the trial court subsequently issued a Judgment on Title and Right to Immediate Possession which determined that title to Fisheating Creek up to the ordinary high water boundary was in the Trustees;

WHEREAS, an appeal of the jury verdict and the judgment is currently pending in the Second District Court of Appeal;

WHEREAS, the issue of the location of the ordinary high water boundary of Fisheating Creek throughout Glades County remains to be tried;

WHEREAS, each of the parties has devoted substantial time and resources in the litigation;

WHEREAS, the Trustees and Intervenor have investigated and surveyed the entirety of the Fisheating Creek course of Glades County upstream from Lake Port and within Glades County and have determined that there are no sovereignty lands outside of the Expanded Corridor, and specifically none on lands covered by Conservation Easements Phase I through V herein, and therefore, the Trustees are or may be offering to purchase said Conservation Easements over such lands;

WHEREAS, the Settlement Agreement would achieve the objectives of the parties in that it:

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1. Eliminates further costly and time consuming litigation between the parties which litigation has an outcome at trial and appellate level uncertain to the parties.
2. Provides the State with immediate fee title to certain lands in Glades County assuring perpetual public use and environmental protection.
3. Provides the State with an immediate conservation easement over adjacent areas assuring protection of the natural resource value and the recreational value of the fee title property.
4. Allows the public to continue traditional local uses of Fisheating Creek and allows Lykes to continue its traditional uses of the conservation easement lands while ensuring preservation of the natural resource value of the property which is a result of Lykes' stewardship of its land.
5. Does not determine the ordinary high water line of Fisheating Creek in Glades County which issue is complex, strongly disputed, and not necessary to resolve in light of other aspects of this Settlement Agreement.

NOW, THEREFORE, in consideration of the foregoing and for other good and valuable consideration, the parties do covenant and agree as follows:

**SECTION ONE  
COVENANTS OF LYKES BROS. INC.**

1. Upon agreement with the Trustees as to purchase price, Lykes agrees to quitclaim its interests in 8,387.1 acres of land to the State, convey fee title to approximately 9,781.1 acres of land to the State, and convey a conservation easement over approximately 41,606.5 acres of land to the State, as more particularly described below. Lykes agrees to abide by the procedures contained in section 259.041, Florida Statutes, governing the acquisition of lands for conservation, preservation, and recreation purposes in arriving at the purchase price for the fee-title lands and the conservation easement. Lykes agrees that, for purposes of settlement, no value will be assigned to the lands quitclaimed to the State as more particularly described in paragraph 2 and 3 which the parties agree for purposes of this Settlement Agreement is 8,387.1 acres. Lykes also agrees that the acquisition of the fee title lands and the conservation easement is linked; one will not be acquired without the other.

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2. Upon agreement with the Trustees as to purchase price, Lykes will convey to the State: a) the acreage which lies below the 25% Exceedance Line of Fisheating Creek as depicted in blue on the map attached as Exhibit A which the parties stipulate encompasses 8,387.1 acres; and b) the acreage which lies between the 25% Exceedance Line and the Phase I Conservation Easement Line as depicted in red on the map attached as Exhibit A which the parties stipulate encompasses approximately 9,781.1 acres. Together these lands encompass approximately 18,168.2 acres and are hereinafter referred to as the Fisheating Creek "Expanded Corridor."

3. Lykes will issue a Special Warranty Deed for the lands in the Expanded Corridor which will except and convey by quitclaim deed the lands lying below the 25% Exceedance Line and will warrant only those lands between the 25% Exceedance Line and the Phase I Conservation Easement line over which the State, for purposes of this Agreement, asserts no claim.

4. Upon agreement with the Trustees as to purchase price, the Trustees, in consultation with Lykes and with Lykes' concurrence as to the surveyor and the final boundary, shall provide a metes and bounds survey of the perimeter of the Expanded Corridor. The final price will be determined based on this survey, and the parties agree that the final purchase price shall not vary by more than 3% as a result of the final survey, which shall not vary more than 3% above or below 18,168.2 acres. The cost of the survey shall be shared equally by Lykes and the Trustees.

5. Lykes agrees to fence and post the property line of the Expanded Corridor within 2 years of closing. The cost of the fencing and maintenance of the fencing will be shared equally by Lykes and the Managing Agency. The type of fencing to be installed is to be determined by mutual agreement of Lykes and the Managing Agency.

6. Lykes agrees to provide the information required by the Board of Trustees to effectuate the appraisal and conveyance of the property within the Expanded Corridor.

7. Lykes retains grazing rights on the lands within the Expanded Corridor subject to an agreement between Lykes and the Managing Agency which shall be based on a report prepared by a mutually acceptable expert on cattle management and conservation of natural resources which will ensure that the level of grazing is compatible with protecting the natural resource value of the land and is no more intensive than the existing operation within the Expanded Corridor. The report and agreement shall be completed no later than 1 year after the closing date. Any change in the existing operation shall be subject to approval of

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the Managing Agency. Grazing rights are also subject to performance with the 1999 draft of the Water Quality Best Management Practices for cow calf operations, so that discharge from Fisheating Creek to Lake Okeechobee shall comply with applicable nutrient and other environmental standards. In the event Best Management Practices or permits for cattle grazing become required by law in the future, Lykes will comply with all applicable laws and regulations pertaining thereto. The Trustees reserve the right to limit the amount of grazing in order to deal with issues raised in the South Florida Water Management District's Lake Okeechobee Restoration Plan to the same extent the Trustees could restrict grazing on comparable grazing lands. Grazing rights within the Expanded Corridor are transferable and assignable to a single purchaser of adjacent upland, but shall not be transferable or assignable to multiple purchasers without the consent of the Trustees, which shall not be unreasonably withheld, so long as the Managing Agency is satisfied that the Expanded Corridor is managed so as to maximize the protection of the natural resource value of the lands in the Expanded Corridor.

8. Upon agreement with the Trustees as to purchase price, Lykes will convey to the State a Conservation Easement under section 704.06, Florida Statutes over the Phase I Conservation Easement lands as depicted on the map attached as Exhibit A which the parties stipulate encompasses approximately 41,606.5 acres. The Conservation Easement is attached as Exhibit B to this Settlement Agreement. The conservation easement was developed using a "snapshot" approach for determining the activities that Lykes may continue on the conservation easement lands. An easement documentation report will be produced which documents that "snapshot." This approach allows Lykes to maintain its traditional agricultural uses of the land, while ensuring that the current condition of the land and its natural resource values are preserved.

9. The Trustees, in consultation with Lykes, and with Lykes' concurrence as to the surveyor and the final boundary, will provide a metes and bounds survey of the perimeter of the Phase I Conservation Easement lands. The final price for the Phase I Conservation Easement lands will be determined based on this survey, and the parties agree that the final acreage shall not vary from the stated acreage in paragraph 7 by more than 3%. The cost of the survey shall be shared equally by Lykes and the Trustees.

10. Pursuant to section 704.06, Florida Statutes, the Trustees shall record the conservation easement in the Official Records of Glades County. The cost of documentary stamps shall be shared equally by Lykes and the Trustees.

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11. Lykes will extend to the Trustees an option to purchase Phase II through V Conservation Easement lands as depicted on the map attached to this Settlement Agreement as Exhibit A. The Conservation Easement and Easement Management Plan shall be site specific for each option parcel. The option for Phase II must be exercised within 12 months and closed within 18 months of the closing of the Expanded Corridor and the Phase I Conservation Easement, unless extended by mutual consent. Subsequent options must be exercised within 12 months and closed within 18 months of closing of the prior phase. Lykes shall have the continuing option to decline to sell on exercise of such option if the price offered by the State is unacceptable to Lykes for any reason. Upon failure to exercise by the Trustees or upon Lykes refusal to accept price all future options expire. Lykes will not significantly change the use of the areas designated as Conservation Easement Phases II to V during the time while the Trustees' option to purchase conservation easements over these areas shall exist. In addition, in the event Lykes declines to sell a Conservation Easement to the USDA on Rainey Slough, or if the part of Rainey Slough marked USDA on Exhibit A shall be included as part of the Phase IV Conservation Easement and Trustees agree that Lykes shall be compensated for whatever interest Trustees acquire.

12. Lykes recognizes that the Trustees are also interested in acquiring a conservation easement over an additional 17,280 acres, which lands are depicted as Future Potential Conservation Easement lands on the map attached as Exhibit A.

13. Lykes shall provide access to Fisheating Creek through Lykes' property at Burnt Bridge via County Road 74 and Ingram's Crossing via County Road 731 in order to facilitate canoeing on Fisheating Creek. Use of these additional access points by canoeists shall be under the control of the Managing Agency or its concessionaire. This access shall be documented in a recordable easement, the terms of which are sufficient to effectuate the purposes of the access and indemnify and hold harmless Lykes from claims by persons using such. The parties shall mutually agree to the terms of the easement, a copy of which is attached hereto as Exhibit C.

#### SECTION TWO COVENANTS OF THE TRUSTEES

14. The Trustees shall accept the quitclaim of Lykes' interests in 8,387.1 acres of land. The Trustees agree to make an offer to purchase the fee title to approximately 9,781.1 acres of land owned by Lykes and a conservation easement over approximately 41,606.5 acres owned by Lykes as more particularly described in Section One. The Trustees shall follow the

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Procedures contained in section 259.041, Florida Statutes, governing the acquisition of lands for conservation, preservation, and recreation purposes in arriving at the price for the fee-title lands and the conservation easement. The Trustees agree that, for purposes of settlement, no value will be assigned to the lands quitclaimed to the State. Acquisition of the fee title lands and the conservation easement is linked; the Trustees will not acquire one without the other.

15. The Trustees and Lykes shall equally share the agreed upon cost of surveying the boundaries of the Expanded Corridor and the Phase One Conservation Easement lands as described in Section One.

16. The Trustees will utilize their best efforts to ensure that Glades County promptly receives the payment in lieu of taxes provided for in section 259.032(12), Florida Statutes.

17. The Trustees will designate the Game and Fresh Water Fish Commission as the Managing Agency (herein "Managing Agency" or the "Commission") for the Expanded Corridor and as the Easement Monitor for Phase I Conservation Easement lands of the Fisheating Creek Ecosystem CARL Project.

18. The Trustees direct that the Expanded Corridor and the Phase I Conservation Easement lands shall be designated high need tracts pursuant to Section 259.032 (11) (c), Florida Statutes, to enable the Managing Agency to obtain sufficient management funds to ensure the adequate management of the Expanded Corridor and Phase I Conservation Easement lands as set forth in Exhibit D. This Funding shall provide for at least four law enforcement positions to provide adequate enforcement and security. Funding shall also provide for aquatic weed control and removal of obstructions to navigation to ensure that Fisheating Creek remains open for recreational boating throughout the Expanded Corridor.

19. The Trustees shall create a thirteen-member Advisory Board composed of one County Commissioner from Glades County, two representatives of Lykes Bros. Inc., two representatives from Save Our Creeks, Inc., two representatives from the Environmental Confederation of Southwest Florida, Inc., one representative from the Division of State Lands of the Florida Department of Environmental Protection, one representative from an environmental organization, two representatives of Lykes' lessees, one concerned citizen, and one representative of the Managing Agency if the agency desires to participate. The representatives shall be designated by their own organizations except for the concerned citizen and the representative of an environmental group who shall be designated by the Trustees from a list submitted by the Advisory Board.

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SECTION THREE  
MANAGEMENT AND USES OF THE FISHEATING CREEK EXPANDED CORRIDOR

20. The Trustees shall lease the Expanded Corridor to the Game and Fresh Water Fish Commission for management purposes.

21. Modifications of this lease require written notice to the parties to this Settlement Agreement, written agreement by the parties to the proposed modification, and action by the Trustees. Authorization to modify the lease shall not be delegated to staff of the Florida Department of Environmental Protection.

22. The Citizen Advisory Board created pursuant to paragraph 19 above may make recommendations to the Managing Agency as to future management issues involving the Expanded Corridor. The Managing Agency has no financial obligation to fund the activities of the Advisory Board.

23. The general public has the right to access the Expanded Corridor for boating and other recreational activities, other than hunting, from the Palmdale Campground and by the Main Street right-of-way in Palmdale. The general public also has the right to access the Expanded Corridor through existing public access points at Venus and Lakeport for boating and recreational activities other than hunting. Access to and use of the Expanded Corridor by motorized land vehicles is prohibited except for vehicular use necessary for the maintenance and management of the property by the Managing Agency or its agents, and by Lykes and its agents when necessary for fence maintenance and in accordance with paragraph 7. Security for the entire Expanded Corridor shall be provided solely by officers of the Commission.

24. The following recreational activities are allowed within the Expanded Corridor:

a. Hunting. Hunting shall be a permissible use in the entire Expanded Corridor upstream of Highway 27. The Commission will regulate the extent of hunting through rules adopted by the Commission. Members of the general public who possess firearms (which includes bows and arrows) must enter the Expanded Corridor through a Commission check point at Palmdale. Landowners adjoining the Expanded Corridor and their lessees and invitees, who possess a valid hunting permit to hunt within the Expanded Corridor, may enter the hunting area only with the prior approval and under conditions established by the Commission. Hunting will be prohibited throughout the entire Expanded Corridor in the area east of Highway 27 except for special opportunity spring turkey hunts conducted in an area between Highway 27 and a point between Rock Lake and the dividing line between sections 32 and 33 in Township 40 South, Range 31 East. The eastern boundary of the

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Special opportunity turkey hunts shall be located so as to provide a sufficient buffer for the current and historic swallow-tail kite colonies in Cowbone Marsh area. No guns shall be possessed in the Expanded Corridor except by hunters with a valid permit to hunt in a designated area, by participants in the feral hog control program but only in the area west of Highway 27, by Commission officers and their agents, and by Lykes' employees conducting necessary activities in accordance with paragraph 7. Hunting with dogs shall be prohibited.

b. Airboating: Airboating shall be permitted for sporting purposes including fishing and frogging in the area depicted on the map attached as Exhibit E, which restricts airboating to the area depicted on the map. The boundary depicted on this map may be adjusted to provide a one-mile buffer from the historic swallow-tail kite colony. The parties agree that the boundary of this airboating area will be clearly delineated and commit to cooperate in enforcing this restriction. Airboaters must obtain an airboat use permit from the Commission, which permit shall be valid for two years. The matter of appropriate airboating regulations in Cowbone Marsh will be revisited by the Commission in two years.

c. Fishing: Fishing shall be a permissible use throughout the entire Expanded Corridor.

d. Boating and Canoeing: The general public has the right to boat and canoe on Fisheating Creek throughout the entire Expanded Corridor. General public access is available as described in paragraph 23. To facilitate canoe access, Lykes has granted canoeists the right of access through Lykes property to Burnt Bridge and Ingram's crossing. Access through these additional access points shall be under the control of the Managing Agency, or its concessionaire if one is established. Landowners adjoining the Expanded Corridor and their lessees and their invitees may enter the corridor for boating and canoeing purposes directly from the adjoining lands. However, such access shall be limited to not more than two vessels for each adjacent landowner and for each of their lessees in any one day unless a permit is obtained from the Managing Agency for a larger number of vessels. No commercial use of adjoining landowner access shall be permitted.

e. Frogging: Frogging shall be a permissible use throughout the entire Expanded Corridor.

f. Wilderness Camping: Wilderness camping shall be a permissible use throughout the entire year in the entire Expanded Corridor.

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g. Hiking: Hiking shall be a permissible use throughout the entire Expanded Corridor.

25. Resource Protection: The Managing Agency is directed to implement the following activities to ensure that the natural resource values of Fisheating Creek are maintained or enhanced in conjunction with the preservation of the historical Creek uses:

a. Protection of Historical and Archeological Sites. Historical or archeological sites within the Expanded Corridor shall be protected in coordination with the Department of State, Division of Historical Resources.

b. Protection of Navigation. The navigability of Fisheating Creek throughout the entire Expanded Corridor shall be maintained and enhanced through a navigation maintenance program which includes aquatic weed control and removal of fallen logs and similar obstructions. This section does not authorize dredging.

c. Protection of Ecological Values Through Prescribed Burning: The ecological values of the entire Expanded Corridor shall be preserved and enhanced through a program of prescribed burning where appropriate.

d. Protection of Ecological Values Through Feral Hog Removal: The Commission shall implement and manage a feral hog control program in the Expanded Corridor west of Highway 27 using up to 50 people local to Fisheating Creek in Glades and Hendry County based on traditional uses by local people. Only shotguns using #1 buckshot or larger shall be used in the feral hog control program. The Commission will set qualifications and conditions to assure the purposes of the program are effectuated to the maximum extent practicable. This shall in no way limit the Commission's authority to authorize and regulate hog hunting in the Expanded Corridor west of Highway 27. Control of feral hogs east of Highway 27 shall be conducted under the supervision of the Commission by means other than hunting. The hogs removed in this manner will be taken in as short a period as possible.

e. Protection of Ecological, Historical, Archeological and Recreational Values: The Commission is authorized to monitor grazing activities within the Expanded Corridor to ensure that such activities are in accordance with paragraph 7 and to ensure that the level of grazing is compatible with protecting the natural resource values of the land. The Commission may exclude grazing from limited areas where necessary to protect major camping areas or sites of historical or archeological significance. Any necessary fences will be paid for by the Commission.

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f. Protection of Ecological Values Through Prohibition of Jet Skis and Jet Powered Watercraft: The Commission is directed to protect ecological values through prohibition of jet skis and jet powered watercraft.

SECTION FOUR  
MISCELLANEOUS

26. Proration of Taxes. Ad valorem taxes will be prorated between the State and Lykes as of the date of closing.

27. Effective Date. This Settlement Agreement will become final upon the entry by the Glades County Circuit Court of a Consent Final Judgment in the pending litigation. Lykes may decline to close the sale of the Expanded Corridor and the Phase I Conservation Easement if it determines that the price offered by the Trustees to purchase the fee title lands and the Phase I Conservation Easement lands is unacceptable and this Settlement Agreement shall become void. Either party may delay the closing until such time as a ruling is issued by the Second District Court of Appeal in Lykes' appeal of the determination of navigability and title to Fisheating Creek but not beyond November 30, 1999. Lykes may elect to abandon this Settlement Agreement in the event the Second District Court of Appeal reverses the trial court's navigability determination.

28. Promptly upon entry of the Consent Final Judgment the Parties will dismiss the litigation with prejudice and give Lykes a release in the form attached to this Settlement Agreement as Exhibit F.

29. This Settlement Agreement constitutes the entire agreement of the parties and the same may not be amended or modified orally. All understandings and agreements heretofore had between the parties are merged in this Settlement Agreement which alone fully and completely expresses their understanding.

30. Any waiver, alteration, or modification of this Settlement Agreement shall not be valid unless in writing and signed by the parties hereto.

31. The parties hereto agree to execute any and all further instruments and documents and take all such action as may be reasonably required by either party to effectuate the terms and provisions of this Settlement Agreement and the transactions contemplated herein, except as otherwise permitted in paragraph 27 and the parties are authorized to record this Settlement Agreement in the property records of Glades County.

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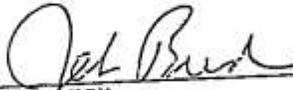
32. This Settlement Agreement and the rights and obligations of the parties herein shall inure to the benefit of and be binding on parties and their respective successors and assigns.

33. Enforceability. This Settlement Agreement may be enforced in circuit court by any signatory to the Agreement, but is not intended to create rights in third party beneficiaries.

34. Closing. The appraisal process shall proceed immediately and the Trustees will enter price negotiations as soon as practical so that the Trustees and Lykes can enter a binding contract of purchase and sale on or before September 15, 1999, with closing as expeditiously as possible thereafter. These dates may be extended by mutual agreement of Lykes and the Trustees.

IN WITNESS WHEREOF, this Settlement Agreement has been executed on the day and year of the last signatory to the Agreement.

(SEAL)  
BOARD OF TRUSTEES OF THE  
INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE  
OF FLORIDA

  
\_\_\_\_\_  
JEB BUSH  
GOVERNOR

  
\_\_\_\_\_  
KATHRYN HARRIS  
SECRETARY OF STATE

  
\_\_\_\_\_  
ROBERT A. BUTTERWORTH  
ATTORNEY GENERAL

  
\_\_\_\_\_  
BOB MILLIGAN  
COMPTROLLER

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Bill Nelson  
BILL NELSON  
TREASURER

Bob Crawford  
BOB CRAWFORD  
COMMISSIONER OF AGRICULTURE

Tom Gallagher  
TOM GALLAGHER  
COMMISSIONER OF EDUCATION

As and Constituting the BOARD OF  
TRUSTEES OF THE INTERNAL  
IMPROVEMENT TRUST FUND OF  
THE STATE OF FLORIDA

Date: May 25, 1999

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John Brabson  
JOHN BRABSON, CHAIRMAN  
LYKES BROS. INC.

5/24/99

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*Becky Hendry*

Becky Hendry, President  
Save Our Creeks, Inc.  
Date: 5/24/99

*Becky Ayech*

Becky Ayech, President  
Environmental Confederation  
of Southwest Florida, Inc.  
Date: 5/24/99

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### **13.3 Title Interests and Encumbrances**

#### **13.3.1 Contract #00053 – South Central Florida Express, Inc., and Lykes Brothers, Inc., for Use of Electrical Wireline and Private Road**