



A Management Plan for the Crooked Lake Wildlife and Environmental Area 2019 - 2029

Polk County, Florida



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

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**A Management Plan
for the
Crooked Lake Wildlife and Environmental Area**

Polk County, Florida

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



June 2019

Approved 
Kipp Frohlich
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: Crooked Lake Wildlife and Environmental Area

Location: Polk County, Florida

Acreage Total: 1,147 acres

Acreage Breakdown:

<u>Land Cover Classification</u>	<u>Acres</u>	<u>Percent of Total Area</u>
Agriculture	56.60	4.9%
Artificial pond	1.31	0.1%
Basin marsh	15.52	1.4%
Basin swamp	168.94	14.7%
Baygall	101.23	8.8%
Depression marsh	14.36	1.3%
Developed	6.58	0.6%
Dome swamp	0.39	<0.1%
Mesic flatwoods	117.68	10.3%
Pasture – improved	270.76	23.6%
Pasture – semi-improved	82.16	7.2%
Road	39.06	3.4%
Sandhill	5.29	0.5%
Scrub	18.99	1.7%
Scrubby flatwoods	64.95	5.7%
Successional hardwood forest	20.50	1.8%
Wet flatwoods	162.54	14%

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

Lease/Management Agreement No.: 4593 (Appendix 12.1)

Use: Single _____

Multiple X

Management Responsibilities:

Agency FWC

Responsibilities

LEAD, LESSEE (Wildlife and Environmental Area, resource protection, law enforcement)

Designated Land Use: Wildlife and Environmental Area

Sublease (s): None

Encumbrances: List: Two ingress/egress easements, one drainage easement and eight utility easements

Type Acquisition: FWC Fish and Wildlife Habitat Program

Unique Features: Natural: None

Archaeological/Historical: None documented within CLWEA

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: 3,183 acres FWC Additions and Inholdings list; 22,097 acres remaining in the Lake Wales Ridge Ecosystem Florida Forever Project (Figure 4)

Surplus Lands/Acreage: None

Public Involvement: Management Advisory Group consensus building meeting and Public Hearing (Appendix 12.2 and 12.3)

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

ARC Approval Date _____ BTIITF Approval Date: _____
Comments: _____

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	iv; 1
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	3-4
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	3-4
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	iv; 1-4; Appendix 12.1
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	8-11; 91
6	An assessment as to whether the property, or any portion, should be declared surplus. <i>Provide Information regarding assessment and analysis in the plan, and provide corresponding map.</i>	18-2.021	51-52
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	79; 81-82
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	7
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)	3
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	4-7

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	50-51
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	48-49
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	50-51
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	4; 79
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	47; 76-77; 88

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	62-84
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)	48-51
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	48-51
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	Appendix 12.18
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	13-18; 47; 75-76; 84
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	48-51
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	76; Appendix 12.13
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	51

*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	13; Appendix 12.2 and 12.3
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)	Appendix 12.3
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)	13; Appendix 12.3
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	Appendix 12.3
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)	Appendix 12.2 and 12.3
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	62-63; Appendix 12.9
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	Appendix 12.9
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	62-63; Appendix 12.9

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	14-18; Appendix 12.4
33	Insert FNAI based natural community maps when available.	ARC consensus	20-21

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	19-40
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	19-40; 47
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	47
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	47
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	41-48
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	41-48
40	The identification or 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	44; 46; Appendix 12.6
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)	62-93
42	Habitat Restoration and Improvement	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.	↓	62-96
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.		85-90
42-C.	The associated measurable objectives to achieve the goals.		85-90
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>		62-96; Appendix 12.10
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.		94-96; Appendix 12.16
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)	19-40

44	Sustainable Forest Management, including implementation of prescribed fire management		
44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		62-96; Appendix 12.10 and 12.13
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	18-2.021, 253.034(5) & 259.032(10) ↓	85-90
44-C.	Measurable objectives (see requirement for #42-C).		85-90
44-D.	Related activities (see requirement for #42-D).		62-96
44-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16
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).	↓	62-96; Appendix 12.11
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85-90
45-C.	Measurable objectives (see requirement for #42-C).		85-90
45-D.	Related activities (see requirement for #42-D).		62-96
45-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16
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)	28; 41; 71-72
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	Appendix 12.17
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).	↓	62-96
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85-90
48-C.	Measurable objectives (see requirement for #42-C).		85-90
48-D.	Related activities (see requirement for #42-D).		62-96
48-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16

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	7; 47
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	47
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	47
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. <i>See footnote.</i>	253.034(5)	47
53	Hydrological Preservation and Restoration	259.032(10) & 253.034(5)	
53-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	75-76
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85-90
53-C.	Measurable objectives (see requirement for #42-C).		85-90
53-D.	Related activities (see requirement for #42-D).		62-96
53-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16

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	47; 76-77
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	47; 76-77
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	76-77; Appendix 12.14
57	Cultural and Historical Resources	259.032(10) & 253.034(5)	
57-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	76-77

57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85-90
57-C.	Measurable objectives (see requirement for #42-C).		85-90
57-D.	Related activities (see requirement for #42-D).		62-96
57-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16

**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)	77; 91
59	Capital Facilities and Infrastructure	259.032(10) & 253.034(5)	
59-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	62-96
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85-90
59-C.	Measurable objectives (see requirement for #42-C).		85-90
59-D.	Related activities (see requirement for #42-D).		62-96
59-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	72-77; 91
61	Public Access and Recreational Opportunities	259.032(10) & 253.034(5)	
61-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	62-96
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85-90
61-C.	Measurable objectives (see requirement for #42-C).		85-90
61-D.	Related activities (see requirement for #42-D).		62-96
61-E.	Budgets (see requirement for #42-E).		94-96; Appendix 12.16

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	vi-xiii
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	iv
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	52-62
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	62-96
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)	94-96; Appendix 12.16
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)	94-96; Appendix 12.16
68	A statement of gross income generated, net income and expenses.	18-2.018	94-96; Appendix 12.16

*** = 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.

Table of Contents

1	Introduction and General Information	1
1.1	Management Plan Purpose	1
1.2	Location	2
1.3	Acquisition.....	3
1.4	Management Authority	3
1.5	Management Directives	4
1.6	Title Interest and Encumbrances	4
1.7	Proximity to Other Public Conservation Lands	4
1.8	Adjacent Land Uses.....	7
1.9	Public Involvement.....	13
2	Natural and Historical Resources	13
2.1	Physiography	13
2.2	Vegetation.....	19
2.3	Fish and Wildlife Resources.....	41
2.4	Native Landscapes	47
2.5	Water Resources	47
2.6	Beaches and Dunes	47
2.7	Mineral Resources	47
2.8	Historical Resources.....	47
2.9	Scenic Resources.....	47
3	Uses of the Property	48
3.1	Previous Use and Development	48
3.2	Current Use of the Property.....	48
3.3	Single- or Multiple-use Management	50
3.4	Acreage Recommended for Potential Surplus Review.....	51
4	Accomplished Objectives from the CLWEA Management Plan 2011-2021	52
5	Management Activities and Intent	62
5.1	Land Management Review.....	62
5.2	Adaptive Management	63

5.3	Habitat Restoration and Improvement.....	64
5.4	Fish and Wildlife Management Imperiled and Locally Important Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration	69
5.5	Exotic and Invasive Species Maintenance and Control	71
5.6	Public Access and Recreational Opportunities	72
5.7	Hydrological Preservation and Restoration.....	75
5.8	Forest Resource Management.....	76
5.9	Historical Resources	76
5.10	Capital Facilities and Infrastructure.....	77
5.11	Land Conservation and Stewardship Partnerships	77
5.12	Research Opportunities.....	79
5.13	Cooperative Management and Special Uses.....	80
5.14	Climate Change	83
5.15	Soil and Water Conservation	84
6	Resource Management Goals and Objectives	85
6.1	Habitat Restoration and Improvement.....	85
6.2	Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration	85
6.3	Other Wildlife (Game and Nongame) Habitat Maintenance, Enhancement, Restoration, and Population Restoration.	86
6.4	Exotic and Invasive Species Maintenance and Control	86
6.5	Public Access and Recreational Opportunities	86
6.6	Hydrological Preservation and Restoration.....	87
6.7	Forest Resource Management.....	87
6.8	Historical Resources	88
6.9	Capital Facilities and Infrastructure.....	88
6.10	Land Conservation and Stewardship Partnerships	88
6.11	Climate Change	89
6.12	Cooperative Management, Special Uses, and Research Opportunities	90
7	Resource Management Challenges and Strategies	92
8	Cost and Funding Sources.....	94

9	Analysis of Potential for Contracting Private Vendors for Restoration and Management Activities	97
10	Compliance with Federal, State, and Local Governmental Requirements	98
11	Endnotes	99
12	Appendices	101
12.1	Lease Agreement.....	101
12.2	Public Hearing Notice, Advertisements, and Press Release	122
12.3	Public Input.....	129
12.4	Soil Series Descriptions.....	177
12.5	Definitions of Management Plan Terms.....	185
12.6	FNAI Element Occurrence Data Usage Letter.....	189
12.7	FWC Agency Strategic Plan.....	190
12.8	FWC Apiary Policy	196
12.9	Land Management Review.....	220
12.10	Prescribed Burn Plan.....	235
12.11	Wildlife Conservation and Prioritization and Recovery Program Strategy (WCPR)	243
12.12	Recreation Master Plan	305
12.13	Timber Assessment.....	321
12.14	Management Procedures Guidelines - Management of Archaeological and Historical Resources	324
12.15	Land Management Uniform Accounting Council Categories	327
12.16	Operation Plan Fiscal Year 2017-2018.....	336
12.17	Arthropod Control Plan	337
12.18	Polk County Letter of Compliance with Local Government Comprehensive Plan	342

Table of Figures

Figure 1. The CLWEA Location	8
Figure 2. Aerial Imagery of the CLWEA	9
Figure 3. The CLWEA Proximity Map with Section, Township and Range	10
Figure 4. Conservation Land and Florida Forever Projects near the CLWEA.....	11
Figure 5. The CLWEA Soil Types	17
Figure 6. The CLWEA Soil Depth to Water Table (cm)	18
Figure 7. The FNAI Natural Communities Map for the CLWEA.....	20
Figure 8. The FNAI Historic Natural Communities for the CLWEA	21
Figure 9. The CLWEA Integrated Wildlife Habitat Ranking	45
Figure 10. FNAI Element Occurrences.....	46
Figure 11. Optimal Conservation Planning Boundary for the CLWEA.....	81
Figure 12. Project Locations for the CLWEA	91

Table of Tables

Table 1. Florida Forever Projects Within 15 Miles of the CLWEA.....	5
Table 2. Conservation Lands Within 15 Miles of the CLWEA.....	5
Table 3. Vegetative Communities Found at the CLWEA.....	19
Table 4. Plant Species Observed at the CLWEA	22
Table 5. Invasive and Exotic Plant Species Observed at the CLWEA.....	28
Table 6. Imperiled Plant Species Known to Occur at the CLWEA	36
Table 7. Mammal Species Observed at the CLWEA	41
Table 8. Bird Species Observed at the CLWEA.....	41
Table 9. Reptiles and Amphibians Observed at the CLWEA.....	42
Table 10. Imperiled Wildlife Species Found at the CLWEA	44

Management Plan Acronym Key

ADA	Americans with Disabilities Act
ARC	Acquisition and Restoration Council
BEBR	Bureau of Economic and Business Research
BOT	Board of Trustees of the Internal Improvement Trust Fund
CARL	Conservation and Recreation Lands Program
CAS	Conservation Action Strategy
CLC	Florida Cooperative Land Cover Map
CLIP	Critical Lands and Waters Identification Project
CLWEA	Crooked Lake Wildlife and Environmental Area
DACS	Department of Agriculture and Consumer Services
DEP	Department of Environmental Protection
DHR	Florida Department of Historical Resources
DSL	Division of State Lands
FAC	Florida Administrative Code
FFS	Florida Forest Service
FLEPPC	Florida Exotic Pest Plant Council
FLUE	Florida Land Use Element
FNAI	Florida Natural Areas Inventory
FS	Florida Statute(s)
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Fish and Wildlife Research Institute
GFC	Florida Game and Freshwater Fish Commission
GIS	Geographic Information Systems
IMPP	Internal Management Policies and Procedures
IPCC	Intergovernmental Panel on Climate Change
IWHRS	Integrated Wildlife Habitat Ranking System
LAP	Landowner Assistance Program
LMR	Land Management Review
LPIGD	Land Parcel Inventory of Geo-Database and Process
OBVM	Objective-Based Vegetation Management
OCPB	Optimal Conservation Planning Boundary
OFW	Outstanding Florida Waters
ORB	Optimal Resource Boundary
PUD	Planned Unit Development
RSPH	Rare Species Potential Habitat
SCHA	Strategic Habitat Conservation Areas
SWFWMD	Southwest Florida Water Management District
TNC	The Nature Conservancy
USFWS	United State Fish and Wildlife Service
WCPR	Wildlife Conservation Prioritization and Recovery

1 Introduction and General Information

The Crooked Lake Wildlife and Environmental Area (CLWEA) is made up of well-managed natural communities that provide numerous wildlife species with quality habitat, as well as excellent nature and wildlife viewing opportunities for Florida's residents and visitors. Located in a relatively rural area of Polk County the CLWEA is approximately 1,147 acres in size and contains forested uplands and wetlands. Management actions on the CLWEA have largely focused on enhancements and maintenance of critical habitats for several important species, most notably the gopher tortoise (*Gopherus polyphemus*), whose habitat is critical and beneficial for other upland species. The CLWEA also offers a network of multi-use trails for hikers, bicyclists and equestrians.

The CLWEA is managed by the Florida Fish and Wildlife Conservation Commission (FWC) for the conservation and protection of natural and historical resources and resource-based, public outdoor recreation. The area is managed to conserve the important natural communities on site that provide habitat for a wide range of imperiled and more common wildlife species.

The CLWEA is owned by the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees). The FWC holds the lease and has lead management authority for all resources within the established boundary. Original acquisition of the area was agreed upon by the FWC and Polk County for use as a gopher tortoise mitigation park in 2007.

1.1 Management Plan Purpose

This Management Plan serves as the basic statement of policy and direction for the management of the CLWEA. It provides information including the past usage, conservation acquisition history and descriptions of the natural and historical resources found on the CLWEA. 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 CLWEA's resource and operational 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 State of Florida through the Florida Department of Environmental Protection's Division of State Lands (DSL), in compliance with paragraph seven of Lease No. 4593 (Appendix 12.1) 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 12.5) 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.

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 12.2 and 12.3). 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 CLWEA Management Plan (Sections 5 – 7).

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 CLWEA. The LMR report (Section 5.1, Appendix 12.9) 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 CLWEA.

Furthermore, 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 ARC for review and consideration.

1.2 Location

The CLWEA consists of 1,147 acres and is located in Polk County (Figure 1 and 2), lying in Sections 28, 33 and 34, Township 31 South and Range 27 East (Figure 3). The CLWEA is located approximately 57 miles southwest of Orlando, 11 miles south of Lake Wales and 20 miles northwest of Sebring. Other municipalities near the CLWEA in Polk County include Frostproof, Avon Park and Fort Meade. The area is surrounded by privately and publicly

owned forested uplands and wetlands, herbaceous wetland, citrus groves and lands used for other agricultural practices.

1.3 Acquisition

1.3.1 Purpose for Acquisition of the Property

The CLWEA was acquired as the Dunham Ranch parcel within the Crooked Lake West Site of the Lake Wales Ridge Ecosystem Florida Forever Project as a Mitigation Park under the FWC Fish and Wildlife Habitat Acquisition Program in cooperation with Polk County. The purpose of this acquisition is for the FWC to manage habitat important for the protection of imperiled wildlife. The CLWEA contributes to the realization of goals for the FWC Gopher Tortoise Management Plan and assists with completion of the Lake Wales Ridge Ecosystem Florida Forever Project. Management goals primarily emphasize conservation of fish and wildlife resources under general guidance of the FWC agency strategic plan.

1.3.2 Acquisition History

The CLWEA was approved for acquisition on December 5, 2007 as a gopher tortoise mitigation park to be managed by the FWC. The FWC implemented the Mitigation Park Program in 1988 to provide land use regulatory programs with an alternative to on-site wildlife mitigation under Section 379.212, FS, which establishes the Fish and Wildlife Habitat Program for the purpose of acquiring, assisting other agencies or local governments in acquiring or managing lands important to the conservation of fish and wildlife. Under this authority, the FWC, or its designee, is responsible for managing these lands for the primary purpose of maintaining and enhancing their habitat value for fish and wildlife.

On February 18, 2008, the Polk County Board of County Commissioners (Polk County), the FWC and the DSL entered into a Multi-Party Acquisition Agreement. The agreement allowed the FWC and Polk County to cooperate in the acquisition and future management of the CLWEA. The Board of Trustees approved the purchase of the CLWEA, formerly known as Dunham Ranch, under the FWC Fish and Wildlife Habitat Program on March 11, 2008. Actual purchase was completed on June 27, 2008.

1.4 Management Authority

The FWC is the designated lead managing agency for the CLWEA under the authority granted by Lease Number 4593 from the Board of Trustees agent, 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, 597 and 870 of the Florida Statutes. 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 4593 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..." 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), FAC, which have been selected, developed or approved by lessor, lessee or other land managing agencies for the protection and enhancement of the leased premises."

1.6 Title Interest and Encumbrances

As State-owned lands, title to the CLWEA is vested in the Board of Trustees (Governor and Cabinet). In December 2008, the DSL, as staff to the Board of Trustees, entered into Lease Agreement Number 4593, a 50-year lease agreement, granting the FWC management authority for the CLWEA.

The boundary survey of the CLWEA lists 11 easements. Two easements, one being 0.82 acres in area, and another being 1.27 acres, are for ingress/egress. There is a drainage easement on 0.23 acres, and there are eight utility easements ranging in size from 0.01 to 0.23 acres. Each of these easements are described in the Official Record Book of Polk County as referenced on the boundary survey.

Additionally, on the CLWEA, there is an expired Citrus Grove Contract and two Housing Agreements. The Citrus Grove Management Contract covered a 54.4-acre citrus grove that succumbed to citrus greening. The contract was dissolved in June 2014, and the trees were subsequently removed. The Housing Agreements are with FWC employees for the CLWEA residences and the contract term is indefinite.

1.7 Proximity to Other Public Conservation Lands

The CLWEA is located in the vicinity of an extensive network of conservation lands, including lands managed by Polk County, the Florida Forest Service (FFS), the Nature Conservancy (TNC), the Department of Environmental Protection (DEP) and the FWC (Figure 4). Several Florida Forever Projects are also located in the vicinity of the area.

Tables 1 and 2 list the conservation lands and Florida Forever Projects within a 15-mile radius of the CLWEA, 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.

Table 1. Florida Forever Projects Within 15 Miles of the CLWEA

Florida Forever Projects	Remaining Acres
Arbuckle Creek Watershed	5,849
Bombing Range Ridge	31,862
Hardee Flatwoods	1,676
Lake Wales Ridge Ecosystem	22,097
Old Town Creek	1,266

Table 2. Conservation Lands Within 15 Miles of the CLWEA

Federal Government	Managing Agency
Avon Park Air Force Range	USDOD-AF
Everglades Headwaters National Wildlife Refuge and Conservation	USFWS
Idols Aside Conservation Easement	USFWS
Grassland Reserve Program Easement #104 and 106	USDOA-NRCS
Morgan Lake Wales Preserve Conservation Bank Conservation Easement	USFWS
Wetlands Reserve Program Easement #141, 155, 164, 207, 208, and 212	USDOA-NRCS

State of Florida	Managing Agency
Bowlegs Creek	DEP-DWRM
Camp Meeting Ground Branch Conservation Easement	DEP-DWRM
Charlie Creek Cattle Company Agricultural and Conservation Easement # 1 and 2	DACS-FFS
Clear Springs	DEP-DWRM
Crews Groves Conservation Easement	DEP-DSL
FPC Hines Conservation Easement	DEP-DWRM
Fussell Farms Old Town Creek Agricultural and Conservation Easement	DACS-FFS
Homeland	DEP-DWRM
Hookers Prairie Link Conservation Easement	DEP-DWRM
Lake Wales Ridge State Forest	DACS-FFS
Lake Wales Ridge Wildlife and Environmental Area	FWC

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Morgan Conservation Easement	DEP-DSL
Paynes Creek Historic State Park	DEP-DRP
Polk Lake	DEP-DWRM
South Fort Meade Hardee County Conservation Easement	DEP-DWRM
South Peace River	DEP-DWRM

Local Government	Managing Agency
Crooked Lake Prairie	Polk County
Crooked Lake Sandhill	Polk County
Crooked Lake West	Polk County
Crooked Lake West-Britt Tract	Polk County
Crooked Lake West-Stuart Tract	Polk County
FX Bar Ranch Conservation Easement	Polk County
Hickory Lake Scrub County Park	Polk County
IMC – Peace River Park	Polk County
Lake Wales Trailways	City of Lake Wales
Laurent/Peace River	Polk County
Peace River Hammock	Polk County
SUMICA	Polk County
Sun ‘n Lake Preserve	Highlands County

Private Organizations	Managing Agency
Bok Tower Gardens Knoll	Bok Tower Gardens Foundation, Inc.
Bok Tower Gardens Pine Ridge Preserve	Bok Tower Gardens Foundation, Inc.
Bok Tower Gardens Planted Pines	Bok Tower Gardens Foundation, Inc.
Bok Tower Gardens Preserve	Bok Tower Gardens Foundation, Inc.
Collany Wetland Mitigation Bank	Collany Mitigation, LLC
Hancock Commons Tract	TNC
Lake Buffum Wildlife Refuge	Green Horizon Land Trust
Saddle Blanket Scrub Preserve	TNC
Scrub Plum Preserve	Green Horizon Land Trust
Sun Ray Scrub	TNC
Tiger Creek Preserve	TNC
TNC/Dellock	TNC

Acronym Key	Agency Name
DACS-FFS	FL Department of Agricultural and Consumer Service-Florida Forest Service
DEP-DRP	FL Department of Environmental Protection-Division of Recreation and Parks
DEP-DSL	FL Department of Environmental Protection-Division of State Lands
DEP-DWRM	FL Department of Environmental Protection-Division of Water Resource Management
FWC	FL Fish and Wildlife Conservation Commission
TNC	The Nature Conservancy
USDOD-AF	U.S. Department of Defense- Air Force
USFWS	U.S. Fish and Wildlife Service
USDOA-NRCS	U.S. Department of Agriculture- Natural Resources Conservation Service

1.8 Adjacent Land Uses

The CLWEA is located in southern Polk County, west of the City of Frostproof. Over the last 50 years, the economy of this area has been based primarily on citrus, and to a lesser extent, cattle and fertilizer. The urban areas of Lakeland, Winter Haven and Lake Wales have been growing in the easterly and southerly directions, which will likely influence future development in the area.

The 2017 U.S. Census estimates that there are 661,645 people living in Polk County. The Department of Economic Affairs, Bureau of Economic and Business Research's (BEBR) medium-range population projection indicates that in the year 2025, there will be 824,900 people living in Polk County. The BEBR population projections for the counties surrounding Polk county for the year 2025 are as follows: Hardee County – 30,500; Highlands – 117,000; Hillsborough – 1,742,200; Lake County – 394,000; Manatee – 471,900; Okeechobee County – 42,600; Orange County – 1,551,400; Osceola – 495,500; and Pasco – 621,400.

The current zoning ordinance for the CLWEA is Agricultural/Residential-Rural. According to Polk County's comprehensive plan, this designation allows for 1 unit/5 acres. Polk county's future land use maps indicate that the CLWEA will continue to be designated and zoned as Agricultural/Residential-Rural.

Lands immediately adjacent to the CLWEA are classified as rural residential, agriculture, and developed.

The CLWEA is not within an area of critical state concern or presently under study for such a designation.

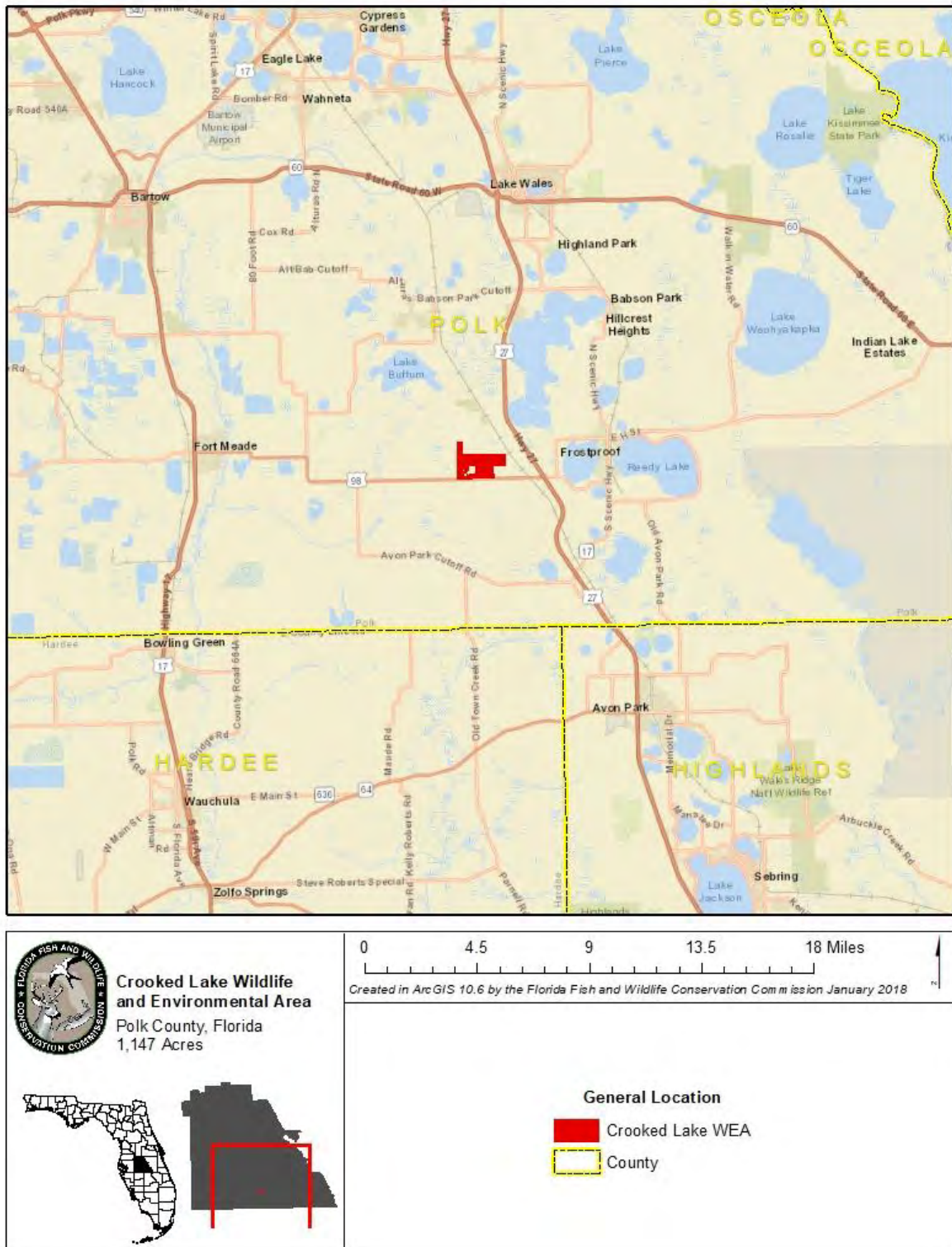


Figure 1. The CLWEA Location

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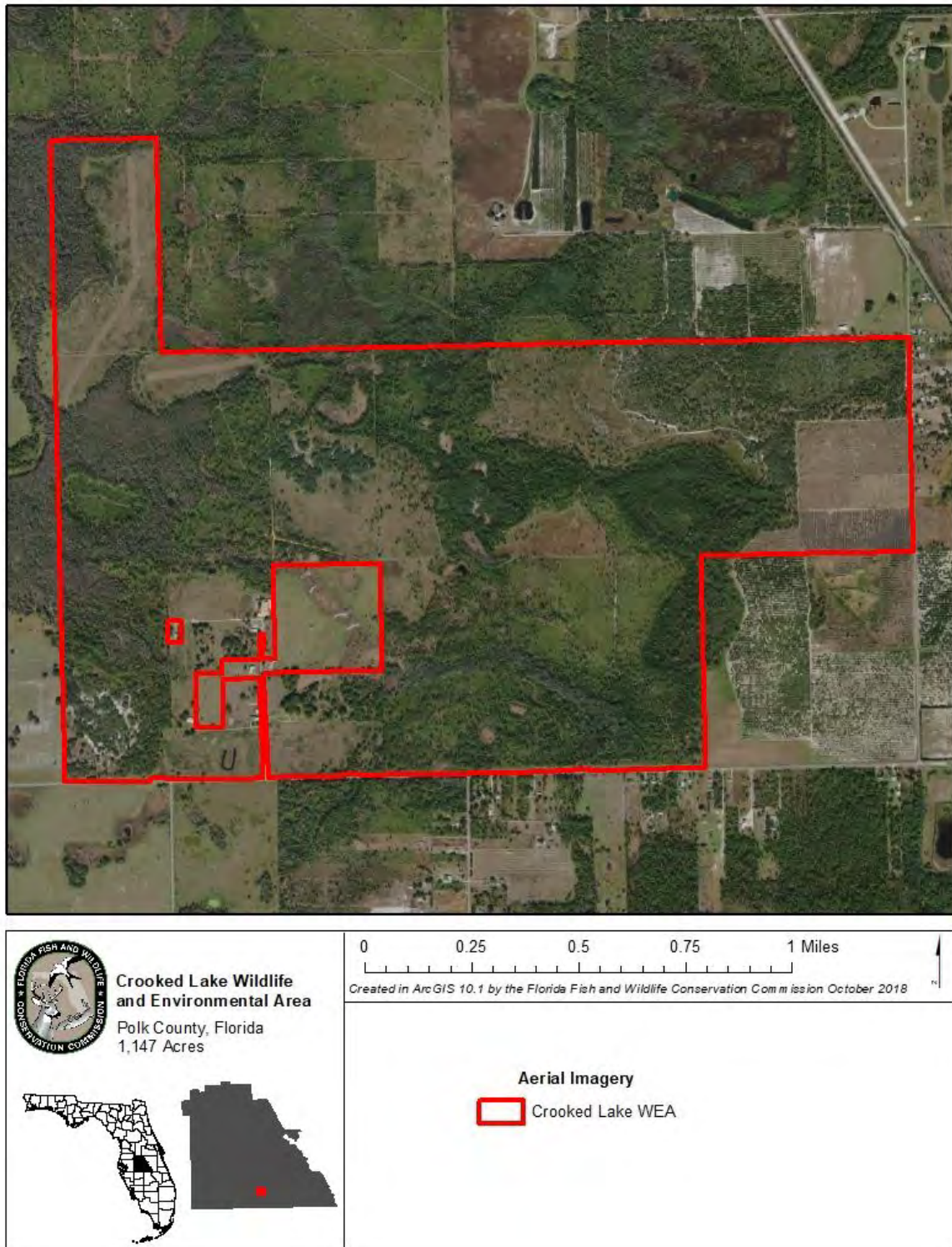


Figure 2. Aerial Imagery of the CLWEA

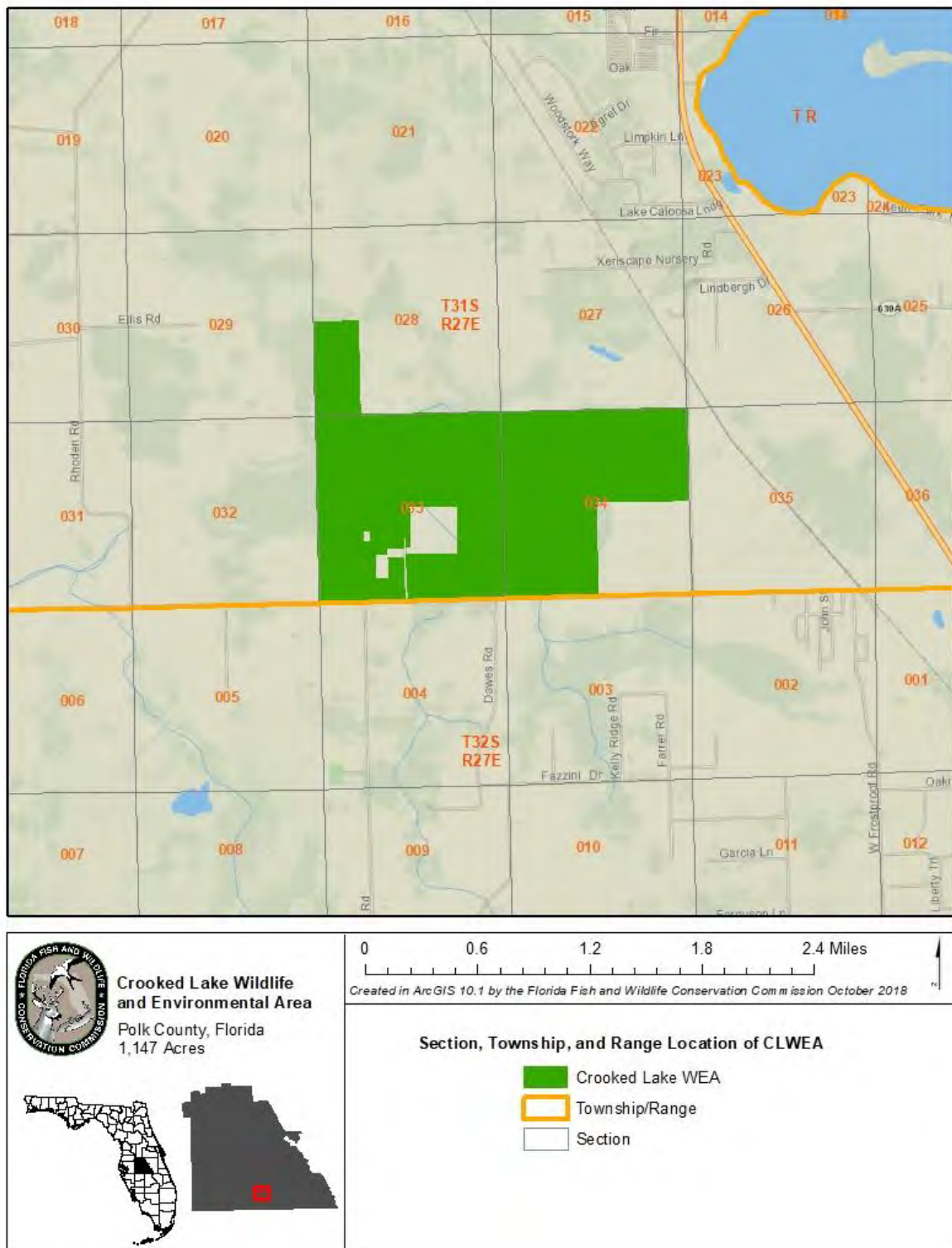


Figure 3. The CLWEA Proximity Map with Section, Township and Range

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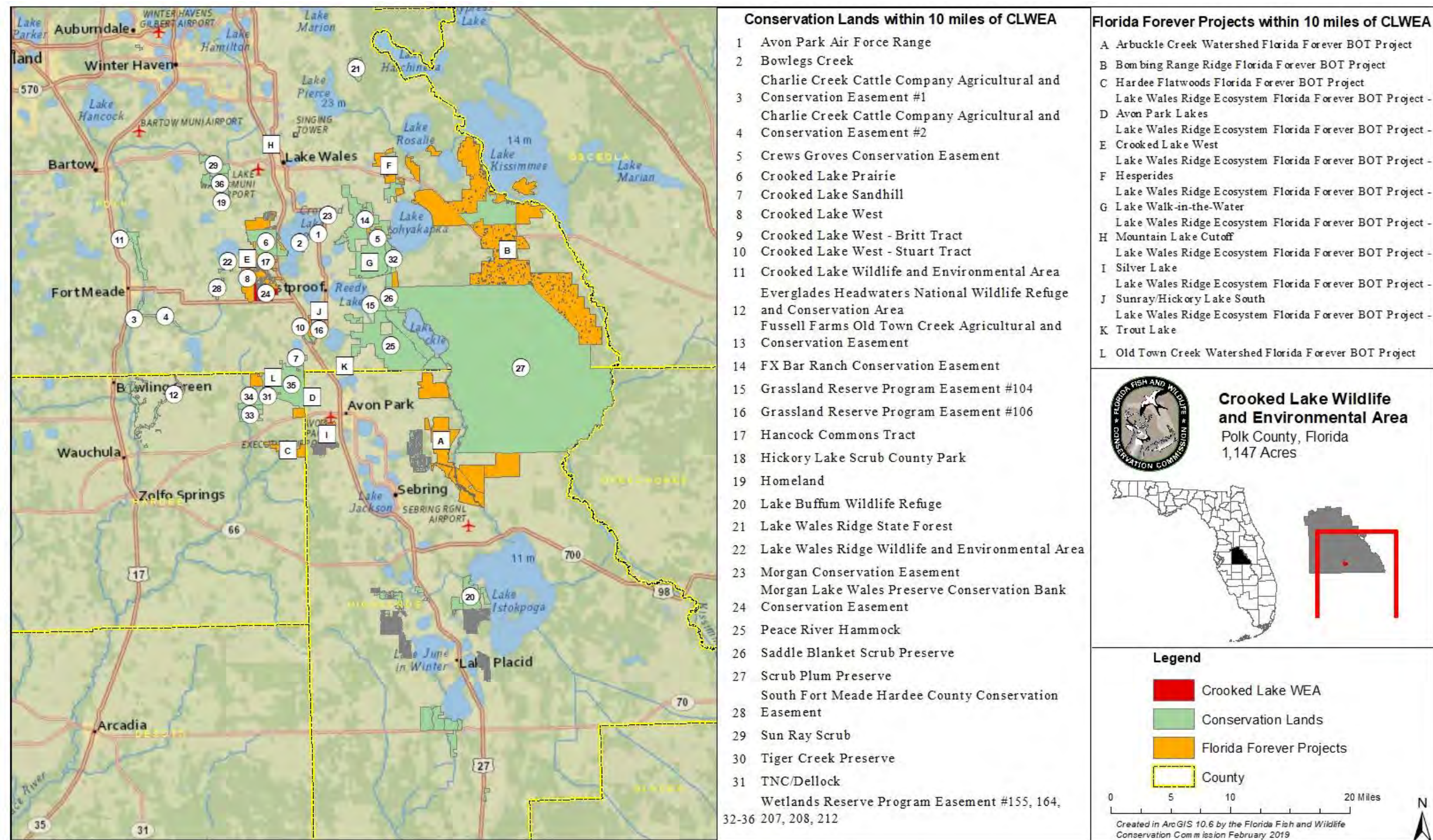


Figure 4. Conservation Land and Florida Forever Projects near the CLWEA

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1.9 Public Involvement

The FWC conducted a MAG meeting in Lakeland, Florida on January 9, 2019 to obtain input from both public and private stakeholders regarding management of the CLWEA. Results of this meeting were used by the 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 12.3. Further, a public hearing, as required by Chapter 259.032(10), FS, was held in Bartow, Florida on February 22, 2019, to solicit input and comment from the general public regarding this Management Plan. The report of that hearing is also contained in Appendix 12.3. A website is also maintained for receipt of public input at <http://myfwc.com/conservation/terrestrial/management-plans/develop-mps/>. Further testimony and input are received at a public hearing held by the ARC. Input received from all public involvement efforts has been considered in the development of this Management Plan.

2 Natural and Historical Resources

2.1 Physiography

Polk County, including the CLWEA, is part of the Central or Mid-peninsular zone of Florida. Within the Mid-peninsular zone, Polk County is located in the Central Highlands physiographic province, which consists of eight physiographic subprovinces. Among these is the Polk Uplands physiographic subprovince which includes the CLWEA. This subprovince occurs at an elevation ranging from 100' to 130' above National Geodetic Vertical Datum and lies west of the Lake Wales Ridge subprovince. These sandy ridges near the CLWEA, and the unique biota they support, were islands shaped by ancient sea level changes during the past million years.

2.1.1 Climate

The climate of Polk County, like most of Florida, is humid and subtropical. However, locally within Florida climate differs from one place to another as influenced by latitude, land and water distribution, prevailing winds, storms, pressure systems and ocean currents. Altitude may have important effects on susceptibility to frost and freezing during the winter.

The closest data station for which the U.S. Department of Commerce, National Oceanic and Atmospheric Administration indicates a climatic data baseline was located in Babson Park, approximately 7.7 miles from the CLWEA. Precipitation data gathered at this location only

occurred during the period from 1947-1993. A more complete data baseline for temperature and precipitation is available from the next closest station, in Avon Park approximately 11.5 miles away from the CLWEA in Highlands County. The average annual maximum temperature for the City of Avon Park during the period 1892 to 2007 was 83.9°F. The average minimum annual temperature for the same period was 62.0°F. During this period, January was the coldest month, with an average maximum temperature of 73.8°F and an average minimum temperature of 50.5°F.

Overall, Florida has an approximate statewide average of 54 inches of rainfall per year. Average total annual precipitation during the period 1892 to 2007 for Avon Park was 52.4 inches, during which period average total precipitation was highest during the month of June (8.6 inches) and lowest in November (1.8 inches). Average total annual precipitation during the period 1947 to 1992 for nearby Babson Park was 51.1 inches, during which period average total precipitation was highest during the month of July (8.0 inches) and lowest in December (1.9 inches). The wet season for Avon Park normally extends from June (8.6 inches) through September (7.1 inches) while the dry season normally extends from October (3.6 inches) through May (4.1 inches).

2.1.2 Topography

The land elevation of the CLWEA ranges from 135 to 165 feet above mean sea level (AMSL). Much of the CLWEA has a low, flat topography with a thin surface layer of poorly drained carbonate sands and silts overlying limestone. Better drained parts of the property are located near centers of some pasture areas, and in the northeastern part of the property, where depths to the water table are greatest. These better drained locations appear to be at elevations exceeding 140 feet AMSL although there also exists at such elevations localized, depressional wetlands. Most well-drained soils are at elevations exceeding 145 feet AMSL.



2.1.3 Soils

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) data were used to identify the CLWEA's soil series and soil depth to water table (Figures 5 and 6). The map units described in the soil survey of the CLWEA are distributed as shown in Figure 5. Analyses of depth to water table for map units occurring within the CLWEA are also provided in Figure 6. 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 5 provides aggregation data for CLWEA map units. Appendix 12.4 lists the names and official map unit descriptions of areas delineated on the detailed soil maps in a soil survey or by miscellaneous areas in the survey area as determined by NRCS. Analysis of depth to water table for map units occurring within the CLWEA are also provided in Appendix 12.4.

Soils found within the CLWEA are generally those associated with the area’s mix of natural communities and are thus poorly to very poorly drained sandy or organic soils. Smyrna and Myakka fine sands make up approximately 27% of the area, with Basinger fine sand up to about 17%, Pomona fine sand around 7% and Kaliga muck 6%. Along with various other less prominent sands including, Archbold sand, Candler sand, Duette sand, Satellite sand, Samsula muck and many others. The CLWEA does not contain beaches, dunes, or virgin timber.

2.1.4 Geologic Conditions

The Lake Wales Ridge Subprovince is a residual highland of coarse siliclastic and limestone, which has been acted upon by surface erosion and karst processes of karst limestone changes over time. The low, flat topography of the western part of the CLWEA consists of relatively poorly drained, organic-rich carbonate sands and silts overlying limestone. The eastern part of the CLWEA is characterized by higher elevation and greater depth to water table. On top of the Lake Wales Ridge is the Intraridge Valley, which includes lakes such as Crooked Lake, located 1.3 miles northeast of the CLWEA. The lakes of the Intraridge Valley are geologically similar, and probably originated through processes involving differential solution by the influence of beach ridges on ground water movement or by variable thicknesses of impermeable clay-rich fill overlying soluble limestone.

Figure 3 in Scott (2001) illustrates a cross section through four major geologic formations found in Polk County. These are, in order of decreasing age, the Ocala Limestone, the Suwannee Limestone, the Undifferentiated Hawthorn Group and the Cypresshead Formation. The Ocala Limestone is an Upper Eocene stratigraphic unit consisting of nearly pure limestones and occasional dolostones. The Suwannee Limestone consists of Oligocene limestone that is white to cream, poorly to well indurated, fossiliferous and vuggy to moldic limestone (grainstone and packstone). The Oligocene to Miocene aged Hawthorn Group contains the Arcadia Formation, the Nocatee Member of the Arcadia Formation, the Tampa Member of the Arcadia Formation and the Bone Valley Member of the Peace River Formation.

The Arcadia Formation contains predominantly fossiliferous limestones and dolostones with a variable amount of siliciclastics and phosphatic sands. The Nocatee Member of the Arcadia Formation consists predominantly of siliciclastics with variable amounts of dolostone and limestone and a minor amount of phosphatic sand. The Tampa Member of the Arcadia Formation contains predominantly limestone with minor amounts of dolostone, sand, and clay and a minor amount of phosphatic sand. The Peace River Formation contains interbedded sands, clays, dolostones and limestones. The clays of the Peace River Formation are often highly phosphatic and are therefore mined in this area. The Bone Valley Member of the Peace River Formation consists primarily of phosphate with variable amounts of sand, silt and clay. The Bone Valley Member of the Peace River Formation is the single largest deposit of phosphate in the United States and has been mined since the late 19th Century.

The most recent formation and most close to surface is the Cypresshead Formation, a Pliocene Series stratigraphic unit consisting of reddish brown to reddish orange, unconsolidated to poorly consolidated, fine to very coarse grained, clean to clayey sands. Cross-bedded sands are common within the formation, as are discoid quartzite pebbles and mica. Smaller clay bed areas are sometimes present. This formation, where exposed, occurs at elevations greater than 100 feet AMSL.

The major mineral resources of Polk County which have been, or potentially could be, economically important are as follows: phosphate, clay, sand, peat and fill [undifferentiated surface resources (dirt)]. Florida's largest mining export is phosphate, which supplies approximately 25% of the global demand, and 75% of the domestic (U.S.) demand for phosphate rock, primarily used in the manufacture of fertilizer products. Most of Florida's phosphate mines are located in southwestern Polk County and adjacent areas outside of Polk County, which lie west of the Lake Wales Ridge.

Mines located on the Lake Wales Ridge in the general vicinity of the CLWEA are clay and sand mines. Clay mined in this region of Florida is of various types serving various industrial uses including absorbent material (Fuller's earth), paper manufacture (kaolin), and manufacture of brick, cement and lightweight aggregate. Sand and associated gravel are mined for use in construction and various other industrial purposes.

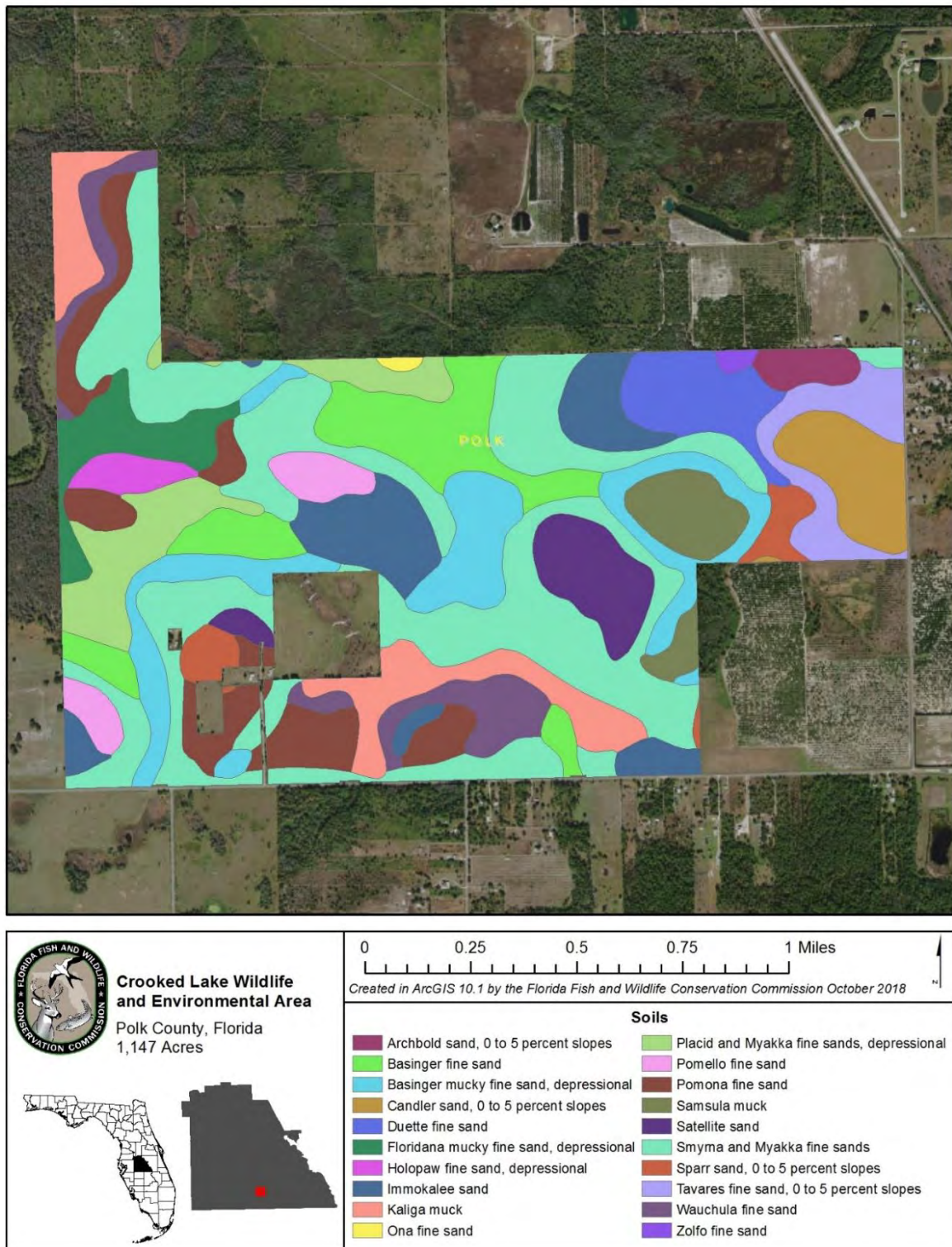


Figure 5. The CLWEA Soil Types

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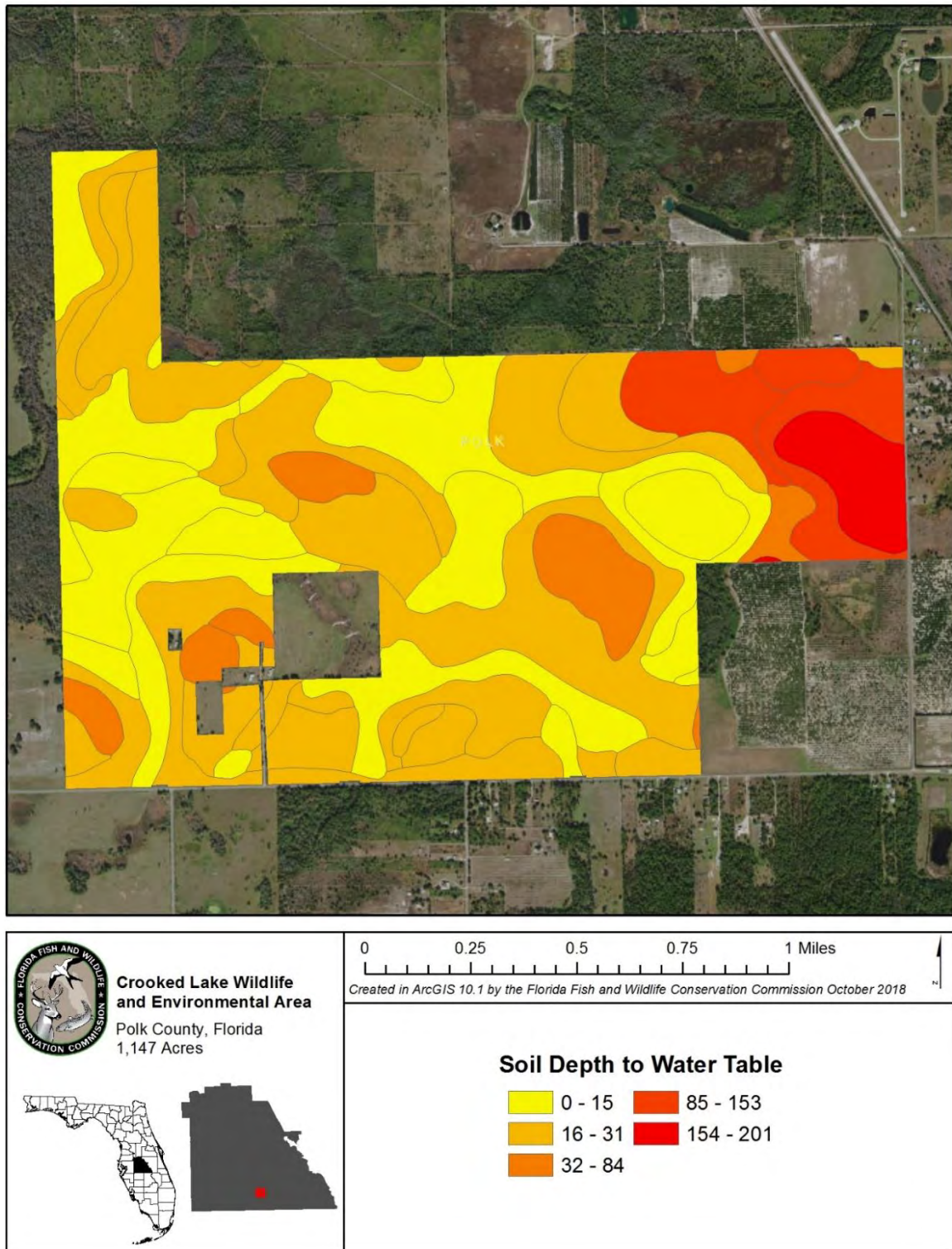


Figure 6. The CLWEA Soil Depth to Water Table (cm)

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2.2 Vegetation

Through the services of the Florida Natural Areas Inventory (FNAI), the FWC has mapped the current natural and anthropogenic communities of the CLWEA which describes 17 natural and anthropogenic community types existing on the CLWEA (Table 3, and Figure 7). Figure 8 also maps out the historic natural communities of the CLWEA, which depicts the composition of native plant communities on the area prior to substantial alteration of the region's hydrology and land for agricultural and development uses. Additionally, plant species found at the CLWEA have been recorded (Table 4), and there are 11 rare plants (Table 6) and 15 exotic and invasive plants (Table 5) within the CLWEA.



Table 3. Vegetative Communities Found at the CLWEA

Community Type	GIS Acres	Percentage
Agriculture	56.60	4.9%
Artificial pond	1.31	0.1%
Basin marsh	15.52	1.4%
Basin swamp	168.94	14.7%
Baygall	101.23	8.8%
Depression marsh	14.36	1.3%
Developed	6.58	0.6%
Dome swamp	0.39	<0.1%
Mesic flatwoods	117.68	10.3%
Pasture – improved	270.76	23.6%
Pasture – semi-improved	82.16	7.2%
Road	39.06	3.4%
Sandhill	5.29	0.5%
Scrub	18.99	1.7%
Scrubby flatwoods	64.95	5.7%
Successional hardwood forest	20.50	1.8%
Wet flatwoods	162.54	14%

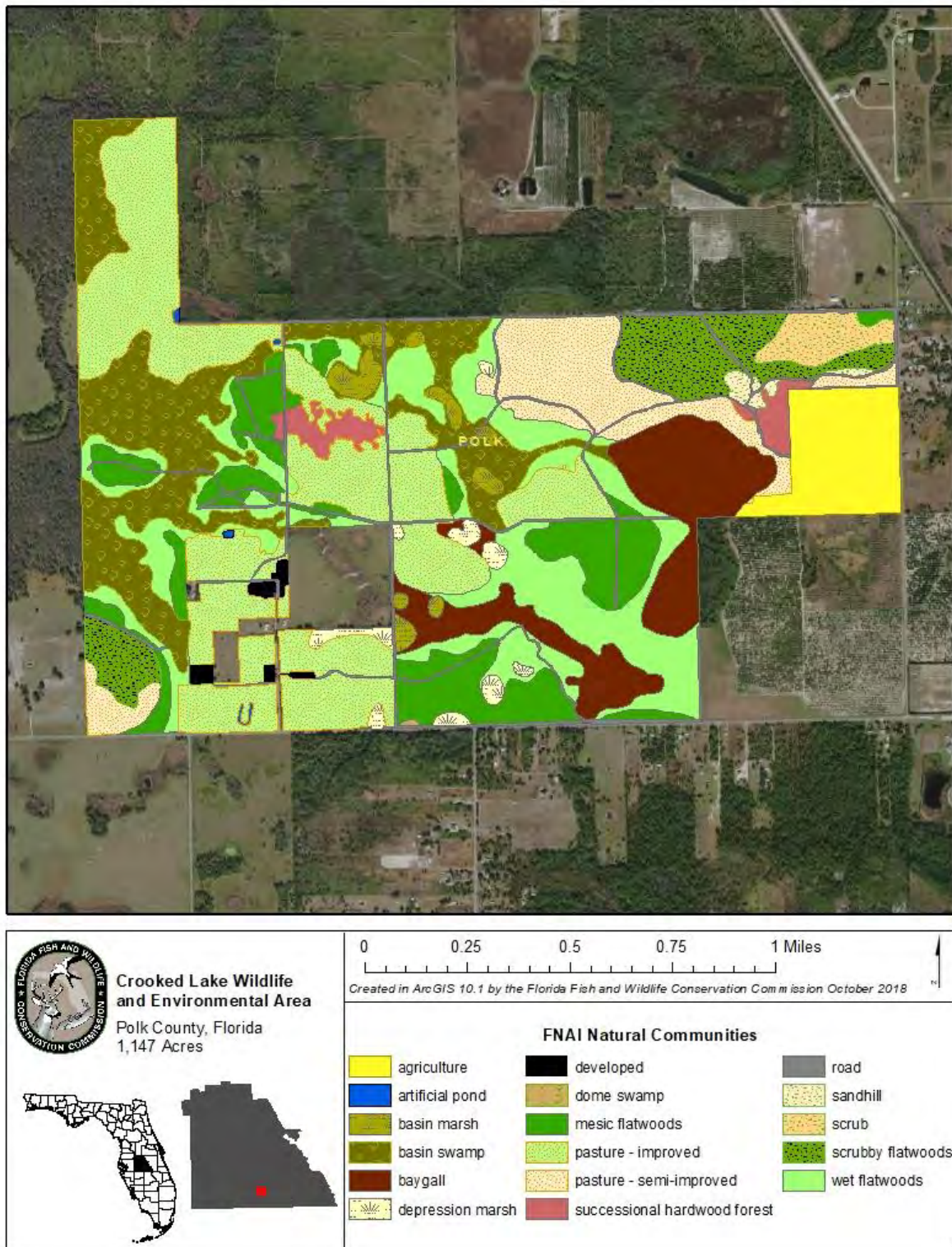


Figure 7. The FNAI Natural Communities Map for the CLWEA

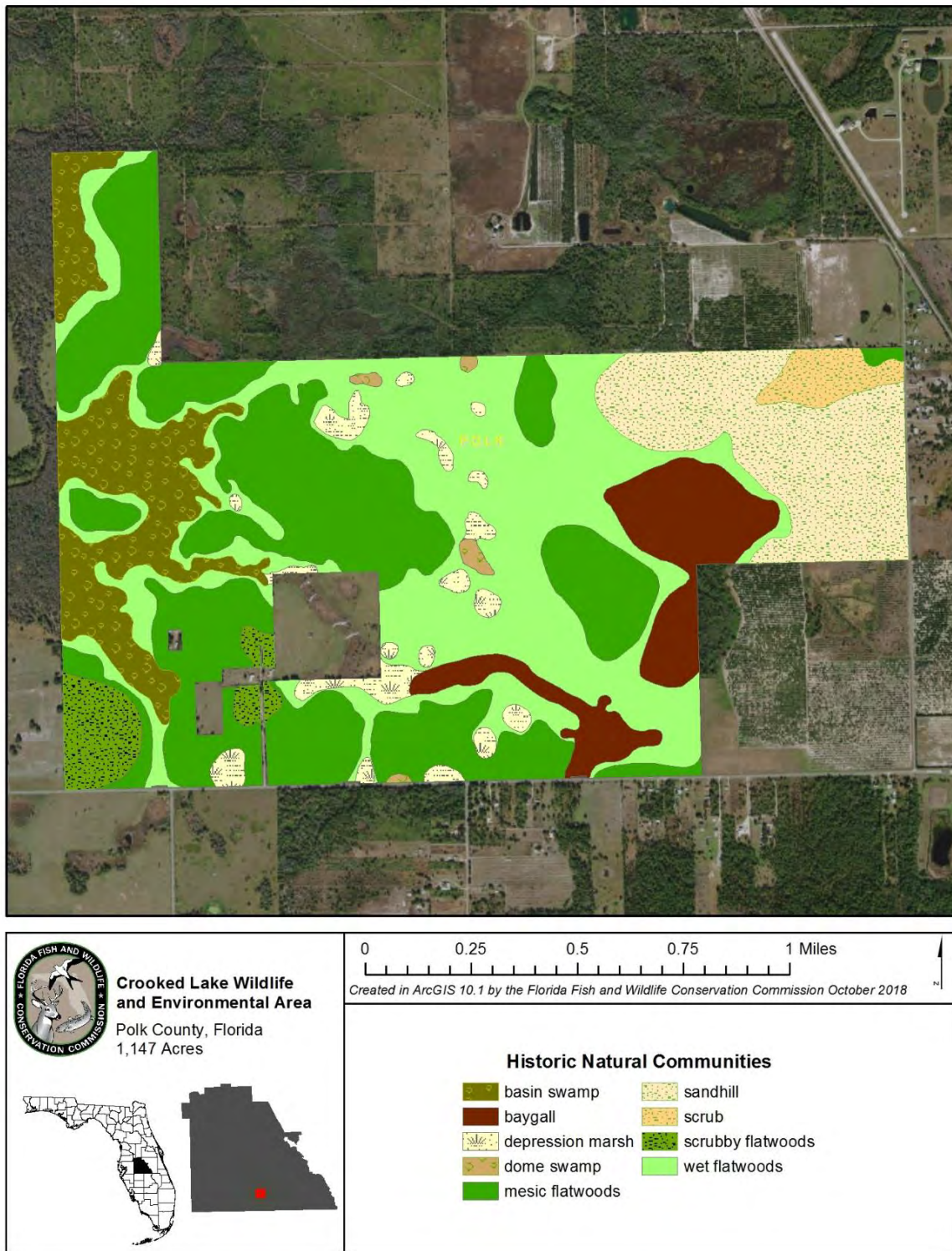


Figure 8. The FNAI Historic Natural Communities for the CLWEA

Table 4. Plant Species Observed at the CLWEA

Common Name	Scientific Name
Adam's needle	<i>Yucca filamentosa</i>
Airplant	<i>Tillandsia sp.</i>
American beautyberry	<i>Callicarpa americana</i>
American pokeweed	<i>Phytolacca americana</i>
Arrowfeather threeawn	<i>Aristida purpurascens</i>
Atlantic St. John's wort	<i>Hypericum tenuifolium</i>
Bahiagrass	<i>Paspalum notatum</i>
Baldwin's spikerush	<i>Eleocharis baldwinii</i>
Ballmoss	<i>Tillandsia recurvata</i>
Beaked panicum	<i>Panicum anceps</i>
Beaksedge	<i>Rhynchospora sp.</i>
Big carpetgrass	<i>Axonopus furcatus</i>
Bigflower pawpaw	<i>Asimina obovata</i>
Blackberry	<i>Rubus sp.</i>
Blackroot	<i>Pterocaulon pycnostachyum</i>
Bladderwort	<i>Utricularia sp.</i>
Blue huckleberry	<i>Gaylussacia frondosa var. tomentosa</i>
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>
Bluestem	<i>Andropogon sp.</i>
Bogbutton	<i>Lachnocaulon sp.</i>
Bottlebrush threeawn	<i>Aristida spiciformis</i>
Bracken fern	<i>Pteridium sp.</i>
Broomsedge bluestem	<i>Andropogon virginicus</i>
Bulltongue arrowhead	<i>Sagittaria lancifolia</i>
Bushy bluestem	<i>Andropogon glomeratus</i>
Camphorweed	<i>Pluchea sp.</i>
Canadian horseweed	<i>Conyza canadensis</i>
Canadian toadflax	<i>Linaria canadensis</i>
Candyroot	<i>Polygala nana</i>
Capillary hairsedge	<i>Bulbostylis ciliatifolia</i>
Carolina laurelcherry	<i>Prunus caroliniana</i>
Carolina redroot	<i>Lachnanthes caroliniana</i>
Carolina yellow-eyed grass	<i>Xyris caroliniana</i>
Carpetgrass	<i>Axonopus sp.</i>
Cat greenbrier	<i>Smilax glauca</i>
Centipede grass	<i>Eremochloa ophiuroides</i>
Chalky bluestem	<i>Andropogon virginicus var. glaucus</i>

Chamber bitter
Chapman's oak
Clustered mille graines
Coastal lovegrass
Coastalplain chaffhead
Coastalplain dawnflower
Coastalplain honeycomb-head
Coastalplain milkwort
Coastalplain staggerbush
Common blue violet
Common buttonbush
Common ragweed
Coral greenbrier
Crabgrass
Creeping primrosewillow
Crimson bluestem
Crowngrass
Dahoon
Dogfennel
Downy milkpea
Dwarf huckleberry
Dwarf live oak
Dwarf sundew
Earleaf greenbrier
Early blue violet
Early whitetop fleabane
Eastern milkpea
Eastern poison ivy
Elderberry
Elliott's milkpea
Elliott's yellow-eyed grass
Erectleaf witchgrass
False rosemary
Fascicled beaksedge
Feay's palafox
Fetterbush
Fewflower gayfeather
Flatsedge
Floatingheart
Florida alicia

Phyllanthus urinaria
Quercus chapmanii
Oldenlandia uniflora
Eragrostis virginica
Carphephorus corymbosus
Stylisma patens
Balduina angustifolia
Polygala setacea
Lyonia fruticosa
Viola sororia
Cephalanthus occidentalis
Ambrosia artemisiifolia
Smilax walteri
Digitaria sp.
Ludwigia repens
Schizachyrium sanguineum
Paspalum sp.
Ilex cassine
Eupatorium capillifolium
Galactia volubilis
Gaylussacia dumosa
Quercus minima
Drosera brevifolia
Smilax auriculata
Viola palmata
Erigeron vernus
Galactia regularis
Toxicodendron radicans
Sambucus nigra ssp. canadensis
Galactia elliottii
Xyris elliottii
Dichanthelium erectifolium
Conradina canescens
Rhynchospora fascicularis
Palafoxia feayi
Lyonia lucida
Liatris pauciflora
Cyperus sp.
Nymphoides sp.
Chapmannia floridana

Florida bluestem
 Florida greeneyes
 Fourleaf vetch
 Fourpetal St. John's wort
 Fringed yellow stargrass
 Frostweed
 Gallberry
 Golden-aster
 Goldenrod
 Gopher apple
 Greenbrier
 Groundnut
 Groundsel tree
 Hairy indigo
 Highbush blueberry
 Hoary-pea
 Hottentot fern
 Humped bladderwort
 Indian cupscale
 Jester lichen
 Knotweed
 Laurel greenbrier
 Lesser florida spurge
 Licoriceweed
 Little bluestem
 Live oak
 Lizard's tail
 Loblolly bay
 Longhorn false rein orchid
 Longleaf pine
 Lopsided Indiangrass
 Lovegrass
 Maidencane
 Manyflower marshpennywort
 Marshpennywort
 Mazus
 Meadowbeauty
 Mexican clover
 Milkwort
 Moistbank pimpernel

Andropogon floridanus
Berlandiera subacaulis
Vicia acutifolia
Hypericum tetrapetalum
Hypoxis juncea
Helianthemum sp.
Ilex glabra
Chrysopsis sp.
Solidago sp.
Geobalanus oblongifolius
Smilax sp.
Apios sp.
Baccharis halimifolia
Indigofera hirsuta
Vaccinium corymbosum
Tephrosia sp.
Thelypteris interrupta
Utricularia gibba
Sacciolepis indica
Cladonia leporina
Polygonum sp.
Smilax laurifolia
Euphorbia polyphylla
Scoparia dulcis
Schizachyrium scoparium
Quercus virginiana
Saururus cernuus
Gordonia lasianthus
Habenaria quinqueseta
Pinus palustris
Sorghastrum secundum
Eragrostis sp.
Panicum hemitomom
Hydrocotyle umbellata
Hydrocotyle sp.
Mazus sp.
Rhexia sp.
Richardia sp.
Polygala sp.
Lindernia dubia

Muscadine
Myrtle oak
Myrtleleaf St. John's wort
Nakedstem dewflower
Narrowleaf silkgrass
Narrowleaf sunflower
Netted chain fern
Netted nutrush
Netted pawpaw
Nutrush
Nuttall's meadowbeauty
Oak
October flower
Pale meadowbeauty
Panic grass
Partridge pea
Peelbark St. John's wort
Pickerelweed
Pinebarren flatsedge
Pinebarren frostweed
Pinebarren goldenrod
Pineland daisy
Pineland pinweed
Pinewoods milkweed
Pinweed
Pond cypress
Possumhaw
Pricklypear
Primrosewillow
Purple bluestem
Purple thistle
Queen-devil
Queen's delight
Rabbitbells
Red chokeberry
Red maple
Rice button aster
Rosy camphorweed
Rough hedgehyssop
Roundleaf bluet

Vitis rotundifolia
Quercus myrtifolia
Hypericum myrtifolium
Murdannia nudiflora
Pityopsis graminifolia
Helianthus angustifolius
Woodwardia areolata
Scleria reticularis
Asimina reticulata
Scleria sp.
Rhexia nuttallii
Quercus sp.
Polygonum polygamum
Rhexia mariana
Panicum sp.
Chamaecrista fasciculata
Hypericum fasciculatum
Pontederia cordata
Cyperus retrorsus
Helianthemum corymbosum
Solidago fistulosa
Chaptalia tomentosa
Lechea sessiliflora
Asclepias humistrata
Lechea sp.
Taxodium ascendens
Viburnum nudum
Opuntia humifusa
Ludwigia sp.
Andropogon glomeratus var. glaucopsis
Cirsium horridulum
Hieracium gronovii
Stillingia sylvatica
Crotalaria rotundifolia
Aronia arbutifolia
Acer rubrum
Symphotrichum dumosum
Pluchea baccharis
Gratiola hispida
Houstonia procumbens

Roundleaf thoroughwort
 Roundpod St. John's wort
 Rustweed
 Rusty staggerbush
 Saltmarsh fingergrass
 Sand blackberry
 Sand cordgrass
 Sand live oak
 Sand pine
 Sandyfield beaksedge
 Savannah yellow-eyed grass
 Saw palmetto
 Sawtooth blackberry
 Scrub oak
 Scrub palmetto
 Sedge
 Sensitive plant
 Sesban
 Shaggy hedgehyssop
 Shiny blueberry
 Shortleaf gayfeather
 Shortspike bluestem
 Skullcap
 Skyblue lupine
 Slash pine
 Slender flattop goldenrod
 Small venus's looking-glass
 Smallfruit beggarticks
 Soft rush
 Sour orange
 South florida slash pine
 Southern dewberry
 Southern needleleaf
 Spadeleaf
 Spanish moss
 Spikerush
 Splitbeard bluestem
 St. John's wort
 Starry rosinweed
 Sugarcane plumegrass

Eupatorium rotundifolium
Hypericum cistifolium
Polypremum procumbens
Lyonia ferruginea
Eustachys glauca
Rubus cuneifolius
Spartina bakeri
Quercus geminata
Pinus clausa
Rhynchospora megalocarpa
Xyris flabelliformis
Serenoa repens
Rubus pensilvanicus
Quercus inopina
Sabal etonia
Carex sp.
Mimosa sp.
Sesbania sp.
Gratiola pilosa
Vaccinium myrsinites
Liatris tenuifolia
Andropogon brachystachyus
Scutellaria sp.
Lupinus diffusus
Pinus elliotii
Euthamia caroliniana
Triodanis biflora
Bidens mitis
Juncus effusus ssp. solutus
Citrus x aurantium
Pinus elliotii var. densa
Rubus trivialis
Tillandsia setacea
Centella asiatica
Tillandsia usneoides
Eleocharis sp.
Andropogon ternarius
Hypericum sp.
Silphium asteriscus
Saccharum giganteum

Swamp bay	<i>Persea palustris</i>
Swamp laurel oak	<i>Quercus laurifolia</i>
Swamp tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>
Sweetbay	<i>Magnolia virginiana</i>
Tall elephantsfoot	<i>Elephantopus elatus</i>
Tarflower	<i>Bejaria racemosa</i>
Tenangle pipewort	<i>Eriocaulon decangulare</i>
Thistle	<i>Cirsium</i> sp.
Thoroughwort	<i>Eupatorium</i> sp.
Threadleaf arrowhead	<i>Sagittaria filiformis</i>
Threeawn	<i>Aristida</i> sp.
Threeflower tick-trefoil	<i>Desmodium triflorum</i>
Tick-trefoil	<i>Desmodium</i> sp.
Toothed midsorus fern	<i>Blechnum serrulatum</i>
Tropical carpetgrass	<i>Axonopus compressus</i>
Turkey oak	<i>Quercus laevis</i>
Vanillaleaf	<i>Carphephorus odoratissimus</i>
Violet	<i>Viola</i> sp.
Virginia chain fern	<i>Woodwardia virginica</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Virginia willow	<i>Itea virginica</i>
Viviparous spikerush	<i>Eleocharis vivipara</i>
Wand goldenrod	<i>Solidago stricta</i>
Ware's hairsedge	<i>Bulbostylis warei</i>
Warty panicgrass	<i>Panicum verrucosum</i>
Water oak	<i>Quercus nigra</i>
Wax myrtle	<i>Morella cerifera</i>
White twinevine	<i>Funastrum clausum</i>
White waterlily	<i>Nymphaea odorata</i>
Whitehead bogbutton	<i>Lachnocaulon anceps</i>
Winged sumac	<i>Rhus copallinum</i>
Wiregrass	<i>Aristida stricta</i> var. <i>beyrichiana</i>
Witchgrass	<i>Dichanthelium</i> sp.
Woodsorrel	<i>Oxalis</i> sp.
Yellow hatpins	<i>Syngonanthus flavidulus</i>

Yellow jessamine	<i>Gelsemium sempervirens</i>
Yellow pondlily	<i>Nuphar advena</i>
Yellow-eyed grass	<i>Xyris sp.</i>
Zarabacoa comun	<i>Desmodium incanum</i>
Zigzag bladderwort	<i>Utricularia subulata</i>

Table 5. Invasive and Exotic Plant Species Observed at the CLWEA

Common Name	Scientific Name	FLEPPC Category
Alligator weed	<i>Alternanthera philoxeroides</i>	II
Brazilian pepper	<i>Schinus terebinthifolius</i>	I
Caesarweed	<i>Urena lobata</i>	I
Camphortree	<i>Cinnamomum camphora</i>	I
Chinaberry	<i>Melia azedarach</i>	II
Cogongrass	<i>Imperata cylindrica</i>	I
Guineagrass	<i>Panicum maximum</i>	II
Japanese climbing fern	<i>Lygodium japonicum</i>	I
Lantana, shrub verbena	<i>Lantana camara</i>	I
Old world climbing fern	<i>Lygodium microphyllum</i>	I
Paragrass	<i>Urochloa mutica</i>	I
Peruvian primrosewillow	<i>Ludwigia peruviana</i>	I
Rosary pea; blackeyed susan	<i>Abrus precatorius</i>	I
Sword fern	<i>Nephrolepis cordifolia</i>	I
Tropical soda apple	<i>Solanum viarum</i>	I
Water spangles	<i>Salvinia minima</i>	I

2.2.1 FNAI Natural Community Descriptions

Basin Marsh (~15.52 acres)

Basin marsh is an herb-dominated community that occurs in large, often irregularly shaped depressions. Basin marshes are regularly inundated freshwater herbaceous wetlands that may occur in a variety of situations, but in contrast to depression marshes, are not small or shallow inclusions within a fire-maintained natural community. Plant species composition is heterogenous, both within and between marshes, but can generally be divided into submersed, floating-leaved, emergent, and grassy zones from deepest to shallowest portions; shrub patches may be present within any of these zones. Basin marsh on the CLWEA is typically surrounded by basin swamp in several small patches throughout the center portion of the property.

Basin Swamp (~168.9 acres)

Basin swamps are forested wetlands of primarily deciduous trees occurring in large depressions or as inclusions in non-pyrogenic habitats such as a bottomland forest. These communities usually contain standing water for a significant portion of the year, and therefore are dominated by hydrophytic trees and shrubs capable of withstanding extended hydroperiods. While basin swamps at the CLWEA historically graded to wet flatwoods, northern sections of this community now directly adjoin improved pasture.

The canopy of this community is often closed and formed by mature trees. As with most basin swamps, pond cypress is the dominant canopy tree. Associated canopy species include red maple, sweetbay, swamp tupelo, South Florida slash pine and swamp laurel oak. These same species also occur in the subcanopy. Shrub cover is variable throughout this community and typical species are common buttonbush, dahoon holly, Virginia willow, fetterbush, sweetbay, wax myrtles, and highbush blueberry. Herbaceous cover is proportional to canopy density and common ground cover species include chalky bluestem, toothed midsorus fern, cinnamon fern, beaked panicum, pickerelweed, lizard's tail, hottentot fern, netted chain fern and Virginia chain fern. Prolonged moisture and high humidity favors an abundance of epiphytes such as ballmoss, southern needleleaf and Spanish moss. Vines are not common within the basin swamp but increase in frequency along the more open ecotones. Recorded species include white twinevine, laurel greenbrier, eastern poison ivy and muscadine. Exotic and invasive plant species observed within basin swamps include Peruvian primrose willow, Japanese climbing fern, sword fern, water spangles and tropical soda apple.

This community occurs in the western half of the property and forms large, irregular shaped swamps that continue off-site to the west. The size and internal character of these habitats differentiate basin swamp from dome swamp. Dome swamps are typically rounder and more affected by fire; in some instances, dome swamp communities can burn completely through.

Baygall (~101.23 acres)

Baygalls are generally characterized as densely forested, peat-filled seepage depressions that often form at the base of sandy slopes. The canopy is composed of tall, densely packed, generally straight-growing evergreen hardwoods, dominated by sweetbay, swamp bay and loblolly bay. A more or less open understory of shrubs and ferns commonly occurs, while sphagnum mats are often interlaced with convoluted tree roots.

At the CLWEA this community occurs in areas that contain standing water and prohibit the development of wet flatwoods or wet prairie by reducing fire frequencies. The baygall community also lines some of the more interior portions of seepage drains found throughout

the property, often occurring with swamp and small stream channels. The canopy of this community is often closed and well-formed and contains a predominance of sweetbay. Red maple, South Florida slash pine and pond cypress are also found in the canopy stratum. Sweetbay also commonly occurs in the sub canopy with loblolly bay, dahoon holly, fetterbush, sweetbay, wax myrtle, swamp bay, sawtooth blackberry and possumhaw. Herbaceous species, by contrast, are characteristically sparse. Common herbaceous species associated with baygall community at the CLWEA include cinnamon fern, royal fern, lizard's tail, sphagnum moss, hottentot fern, netted chain fern and Virginia chain fern. Epiphytes are not common but southern needleleaf and Spanish moss are occasionally seen. Vines are sometimes common and include laurel greenbrier and muscadine. Exotic and invasive plants occur at a single observed location and are old world climbing fern and Caesar's weed.

Depression Marsh (~14.36 acres)

Depression marshes are typically small wetlands that are round in shape and are dominated by herbaceous species. These marshes often dry out during periods of low rainfall, and as a result, burn more frequently and more completely than basin marshes. The substrate is usually sand with deepening peat toward the center. Because water depth in depression marshes usually increases toward the center, vegetation typically forms distinctive zones corresponding to water depth and permanence. This community occurs in fire-maintained matrix communities such as flatwoods, upland pine or sandhill. Depression marshes at the CLWEA exist primarily within a wet flatwoods matrix.

Canopy trees are present in several depression marshes and are represented by swamp tupelo, South Florida slash pine and cypress. Shrubs are not uncommon although species diversity is limited to peelbark St. John's wort, dahoon holly, wax myrtle, swamp tupelo and South Florida slash pine. Herbaceous plants account for the greatest percentage of cover and include blue maidencane, shortspike bluestem, soft rush, yellow pondlily, white waterlily, beaked panicum, maidencane, pickerelweed and Virginia chain fern.

This community is only found in the central portion of the property and often forms deep, open water areas with floating aquatic bed species. Depression marshes in the north-central sections of the property are often weakly connected hydrologically and form linked drainage through the wet flatwoods matrix.

Dome swamp (~0.39 acres)

Dome swamp is an isolated forested wetland community occurring in shallow basins within a fire-maintained community. Fire occurs occasionally along the periphery, spreading from the surrounding uplands but is infrequent in the deeper portions of the swamp due to

decreased fuels and wetter conditions. Trees in the center are generally taller than those on the edges, giving the stand its characteristic dome-shaped profile.

Pond cypress is the primary canopy tree species but sweetbay and South Florida slash pine are also present. Shrub densities are variable and typical species are fetterbush, dahoon holly, wax myrtle, pond cypress and highbush blueberry. Herbs occurring within dome swamp include smallfruit beggarticks, soft rush, maidencane, pickerelweed, threadleaf arrowhead and Virginia chain fern. Conditions are favorable for epiphytes and observed species include ballmoss, airplant and Spanish moss. Vines are limited to laurel greenbrier.

Mesic Flatwoods (~117.68 acres)

Mesic flatwoods are open, pine canopy forests with a diverse understory of shrubs and herbs occurring on low, flat terrain. Fire is an important factor in maintaining high plant diversity and naturally occurs during the later spring/early summer lightning season.

Canopy trees in this community include red maple, sand pine, South Florida slash pine, longleaf pine, sand live oak and swamp laurel oak. South Florida slash pine is often the



dominant canopy associate and occurs in sparse densities. Co-dominants in the subcanopy are red maple, swamp bay, South Florida slash pine, swamp laurel oak and water oak. The dominant shrub species observed at the CLWEA include Atlanta St. John's wort, fourpetal St. John's wort, gallberry, coastalplain staggerbush, fetterbush, wax myrtle, dwarf live oak, winged sumac, saw palmetto and shiny blueberry. Herbaceous cover is low in relation to shrub densities although common herbs include bottlebrush threeawn, wiregrass, coastalplain chaffhead, witchgrass, tall elephantsfoot, slender flattop goldenrod, bracken fern, blackroot, little bluestem and the rare cutthroat grass. The only epiphyte present is Spanish moss, and this occurs infrequently. Vines are a small component of this community but include yellow jessamine and muscadine. Exotic and invasive plants in mesic flatwoods include cogongrass, tropical soda apple and Caesar's weed.

Sandhill (~5.29 acres)

Sandhill is characterized by a canopy of widely spaced pine trees with a sparse midstory of deciduous oaks, and a moderate to dense groundcover of grasses, herbs and low shrubs occurring over a rolling topography composed of deep sands.

At the CLWEA, sandhill only occurs in the extreme northeastern section of the property. This community still contains intact groundcover but fire suppression is evident in the dense shrub layer. This community also blends into scrub and/or scrubby flatwoods along its perimeter. The advancement of the shrub component often makes the distinction between sandhill and scrub difficult. Some areas of historic sandhill community have been converted to semi-improved pasture with pasture grass establishment and clearing disturbances. These areas still contain some rare and exceptional species including, but not limited to, gopher tortoise and Britton's beargrass. Activities creating soils disturbance in these areas should be carefully assessed.

The sandhill canopy of the CLWEA is often dense to moderately dense and includes sand pine, South Florida slash pine and sand live oak. This community lacks a distinct subcanopy although many small trees and tall shrubs fill this general stratum. The diverse, yet often dense shrub layer includes coastalplain staggerbush, fetterbush, sand pine, Chapman's oak, sand live oak, turkey oak, the rare garberia, scrub palmetto, saw palmetto and Adam's needle. Within the herbaceous layer, wiregrass associates include Florida greeneyes, coastalplain chaffhead, starry rosinweed, and lopsided indiagrass. Epiphytes are common and are represented by ballmoss and Spanish moss. Exotic and invasive plant species observed in sandhill are rosary pea, cogongrass and Guinea grass. Fire suppression and woody encroachment are common in this community. Multiple fire applications are needed to reduce the fuel loads and open the shrub layer. This will provide more light penetration to the forest floor and to associated groundcover species.

Scrub (~18.99 acres)

Scrub occurs in many forms but is often characterized by thickets of scrub oaks and other shrubs occurring on xeric, sandy soils with numerous open patches of bare sand. The ground cover is generally very sparse and is typically dominated by ground lichens, or rarely, herbaceous species.

At the CLWEA, scrub is limited to one area in the extreme northeast portion of the property. In this community, the canopy is often denser than ideal conditions due to fire exclusion. The canopy includes sand pine and sand live oak. These same species also occur as shrubs, together with Chapman's oak, scrub oak, scrub palmetto and saw palmetto. Epiphytes are abundant and include ballmoss and Spanish moss. Vines are infrequent in this community but include earleaf greenbrier. Invasive cogongrass is an infrequently

documented component of this scrub community commonly found adjacent to the property boundary. Woody vegetation in this community is dense due to a lack of prescribed fire in years past. Herbaceous vegetation is generally absent. The perimeter of this site contains a wide firebreak that has disturbed much of this community. Slash from clearing activities has been pushed into this community and will either smother species in the groundcover layer or, when fire is applied to this community, the slash piles will burn hot enough to sterilize the soil. This scrub community grades into sandhill to the west and south. The use of mechanical treatments in this community should be carefully evaluated to minimize soil disturbance.

Scrubby flatwoods (~64.95 acres)

Scrubby flatwoods is a community characterized as having an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of bare white sand.

This community of the CLWEA occurs in the extreme southwestern portion of the property and as an included ecotone of the sandhill community where sandhill meets mesic flatwoods. Much of this community has been disturbed in the past by cattle, clearing, and pasture grass seeding. Areas of this community that contain sufficient levels of disturbance have been classified as semi-improved pasture.

The canopy layer at the CLWEA is highly variable in density and height and includes sand pine, longleaf pine, sand live oak and live oak. The shrub layer is dominated by coastal plain staggerbush, Chapman's oak, sand live oak, scrub oak, scrub palmetto and saw palmetto. Herbaceous cover is quite low but associated species commonly include broomsedge bluestem, arrowfeather threeawn, wiregrass, frostweed and sandyfield beaksedge. Epiphytes are common and include ballmoss and Spanish moss. Vines are infrequent within scrubby flatwoods and are limited to earleaf greenbrier.

Successional hardwood forest (~20.50 acres)

Successional hardwood forest is characterized by a canopy of fast-growing hardwoods such as live oak, laurel oak, water oak, and/or sweetgum, often with remnant pines. The subcanopy and shrub layers of these forests are often dense and dominated by smaller individuals of the canopy species, and vines are often abundant. Successional hardwood forests can contain remnant species of the former natural community.

Canopy trees are limited to live oak and the shrub layer includes saw palmetto. Non-native bahiagrass is the only recorded herbaceous species. Among epiphytic species are ballmoss and Spanish moss. These habitats are present only as a result of former natural community disturbance.

Wet flatwoods (~162.54 acres)

Wet flatwoods are forests with an open pine canopy and an understory of hydrophytic herbs and shrubs. Wet flatwoods that burn frequently have a sparse understory of shrubs and a dense complement of herbs.

A large percentage of this community has been lost to improved pasture creation at the CLWEA. Disturbance from pasture grass seeding is evident in many wet flatwoods communities as well. The randomness of pasture grass seed dispersal often makes differentiating between wet flatwoods and semi-improved pasture difficult.

Wet flatwoods occur in two unique forms at the CLWEA. Most of the centrally located wet flatwoods sites contain unusually high amounts of water and often support dense stands of young to mature South Florida slash pine. The remainder of the site contains wet flatwoods areas that are well-drained and where standing water typically does not occur. These areas are broad ecotones between upland communities and swamps and/or baygall habitats.

Canopy trees in the wet flatwoods community are represented by mature examples of South Florida slash pine. Elements of the subcanopy include dahoon holly, sweetbay, South Florida slash pine and swamp laurel oak. A diverse assemblage of shrubs occurs in wet flatwoods although coverage is variable across this community. Shrub species include gallberry, fetterbush, wax myrtle, swamp bay, South Florida slash pine, swamp laurel oak, live oak, winged sumac, sawtooth blackberry and saw palmetto. Within the diverse herbaceous layer is blue maidencane, bluestem, broomsedge bluestem, chalky bluestem, big carpetgrass, Baldwin's spikerush, tenangle pipewort, slender flattop goldenrod, cogongrass, soft rush, rare cutthroat grass, panic grass, bahiagrass, crowngrass, sesban, Virginia chain fern and Elliott's yellow-eyed grass. Epiphytes are generally sparse and limited to Spanish moss. Vines are not a common component but include laurel greenbrier and muscadine. Exotic and invasive plant species, while generally uncommon in wet flatwoods, are problematic in areas disturbed by cattle grazing, feral hogs and forestry operations. These species include Peruvian primrose willow, Guinea grass and tropical soda apple.

Altered Community Descriptions

The CLWEA also has six additional altered communities that are listed and described by FNAI as follows.

Agriculture (~56.60 acres)

The east side of the CLWEA has a clearing that was previously an orange grove that succumbed to citrus greening. The grove was cleared, and a few orange trees were left to provide cover. Long-term maintenance will include periodic mowing to maintain low

groundcover. There are no plans to actively restore this acreage to native conditions during this planning period; however, the cleared grove will be managed to provide habitat for gopher tortoises and other locally important species on the area.

Artificial Pond (~1.31 acres)

Includes water retention ponds, cattle ponds, etc.

Developed (~6.58 acres)

Includes parking lots, buildings, recreational and residential areas.

Pasture – Improved (~270.76 acres) and Semi-Improved (~82.16 acres)

Improved pastures have been cleared of their native vegetation. They are dominated by planted, non-native plant species, and they contain evidence of current or recent cultural activities such as mowing or grazing. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted in non-native or domesticated native forage species. However, they still retain scattered patches of native vegetation with natural species composition and structure (most often small areas of mesic flatwoods). Area staff currently manage pastures with annual mowing to reduce the density of herbaceous species such as dog fennel and to treat dense areas of shrubby species such as wax myrtle. Pasture management also includes the treatment of cogongrass and burning on a 1-3-year rotation. To provide travel corridors and cover for wildlife, the FWC plans to strategically plant trees in these pastures, including containerized longleaf pine seedlings. Area staff also plan to plant seedlings in the former orange grove.

Full restoration of these communities would require drastic alteration to current conditions and groundcover, which would have an immediate, negative impact on species such as gopher tortoises. Rather than undertake full restoration of native groundcover, planned future management will include planting and burning to create a flatwoods-like structure in these pasture communities. These management actions will keep the pastures in a condition that is suitable for use by gopher tortoises, Southern fox squirrels (*Sciurus niger*), Florida sandhill cranes (*Grus canadenses pratensis*) and the southeastern American kestrel (*Falco sparverius paulus*). Further, native plant species such as cutthroatgrass are already moving into some of the pastures from adjacent native habitat, and staff will encourage this establishment through future management actions. Planned management will allow for the open conditions that these native plant species require and allow for a slow conversion of the habitat to a native structure that should continue to benefit a suite of locally important and imperiled species.

Road (~39.06 acres)

Includes paved and unpaved roadways.

2.2.2 Imperiled Plants

For the purposes of this Management Plan, the term “imperiled species” as it relates to plants refers to plant species that DACS or USFWS designated as endangered or threatened. This designation is commonly known as “listed species”, and all names and status determinations were derived from Florida’s Regulated Plant Index Rule (5B-40.0055 F.A.C.) that is maintained by DACS.

Table 6. Imperiled Plant Species Know to Occur at the CLWEA

Common Name	Scientific Name	Status
Austin's dawnflower	<i>Stylisma abdita</i>	SE
Britton's beargrass	<i>Nolina brittoniana</i>	FE; SE
Cinnamon fern	<i>Osmunda cinnamomea</i>	CE
Cut-throat grass	<i>Panicum abscissum</i>	SE
Edison ascyrum	<i>Hypericum edisonianum</i>	SE
Garberia	<i>Garberia heterophylla</i>	ST
Giant wild-pine	<i>Tillandsia utriculata</i>	SE
Non-crested eulophia	<i>Eulophia ecristata</i>	ST
Pigeon wings	<i>Clitoria fragrans</i>	FT; SE
Royal fern	<i>Osmunda regalis</i>	CE
Tufted wireweed	<i>Polygonella basiramia</i>	FE; SE

Acronym	Status
CE	Commercially Exploited
FE	Federally Endangered
FT	Federally Threatened
SE	State Endangered
SL	State Listed
ST	State Threatened

The FNAI conducted a listed plant survey in 2018/2019 on the CLWEA and identified six imperiled plant species, of which one is state and federally endangered, three are state endangered and one is state threatened (Table 6). Furthermore, through the efforts of the FWC and the FNAI staff, an additional four imperiled plant species have also been observed on the CLWEA through other mapping and monitoring efforts. One of these observed species are federally threatened and state endangered, one is federally and state endangered, one is state endangered, and one is state threatened. The protections afforded

plants that occur on conservations lands, in conjunction with management actions that include exotic and invasive plant removal and prescribed fire, will continue to maintain and enhance habitat for these and other rare plants. As such, these species should persist under planned management on the CLWEA.

In addition to the imperiled plant, two plants State listed as commercially exploited are known to occur on the CLWEA. The FWC will continue to monitor the known occurrences of these species and report any illegal collection to the appropriate authorities.

It is possible other imperiled plant species occur on the CLWEA and if encountered, staff will document these occurrences. Florida's imperiled species are adapted to natural communities and should continue to benefit from the FWC's ongoing and planned management to maintain and enhance natural community structure and function. While habitat management provides overall benefits to a host of species reliant upon these natural communities, imperiled species sometimes require specific attention.

Austin's dawnflower (*Stylisma abdita*) - Austin's dawnflower prefers open, sandy areas within sandhills and scrub communities. The plant is small and inconspicuous, often almost hidden by grasses, other small plants and even fallen leaves. Occasionally this species occurs in shaded areas beneath oaks (*Quercus* spp.) or slash pines (*Pinus elliottii*), but in these situations its leaves are generally lighter colored and larger, and the stem internodes are longer. This species requires a fire regime that reduces the encroachment of woody species and creates open areas allowing sunlight to reach the ground. Altered fire regimes and fire suppression negatively affect this species, therefore, prescribed fire should follow appropriate natural community fire regimes, varying by season, frequency and fire intensity to ensure species diversity. Scrub management programs should strive to mimic natural processes that create the openings this species requires. The best time for conducting surveys is during flowering, which occurs from April to November, or fruiting, which occurs from September to December.

Britton's beargrass (*Nolina brittoniana*) - Britton's beargrass prefers open, sunny areas in sandhill, scrub and scrubby flatwoods. Occasionally this species occurs in xeric hammocks. Britton's beargrass is commonly associated with blueberries (*Vaccinium* spp.), huckleberries (*Gaylussacia* spp.) and Lyonias (*Lyonia* spp.). This species requires fire to survive, and prescribed fire should occur with a frequency that reduces the encroachment of woody species and creates open areas allowing sunlight to reach the ground. Britton's beargrass responds to fire with increased flowering one-year post fire, and flowering dramatically reduces over subsequent years without fire. Fire suppression and hydrologic disturbances negatively affect this species; therefore, staff will avoid constructing fire breaks in ecotones, maintain and restore the natural hydrology and apply natural

community specific fire regimes. The best time for conducting surveys is during flowering, which occurs from March to May.

Cutthroatgrass (*Panicum abscissum*) - Cutthroatgrass prefers areas of slight to strong groundwater seepage. It grows mainly on the eastern and western sandy seepage slopes of the Lake Wales Ridge.

Cutthroatgrass also occurs around depression marshes, ponds and in low spots in wet and mesic flatwoods. This species needs prescribed fire every 1-3 years during the growing season for it to survive. Cutthroatgrass very rarely flowers without fire, and it blooms vigorously within a few months after a fire. If cutthroatgrass is top-killed by fire, it survives by resprouting from rhizomes. Hydrologic disturbances negatively affect this species; therefore, staff will protect seepage habitats from erosion by limiting vehicular and foot traffic in the seepage habitats to the extent practicable, especially during wet periods.

Cutthroatgrass is identifiable all year, and the best time for conducting flower surveys is from mid-June to late September or a few months after a growing season fire.



Edison ascyrum (*Hypericum edisonianum*) - Edison ascyrum prefers open areas in depression marshes, floodplain swamps, hydric hammocks, mesic flatwoods, mesic hammocks, scrubby flatwoods, seepage slopes, wet flatwoods and wet prairies (including cutthroat seeps variant). This species requires a fire regime that allows for patchy burns and fires to naturally enter and extinguish in wetlands and ecotones. If Edison ascyrum is top-killed by fire, it survives by resprouting after a fire. Fire suppression and hydrologic disturbances negatively affect this species; therefore, avoid constructing fire breaks in ecotones, maintain and restore the natural hydrology, and apply natural community specific fire regimes. This species is best identified when flowering, which occurs throughout the year.

Garberia (*Garberia heterophylla*) - Garberia prefers partial to full sun and well-drained sandy soils in coastal strand, dry prairie, mesic flatwoods, sandhill, scrub, scrubby flatwoods and xeric hammock. This species requires fire during the growing season that reduces the encroachment of woody species and creates open areas allowing sunlight to reach the ground. Garberia is well-adapted to growing season fires by vigorously resprouting, strong seedling establishment, and producing flowers five months after exposure to fire. Altered fire regimes and fire suppression negatively affect this species, therefore, prescribed fire when practical, will follow appropriate natural community fire regimes and

vary by season, frequency, and fire intensity to ensure species diversity. The best time for conducting surveys is during flowering, which occurs from September to November.

Giant Wild-pine (*Tillandsia utriculata*) - Airplants occur in many natural communities in Florida, both wet and dry. Most airplants are primarily epiphytes (plants that grow harmlessly upon another plant and derive its moisture and nutrients from the air, rain, and sometimes from debris accumulating around it) that grow on stumps, tree trunks and branches. However, large individuals may fall to the ground and successfully continue to live. While many airplants grow in communities that are not actively managed, if conducting management activities near known occurrences, staff will make efforts to protect the plant and host plant from fire, chemicals and mechanical treatments. Airplants are experiencing massive population losses due to the Mexican bromeliad weevil (*Metamasius callizona*), an exotic pest, making the protection and management of these plants from other threats all the more critical.

Non-Crested Eulophia (*Eulophia ecristata*) - Non-crested eulophia prefers open areas, with at least filtered sunlight and no dense shrub competition in mesic flatwoods, pine rocklands, sandhills, scrub, scrubby flatwoods and wet flatwoods. While this species may persist for long periods in xeric habitats without fire, occasional fire is needed to reduce competition and shading by shrubs. However, non-crested eulophia is dependent on frequent fire in moist habitats that experience rapid shrub growth, and prescribed fire should occur with a frequency that will create or maintain open areas, limit the shrub layer and encourage diverse herbaceous cover. Excessive site preparation and illegal collecting negatively affect this species; therefore, areas of known occurrences will be protected. Flowering, which occurs from July to September, or fruiting, which occurs from September to November, is the best time for conducting surveys.

Pigeon wings (*Clitoria fragrans*) - Pigeon wings prefer open well-drained sandy soils in sandhill, scrub and scrubby flatwoods. This species is well adapted to growing season fire that reduces the encroachment of woody species and creates open areas allowing sunlight to reach the ground. It responds positively to fire by vigorously flowering and re-sprouting and seedling establishment increases after a fire. Altered fire regimes and fire suppression negatively affect this species, therefore when practical, prescribed fire will follow appropriate natural community fire regimes and vary by season, frequency and fire intensity to ensure species diversity. Scrub management programs should strive to mimic natural processes that create the openings this species prefers. The best time for conducting surveys is during flowering, which occurs from May-early September.

Tufted wireweed (*Polygonella basiramia*) - Tufted wireweed prefers open, bare sandy areas in rosemary (*Ceratiola ericoides*) scrub, sand pine (*Pinus clausa*)-evergreen oak (*Quercus* spp.), scrub and scrubby flatwoods. Even though fires kill this species, prescribed fires are

required in this species' preferred habitats for its survival. Prescribed fire should occur with a 10-40-year frequency. Burning at the more frequent end of this range will likely create patchy burns, which is important because this species reoccupies burned areas via seeds dispersed from unburned patches or areas outside of the burn. Altered fire regimes and fire suppression negatively affect this species, therefore when practical, application of prescribed fire will vary by season, frequency and fire intensity to ensure species diversity. Allow fires from adjacent fire-maintained communities to enter and extinguish naturally in scrub and ecotones. Scrub management programs should strive to mimic natural processes that create the openings this species prefers. The best time for conducting surveys is during flowering, which occurs from September-November.

Cinnamon Fern (*Osmunda cinnamomea*) and Royal Fern (*O. regalis*) - These ferns occur in many natural communities in Florida, both wet and dry. While these species grow in many communities that the FWC typically does not actively managed, if conducting management activities near known occurrences, make efforts to protect known occurrences from chemical and mechanical treatments. These species do not require fire. However, some of the natural communities in which these species occur are fire-adapted, and these ferns resprout after fire. Illegal collecting and hydrological disturbances negatively affect these species. Staff will protect areas with known occurrences and maintain and restore the natural hydrology where practicable. As fronds are present year-round, these species can be identified throughout the year.

2.2.3 Forest Resources

Approximately 350 acres of the CLWEA are comprised of mesic, wet and scrubby flatwoods, and represent the natural communities with the most potential for forest resource (timber) production. At the CLWEA the mesic flatwoods natural community typically contains a sparse canopy of slash pine or longleaf pine. These pine canopies are often very sparse when adjacent to scrubby flatwoods and scrub communities and somewhat denser when grading down slope towards hammock communities. Approximately 243 acres on the CLWEA have been determined by the FFS and FWC staff as appropriate for thinning for forest stand improvement. This action will be completed during this planning period.

A Timber Assessment of the forest resources of the CLWEA was conducted by the FFS in 2010, and subsequently updated in 2016. The management of forest resources will be considered in the context of the Timber Assessment and the overall land management goals and activities. Once timber thinning on the area has been accomplished, an additional update to the current Timber Assessment will be completed. Also, the FWC will continue to consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.

2.3 Fish and Wildlife Resources

In association with the varied assemblage of natural communities described above, a rich diversity of wildlife species is found on the CLWEA. The FWC maintains an inventory of wildlife that occurs on the CLWEA. These species include mammals (Table 7), birds (Table 8), and reptiles and amphibians (Table 9). In addition to the species listed in the tables below, one exotic wildlife species has been documented on the CLWEA (feral hog). These inventories are continuously updated by FWC staff.

Table 7. Mammal Species Observed at the CLWEA

Common Name	Scientific Name
Big brown bat*	<i>Eptesicus fuscus</i>
Bobcat	<i>Lynx rufus</i>
Coyote	<i>Canis latrans</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Eastern gray squirrel	<i>Sciurus carolinensis</i>
Eastern spotted skunk	<i>Spilogale putorius</i>
Florida black bear*	<i>Ursus americanus floridanus</i>
Florida panther	<i>Puma concolor coryi</i>
Raccoon	<i>Procyon lotor</i>
Southern fox squirrel	<i>Sciurus niger shermani</i>
Southeastern shrew	<i>Sorex longirostris</i>
Virginia opossum	<i>Didelphis virginiana</i>
White-tailed deer	<i>Odocoileus virginianus</i>

Table 8. Bird Species Observed at the CLWEA

Common Name	Scientific Name
American kestrel	<i>Falco sparverius</i>
Anhinga	<i>Anhinga anhinga</i>
Barred owl	<i>Strix varia</i>
Belted kingfisher	<i>Megasceryle alcyon</i>
Black-bellied whistling duck	<i>Dendrocygna autumnalis</i>
Blue jay	<i>Cyanocitta cristata</i>
Eastern bluebird	<i>Sialia sialis</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eastern meadowlark	<i>Sturnella magna</i>
Eastern screech owl	<i>Megascops asio</i>
Eastern wild turkey	<i>Meleagris gallopavo</i>

Florida sandhill crane	<i>Grus canadensis pratensis</i>
Florida scrub jay*	<i>Aphelocoma coerulescens</i>
Gray catbird	<i>Dumetella carolinensis</i>
Great blue heron	<i>Ardea herodias</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>
Great egret	<i>Ardea alba</i>
Killdeer	<i>Charadrius vociferus</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Northern bobwhite quail	<i>Colinus virginianus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern harrier	<i>Circus cyaneus</i>
Osceola wild turkey	<i>Meleagris gallopavo osceola</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Short-tailed hawk	<i>Buteo brachyurus</i>
Southeastern American kestrel	<i>Falco sparverius paulus</i>
Southern bald eagle	<i>Haliaeetus leucocephalus leucocephalus</i>
Swallow-tailed kite	<i>Elanoides forficatus</i>
Turkey vulture	<i>Cathartes aura</i>
White ibis	<i>Eudocimus albus</i>
Wood stork	<i>Mycteria americana</i>

Table 9. Reptiles and Amphibians Observed at the CLWEA

Common Name	Scientific Name
American alligator	<i>Alligator mississippiensis</i>
Anole	<i>Anolis carolinensis</i>
Banded water snake	<i>Nerodia fasciata fasciata</i>
Brown water snake	<i>Nerodia taxispilota</i>
Common snapping turtle	<i>Chelydra serpentina</i>
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>
Eastern narrow-mouthed frog	<i>Gastrophryne carolinensis</i>
Florida scrub lizard	<i>Sceloporus woodi</i>
Gopher frog	<i>Lithobates capito</i>
Gopher tortoise	<i>Gopherus polyphemus</i>
Scarlet kingsnake	<i>Lampropeltis elapsoides</i>
Southern black racer	<i>Coluber constrictor priapus</i>
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>
Southern toad	<i>Anaxyrus terrestris</i>

Spadefoot toad
Yellow rat snake

Scaphiopus holbrookii
Pantherophis alleghaniensis

*Species not directly observed by FWC staff, however species have appeared in FNAI's element occurrences within the vicinity of the area.

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 CLWEA has a mean wildlife value of 5.9. (Figure 9).

2.3.2 Imperiled Fish and Wildlife

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 the FWC, or that are designated as Endangered or Threatened by the USFWS. This designation is also commonly known as “listed species.” At its November, 2016, Commission meeting, the FWC approved Florida’s Imperiled Species Management Plan (<http://myfwc.com/wildlifehabitats/imperiled/plan/>), which included changes to the listing status for many wildlife species. Subsequent rule changes (68A-27.003 and 68A-27.005 FAC) reflecting changes came into effect in January 2017. All federally listed species that occur in Florida are included in Florida’s Endangered and Threatened Species list (<https://myfwc.com/media/1945/threatened-endangered-species.pdf>) as federally-designated Endangered or federally-designated Threatened. Species that are not federally listed, but which have been identified by the FWC as being at some level of risk of extinction, are listed as state-designated Threatened. Additionally, the FWC continues to maintain a separate Species of Special Concern category. This category was reviewed as part of Florida’s Imperiled Species Management Plan, with the majority of the species previously contained within the category either being removed from Florida’s Endangered and

Threatened Species list due to conservation success, or had their status changed to state-designated Threatened.

Table 10. Imperiled Wildlife Species Found at the CLWEA

Common Name	Scientific Name	Status
American alligator	<i>Alligator mississippiensis</i>	FT(S/A)
Florida panther	<i>Puma concolor coryi</i>	FE
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ST
Gopher tortoise	<i>Gopherus polyphemus</i>	ST
Southeastern American kestrel	<i>Falco sparverius paulus</i>	ST
Wood stork	<i>Mycteria americana</i>	FT

Abbreviation	Status
FE	Federal Endangered
FT(S/A)	Federal Threatened due to Similarity of Appearance
FT	Federal Threatened
ST	State 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 CLWEA. The area supports a population of gopher tortoises, and the FNAI element occurrences records include several occurrences of the Florida scrub-jay, Florida scrub lizard, big brown bat and Florida black bear in the landscape surrounding the CLWEA. Known locations of the FNAI element occurrences from the most recent GIS databases are displayed in Figure 10. As defined by the FNAI, an “element” is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, 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. Appendix 12.6 contains a letter from the FNAI authorizing the FWC to utilize their database for the purpose of displaying known plant and animal resources.

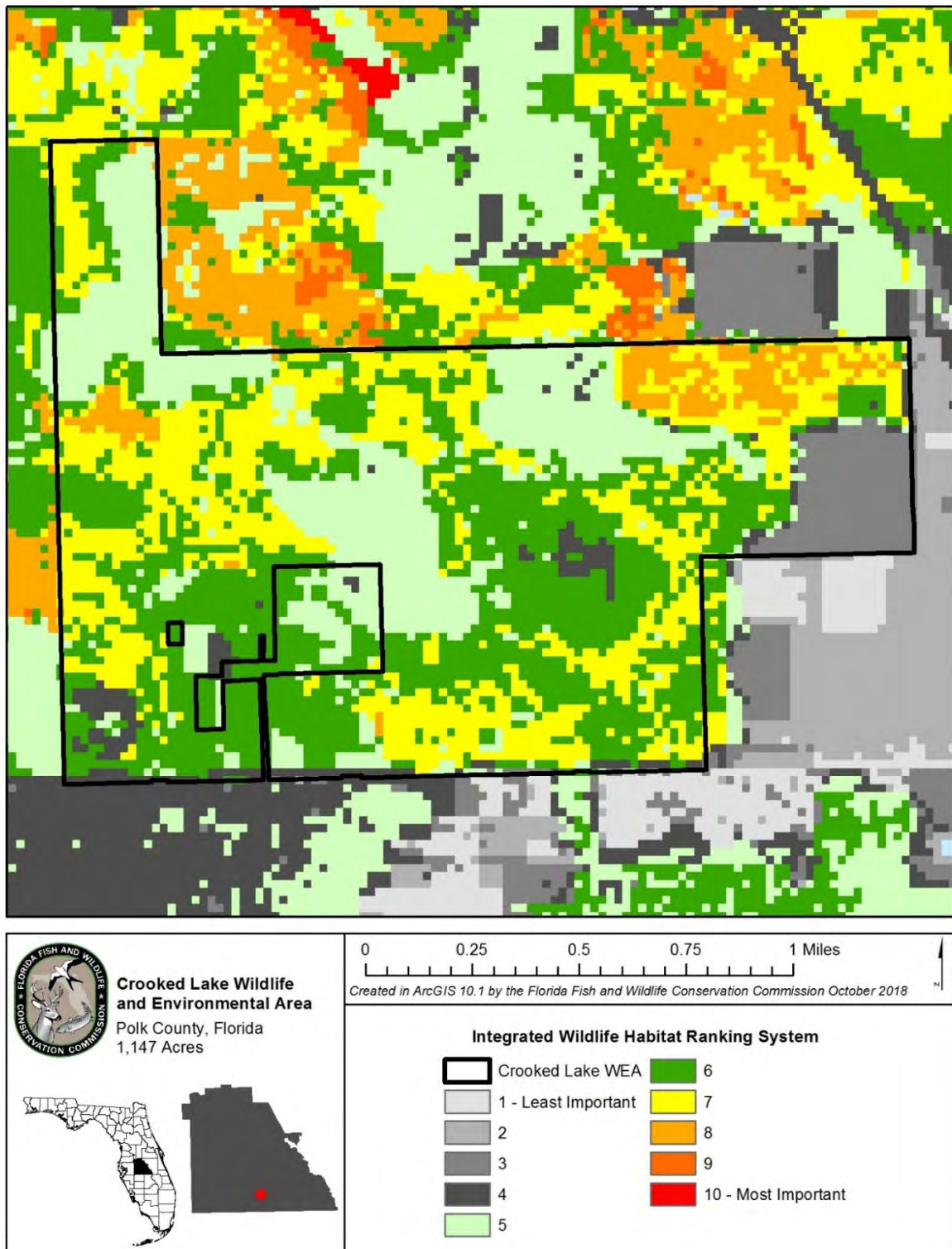


Figure 9. The CLWEA Integrated Wildlife Habitat Ranking

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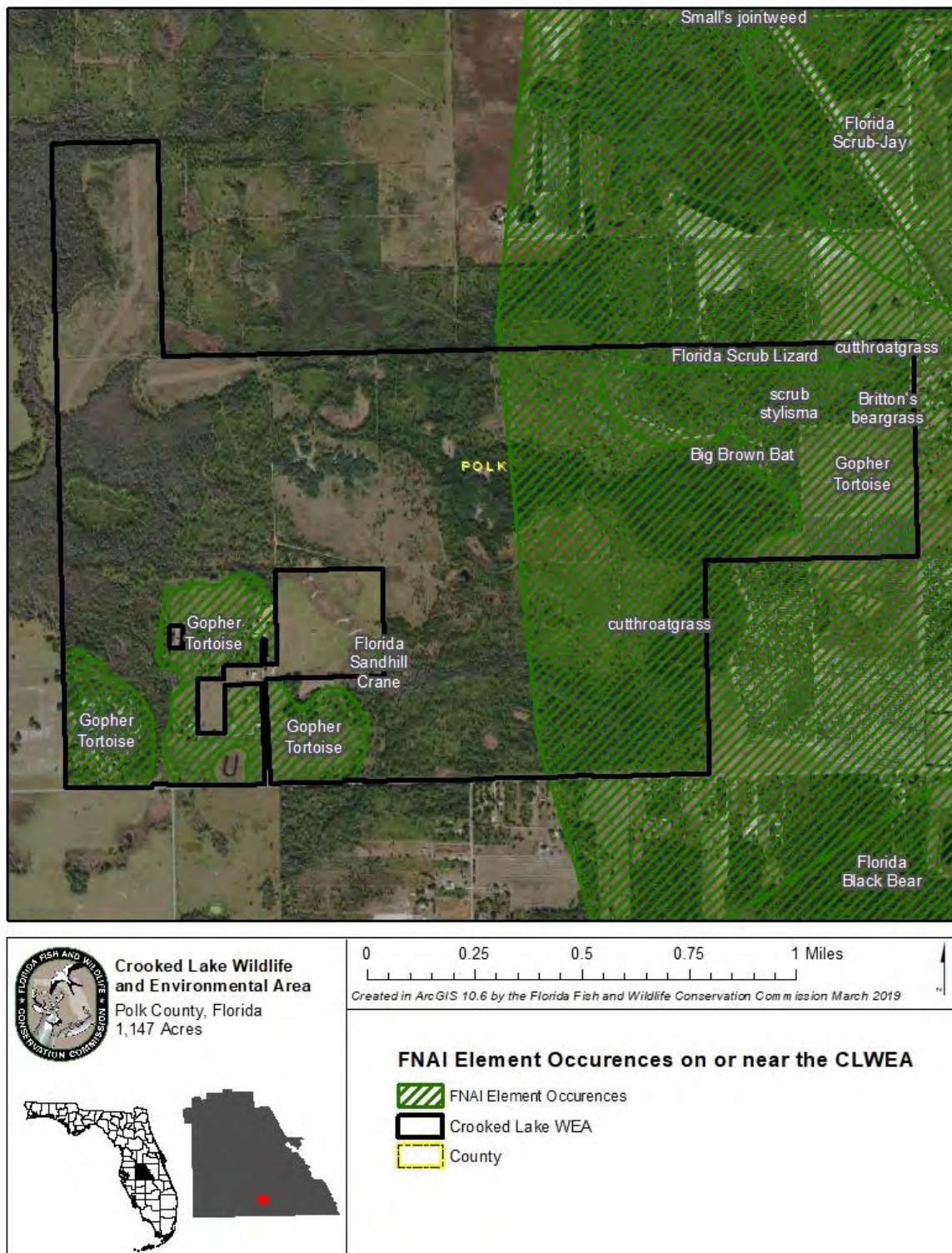


Figure 10. FNAI Element Occurrences

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

2.4 Native Landscapes

The predominate native landscapes occurring on the CLWEA are mesic and scrubby flatwoods, basin swamp and baygall. As described in detail above, complete descriptions of the natural communities found on the CLWEA can be found in Section 2.2 of this Management Plan.

2.5 Water Resources

All surface waters of the State are classified by the DEP according to designated uses as described in Chapter 62-302.44 FAC. The surface waters of the CLWEA are designated as Class III, and classified for fish consumption; recreation, as well as propagation and maintenance of a healthy, well-balanced population of fish and wildlife. Additionally, it is the policy of the DEP to afford the highest protection to Outstanding Florida Waters (OFW) and Outstanding National Resource Waters (Chapter 62-302.700 FAC). The CLWEA does not contain a first magnitude spring, nor is it designated as an aquatic preserve and is not under consideration for such designation, and there are no portions of the CLWEA that are designated as Outstanding Florida Waters (OFW).

2.6 Beaches and Dunes

There are no beach or dune resources on the CLWEA.

2.7 Mineral Resources

There are no known commercial mineral deposits on the CLWEA.

2.8 Historical Resources

The Florida Department of State's Division of Historical Resources (DHR) Master Site File indicated that there are no recorded historical structures or sites within the boundaries of the CLWEA. However, the FWC will coordinate with the DHR to work towards conducting a historical resource survey during this planning period. If any sites are found, the FWC will continue to coordinate with the DHR to ensure sites are recorded and monitored accordingly.

2.9 Scenic Resources

The CLWEA offers remarkably scenic views of mesic and scrubby flatwoods, along with other natural communities on the area. As a result, the area has been valued for its scenic quality unaffected by development and most other human alterations of the landscape. Wildlife is abundant year-round throughout the area. The scenery of the CLWEA can be enjoyed by hiking, biking or horseback riding on the area's trails.

3 Uses of the Property

3.1 Previous Use and Development

Prior to European settlement, the landscape of Florida, including this area of the peninsula, was settled and used by a variety of aboriginal peoples whose culture relied mainly on hunting, fishing and subsistence agriculture. Though some land alteration occurred, only minor alteration of the landscape is thought to have taken place until the advent of European settlement, beginning with the Spanish occupation of Florida in the sixteenth century. Along with more advanced agricultural practices, the Spanish and other settlers brought livestock, primarily cattle and hogs, to Florida. This began an era of broad use of the landscape for agriculture.

Rangeland cattle grazing and other agricultural practices began to be utilized in a more systematic way and occurred through much of the central Florida peninsula throughout most of the European settlement era from the 16th through the 20th century. Use of these agricultural practices began an era of increased alteration of the natural landscape. However, it wasn't until the 19th and 20th century that major settlement and more extensive alteration of the landscape in the area began with the widespread use of agriculture and associated development.

Previous use of the CLWEA was primarily for grazing and other agricultural uses such as citrus. Livestock grazing on the CLWEA and adjoining lands was the apparent prevalent use prior to 1970. Past grazing practices have impacted natural resources such as soil, vegetation and water.

Prior to 1970, the CLWEA appears to have been primarily made up of agricultural lands, wooded uplands, wetlands and citrus, with several small structures (buildings) present. Several inholdings exist on the property including one of approximately 40 acres, as well as a few smaller inholdings totaling approximately eight acres, most with residential structures on them. Trail roads provide access to structures, including residences, as well as those on outparcels. By the year 1980, several additional trail roads had been constructed, as well as a new residential structure on an outparcel. During the period of 1980-1995 agricultural activities and residential development on the CLWEA increased. During the period of 1995-2004, most of the CLWEA has remained the same although several new structures were constructed on it during this period.

3.2 Current Use of the Property

The CLWEA is leased to and managed by the FWC as a Wildlife and Environmental Area in conformance with the provisions of the Board of Trustees lease to the FWC to: protect and provide for water conservation; maintain ecological diversity; conserve habitat for

imperiled, rare and more common wildlife species; and provide a diversity of public outdoor recreational opportunities that are fish- and wildlife-oriented, and that are compatible with the Board of Trustees lease provisions that do not adversely impact the long-term well-being of fish and wildlife habitats and their associated wildlife populations.

A wide range of operational and resource management actions are conducted on the CLWEA each year including activities such as: prescribed burning; wildlife habitat restoration and improvement; invasive and 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 historical resources monitoring and protection; and research related activities.

Current and anticipated resource uses of the property are diverse. The area also offers excellent opportunities for bird watching. 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 and horseback riding. Due to the proximity of population centers in Polk County, public use can be expected to increase as public awareness of opportunities increases.

3.2.1 Visitation and Economic Benefits

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 CLWEA and contribute to the overall economy for this region of Florida. The FWC economic analysis estimates indicate that if the CLWEA were to reach its carrying capacity of 86 visitors per day, the area has the potential to generate an estimated annual economic impact of \$6,133,292 for the State and the Southwest Florida region and the potential to aid in the creation of an estimated 62 jobs. However, it should be noted that the current visitation rates for the area are estimated to be far below the area's established carrying capacity.

Further revenue generating potential of the CLWEA will depend upon future uses described in this Management Plan. Additional revenue from environmental lands such as the CLWEA 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 CLWEA will be managed under the multiple-use concept as a Wildlife and Environmental Area. The CLWEA 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 CLWEA will be managed under the guidance of the ARC, the Conceptual State Lands Management Plan and as outlined in 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 CLWEA. 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 12.7). 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	✓		
Cattle grazing		✓	
Citrus or other agriculture			✓
Ecosystem services and maintenance	✓		
Ecotourism		✓	
Environmental Education	✓		
First-responder training		✓	
Fishing			✓
Geocaching		✓	
Hiking	✓		
Horseback riding	✓		
Hunting			✓
Linear facilities			✓
Military training		✓	
Preservation of historical resources	✓		
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 CLWEA are made in accordance with the requirements of Section 253.034(10) FS, 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 DEP-DSL, the ARC and the Board of Trustees prior to any incompatible use or linear facility being authorized on the CLWEA.

3.3.3 Assessment of Impact of Planned Uses of the Property

To communicate the 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 CLWEA (Sections 5 -7). 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 Recommended for Potential Surplus Review

On conservation lands where the FWC is the lead manager, the FWC evaluates and identifies recommended areas for a potential surplus designation by the DSL, the 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, the FWC considers recommendations for surplus lands as they relate to Florida’s “No Net Loss of Hunting Lands” legislation (Ch. 379.3001 F.S.), 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 CLWEA by the 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 CLWEA is recommended for potential surplus review.

4 Accomplished Objectives from the CLWEA Management Plan 2011-2021

This section is dedicated to reporting the extent to which the Objectives described in the CLWEA Management Plan 2011 – 2021 were successfully completed. Accomplishments for the CLWEA 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 2011 – 2021 CLWEA Management Plan describe the planned activities for the CLWEA during this period. The degree to which the FWC was able to accomplish the planned activities during this period is reflected as **Percent Accomplished** for each associated Objective.

Objectives Accomplished from the 2011 Crooked Lake Wildlife and Environmental Area Habitat Management Plan

Goals and Objectives	Percent Accomplished
Goal 1: Habitat Restoration and Improvement: Improve extant habitat and restore disturbed areas.	
Objective 1: Maintain 300 acres per year within target fire return interval. (June 2011 – June 2013) <i>Comments: FWC staff continues to maintain habitats within their target fire return interval.</i>	100%
Objective 2: Conduct habitat/natural community improvement on 100 acres including vegetation management in preparation for prescribed burns and nuisance vegetation control. (June 2011 – June 2013) <i>Comments: FWC staff conducted improvements and continues to maintain natural communities on the area as needed and appropriate.</i>	100%
Objective 3: Develop and implement contract to survey and map exotic plants. Initiate treatment of exotic species (~100 acres). (June 2011 – June 2013) <i>Comments: The FWC has an ongoing contract for treatment of exotic species. As treatment occurs, exotic species locations are also mapped and documented.</i>	100%

Objective 4: Develop and implement OBVM program. (June 2011 – June 2013) <i>Comments: OBVM was initiated on the area and continues to be implemented.</i>	100%
Objective 5: Continue implementing OBVM program. (June 2011-June 2021) <i>Comments: OBVM continues to be implemented.</i>	100%
Objective 6: Continue to maintain 300 acres per year within target fire return interval. (June 2011-June 2021) <i>Comments: FWC staff continues to maintain habitats within their target fire return interval.</i>	100%
Objective 7: Conduct habitat/natural community improvement on an average of 50 acres annually including vegetation management in preparation for prescribed burns and nuisance vegetation control. (June 2011-June 2021) <i>Comments: FWC staff conducted improvements and continues to maintain natural communities on the area as needed and appropriate.</i>	100%
Objective 8: Initiate habitat/natural community restoration activities on 100 acres including mechanical treatments to vegetation, pine timber thinning, and hydrologic restoration. (June 2011- June 2021) <i>Comments: FWC staff conducted and continues to maintain natural communities on the area as needed and appropriate.</i>	100%
Objective 9: Continue treatment of exotic species as needed. (June 2011-June 2021) <i>Comments: The FWC continues to treat all exotic species on the area, as needed and appropriate.</i>	100%
Objective 10: Assess the need for future restoration of disturbed areas. (June 2011-June 2021) <i>Comments: FWC staff continues to assess restoration needs on the area as needed and appropriate.</i>	100%
Goal 2: Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration: Maintain, improve, and restore imperiled species populations, and habitats.	
Objective 1: Develop and implement a WCPR strategy for select focal and imperiled species; implement monitoring protocols. (June 2011-June 2013) <i>Comments: The WCPR Strategy for the CLWEA was completed in August 2015.</i>	100%

Objective 2: Conduct one gopher tortoise survey. (June 2011-June 2013) <i>Comments: A gopher tortoise survey was conducted in 2016 using the new Line Transect Distance Sampling protocol. FWC delayed surveys in order to use a new survey methodology that was being implemented on a statewide level. Surveys will be repeated approximately every 5 years.</i>	100%
Objective 3: Continue to collect opportunistic wildlife species occurrence data. (June 2011-June 2013) <i>Comments: The FWC collects and records opportunistic wildlife observations on the area.</i>	100%
Objective 4: Conduct one gopher tortoise survey. (June 2011-June 2021) <i>Comments: A gopher tortoise survey was conducted in 2016 using the new Line Transect Distance Sampling protocol. The FWC delayed surveys in order to use a new survey methodology that was being implemented on a statewide level. Surveys will be repeated approximately every five years.</i>	100%
Objective 5: Cooperate with Lake Region Audubon Society to conduct a bird species inventory. (June 2011-June 2021) <i>Comments: The FWC, during this planning period, has developed protocols for FWC staff and partners to perform ongoing species inventories that are entered into a database. Therefore, coordination with the Lake Region Audubon Society was determined unnecessary and did not occur during this planning period.</i>	0%
Objective 6: Continue to collect opportunistic wildlife species occurrence data. (June 2011-June 2021) <i>Comments: The FWC collects and records opportunistic wildlife observations on the area.</i>	100%
Objective 7: Continue to implement WCPR monitoring protocols for selected imperiled species. (June 2011-June 2021) <i>Comments: The WCPR Strategy for the CLWEA was developed and implemented in August 2015.</i>	100%
Objective 8: Conduct a rare and imperiled plant species inventory. (June 2011-June 2021) <i>Comments: The FWC has currently scheduled a rare and imperiled plant survey and it will be completed before this management plan is finalized and approved.</i>	100%
Objective 9: To minimize fragmentation of the area, continue to identify strategic parcels necessary to complete an Optimum Boundary for CLWEA. (June 2011-June 2021) <i>Comments: During the development of the CLWEA Management Plan, the FWC developed an OCPB for the area to determine potential habitat</i>	100%

<i>and resource needs to further enhance the area; the FWC continues to maintain and revise this boundary as necessary.</i>	
Objective 10: Maintain a GIS shapefile and other necessary data to facilitate nominations for the FWC Optimum Boundary and Land Acquisition Program. (June 2011-June 2021) <i>Comments: The FWC continues to maintain a GIS shapefile and geodatabase to further assist acquisition program needs of partnership programs.</i>	100%
Goal 3: Exotic and Invasive Species Maintenance and Control: Remove exotic and invasive plants and animals and conduct needed maintenance-control.	
Objective 1: Treat and GPS record Florida Exotic Pest Plant Council (FLEPPC) Category I and Category II invasive exotic plant species throughout area (1,147 acres) as needed. (June 2011-June 2013) <i>Comments: The FWC conducts mapping of exotic plant species on the CLWEA. Additionally, the FWC contracts for the spraying of exotics, and staff document occurrences during these treatments.</i>	100%
Objective 2: As necessary and feasible, implement control measures on feral hogs. (June 2011-June 2013) <i>Comments: Due to the terms of acquisition, hunting is currently prohibited on the CLWEA. Therefore, hog control measures have been limited. However, the FWC will work towards determining measures during this upcoming planning period to address control of feral hog damage.</i>	0%
Objective 3: Continue to treat FLEPPC Category I and Category II invasive exotic plant species throughout area (1,147 acres) as needed. (June 2011-June 2021) <i>Comments: The FWC conducts mapping of exotic plant species on the CLWEA. Additionally, the FWC contracts for the spraying of exotics, and staff document occurrences during these treatments.</i>	100%
Objective 4: Continue to monitor and assess impacts of invasive exotic plant and animal species. (June 2011-June 2021) <i>Comments: The FWC conducts mapping of exotic plant species on the CLWEA. Additionally, the FWC contracts for the spraying of exotics, and staff document occurrences during these treatments.</i>	100%
Objective 5: As necessary and feasible, continue to implement control measures on feral hogs. (June 2011-June 2021) <i>Comments: Due to the terms of acquisition, hunting is currently prohibited on the CLWEA. Therefore, hog control measures have been limited. However, the FWC will work towards determining measures during this upcoming planning period to address control of feral hog damage.</i>	0%

Goal 4: Public Access and Recreational Opportunities: Provide public access and recreational opportunities.	
Objective 1: Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 43 visitors per day. (June 2011-June 2013) <i>Comments: The FWC has continued to maintain all recreational opportunities to sustain a carrying capacity of 43 visitors per day.</i>	100%
Objective 2: Provide website, two panel kiosks, trail brochure, and bird list for interpretation and education. (June 2011-June 2013) <i>Comments: The FWC has continued to provide and maintain the website, two panel kiosk, trail brochure, and bird list on the area.</i>	100%
Objective 3: Cooperate with other agencies, counties, cities, stakeholders, and regional landowners to investigate regional recreational opportunities. (June 2011-June 2013) <i>Comments: The FWC continually cooperates with all relevant partners as needed and appropriate.</i>	100%
Objective 4: Begin to design and develop a system of ~4.5 miles of multi-use trails. (June 2011-June 2013) <i>Comments: The FWC designed, developed and implemented ~4.5 miles of multi-use trails on the area during this planning period.</i>	100%
Objective 5: Monitor trails annually for visitor impacts. (June 2011-June 2013) <i>Comments: The FWC continually monitors and maintains the multi-use trail system on the area.</i>	100%
Objective 6: Develop a Basic Recreation Plan. (June 2011-June 2013) <i>Comments: The Recreation Master Plan for the CLWEA was completed in November 2013.</i>	100%
Objective 7: Complete ~4.5 miles of multi-use trails. (June 2011-June 2021) <i>Comments: The FWC designed, developed and implemented ~4.5 miles of multi-use trails on the area during this planning period.</i>	100%
Objective 8: Upon completion of multi-use trails, monitor trails biannually for visitor impacts. (June 2011-June 2021) <i>Comments: Through the Recreation Master Plan, and FWC staff, recreational opportunities are continually assessed on the area.</i>	100%
Objective 9: As necessary, maintain multi-use trails. (June 2011-June 2021) <i>Comments: The FWC continually monitors and maintains the multi-use trail system on the area.</i>	100%

Objective 10: Reassess recreational opportunities every three years. (June 2011-June 2021) <i>Comments: Through the Recreation Master Plan, and FWC staff, recreational opportunities are continually assessed on the area.</i>	100%
Objective 11: Continue to provide website, two panel kiosks, trail brochure and bird list for interpretation and education. (June 2011-June 2021) <i>Comments: The FWC has continued to provide and maintain the website, two panel kiosk, trail brochure and bird list on the area.</i>	100%
Goal 5: Hydrological Preservation and Restoration - Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.	
Objective 1: Replace/repair culverts on roadways as needed. (June 2011-June 2013) <i>Comments: FWC staff replace and maintain culverts and low-water crossing as needed and appropriate.</i>	100%
Objective 2: Conduct or obtain a site assessment/study to identify potential hydrology restoration needs. (June 2011-June 2021) <i>Comments: In 2011, the FWC obtained a hydrological assessment for the CLWEA.</i>	100%
Goal 6: Forest Resource Management: Manage timber resources to improve or restore natural communities for the benefit of wildlife.	
Objective 1: Consult with the DOF (now FFS) or a professional forestry consultant regarding forest management activities as appropriate. (June 2011-June 2013) <i>Comments: The FWC consults with the FFS on forest management activities as needed and appropriate.</i>	100%
Objective 2: Continue to consult with DOF or a professional forestry consultant regarding forest management activities as appropriate. (June 2011-June 2021) <i>Comments: The FWC consults with the FFS on forest management activities as needed and appropriate.</i>	100%
Objective 3: Prepare and implement a forest management plan including reforestation, harvesting, restoration and timber stand improvement activities and goals. (June 2011-June 2021) <i>Comments: A Forest Management Plan was determined unnecessary for this area, however the FFS completed a Timber Assessment for the CLWEA in December 2010, and subsequently updated their assessment in 2016.</i>	0%
Goal 7: Cultural and Historical Resources: Protect, preserve, and maintain cultural and historic resources.	

Objective 1: Cooperate with DHR to assess the need for a comprehensive cultural resource survey. (June 2011-June 2013) <i>Comments: The FWC contacted the DHR to determine the need to conduct a cultural resource survey. At the time, the CLWEA was a low priority for a survey, but a survey will likely be conducted in the next planning period.</i>	100%
Objective 2: Cooperate with DHR in designing site plans for development of infrastructure. (June 2011-June 2021) <i>Comments: The FWC cooperates with the DHR in development of infrastructure and/or any other ground disturbing activities as needed and appropriate.</i>	100%
Goal 8: Capital Facilities and Infrastructure: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.	
Objective 1: Maintain an informational kiosk at the public access point. (June 2011-June 2013) <i>Comments: The FWC continues to maintain the informational kiosks located on the area.</i>	100%
Objective 2: Begin to design and develop a system of ~4.5 miles of multi-use trails. (June 2011-June 2013) <i>Comments: The FWC designed, developed and implemented ~4.5 miles of multi-use trails on the area during this planning period.</i>	100%
Objective 3: Maintain seven facilities (Ranch House, Field Office, 1940's House, Quonset Hut, Shop, Public Use Entrance, Grove Pump House). (June 2011-June 2013) <i>Comments: The FWC continues to maintain all facilities located on the area, however in 2017 the Quonset Hut was destroyed due to Hurricane Irma.</i>	100%
Objective 4: Maintain eight miles of roads. (June 2011-June 2013) <i>Comments: The FWC continues to maintain all facilities located on the area, as well as all existing trails and roads.</i>	100%
Objective 5: Coordinate with Polk County for any easements, linear facilities or incompatible use requests and proposals. (June 2011-June 2013) <i>Comments: The FWC coordinates with Polk County on all requests and proposals as needed and appropriate.</i>	100%
Objective 6: Complete ~4.5 miles of multi-use trails. (June 2011-June 2021) <i>Comments: The FWC designed, developed and implemented ~4.5 miles of multi-use trails on the area during this planning period.</i>	100%

Objective 7: Continue to maintain seven facilities and eight miles of roads. (June 2011-June 2021) <i>Comments: The FWC continues to maintain all facilities and roads located on the area, including trails and roads, however in 2017 the Quonset Hut was destroyed due to Hurricane Irma.</i>	100%
Objective 8: Monitor trails biannually for visitor impacts. (June 2011-June 2021) <i>Comments: The FWC monitors and maintains the multi-use trail system on the area.</i>	100%
Objective 9: As necessary, maintain multi-use trails. (June 2011-June 2021) <i>Comments: The FWC monitors and maintains the multi-use trail system on the area.</i>	100%
Objective 10: Maintain signage, approximately seven miles of boundary fence, ten gates, one primary entrance sign and at least one public access point. (June 2011-June 2021) <i>Comments: The FWC continues to maintain all facilities located on the area, as well as all existing trails and roads.</i>	100%
Objective 11: Coordinate with Polk County for any easements, linear facilities or incompatible use requests and proposals. (June 2011-June 2021) <i>Comments: The FWC coordinates with Polk County on all requests and proposals as needed and appropriate.</i>	100%
Goal 9: Conservation Acquisition and Stewardship Partnerships: Enhance fish and wildlife conservation, resource and operational management through development of an optimal boundary.	
Objective 1: Identify potential important wildlife habitat, landscape-scale linkages, wildlife corridors, and operational/resource management needs. (June 2011-June 2013) <i>Comments: During the development of the CLWEA Management Plan, the FWC develops an OCPB for the area to determine potential habitat and resource needs to further enhance the area.</i>	100%
Objective 2: Continue to identify and pursue acquisition needs and conservation stewardship partnerships. (June 2011-June 2013) <i>Comments: FWC staff continue to work to identify and pursue any potential conservation acquisition needs and regularly interact with adjoining landowners and other agencies and assess potential conservation stewardship partnerships.</i>	100%

Objective 3: Develop and maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC optimal boundary for FWC's Landowner Assistance and Land Acquisition Programs. (June 2011-June 2013) <i>Comments: The FWC continues to maintain a GIS shapefile and geodatabase to further assist acquisition program needs and potential partnership programs.</i>	100%
Objective 4: Develop a Conservation Action Strategy. (June 2011-June 2013) <i>Comments: The FWC has developed a Conservation Action Strategy for the CLWEA.</i>	100%
Objective 5: Contact and inform adjoining landowners about the FWC LAP to pursue non-acquisition conservation stewardship partnerships. (June 2011-June 2013) <i>Comments: FWC staff regularly interact with multiple adjoining landowners and talk with them about the voluntary Landowners Assistance Program.</i>	100%
Objective 6: Determine which parcels should be nominated for addition to the FWC acquisition list. (June 2011-June 2013) <i>Comments: FWC staff developed an OCPB for the CLWEA, and the FWC has identified nominations to the FWC Additions and Inholdings list that will be completed before the end of this planning period and implement into the updated management plan.</i>	50%
Objective 7: Identify potential non-governmental organization partnerships and grant program opportunities. (June 2011-June 2013) <i>Comments: The FWC continues to work towards identifying partnerships and grant opportunities as needed and appropriate.</i>	100%
Objective 8: Determine efficacy of conducting an adjacent landowner's assistance/conservation stewardship partnership workshop. (June 2011-June 2013) <i>Comments: The FWC assessed the need and feasibility of a landowner's assistance/conservation stewardship partnership workshop and determined it unnecessary at this time.</i>	100%
Objective 9: To minimize fragmentation of the area, continue to identify strategic parcels necessary to revise the completed optimal boundary for CLWEA as deemed necessary. (June 2011-June 2021) <i>Comments: During the development of the CLWEA Management Plan, the FWC develops an OCPB for the area to determine potential habitat and resource needs to further enhance the area; the FWC continues to maintain and revise this boundary as necessary.</i>	100%

Objective 10: Continue to maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC optimal boundary for the FWC Landowner Assistance Program and for the Land Acquisition Program. (June 2011-June 2021) <i>Comments: The FWC continues to maintain a GIS shapefile and geodatabase to further assist acquisition program needs and potential partnership programs.</i>	100%
Objective 11: Continue to determine which nominated parcels should be added to the FWC acquisition list. (June 2011-June 2021) <i>Comments: FWC staff developed an OCPB for the CLWEA, and the FWC has identified nominations to the FWC Additions and Inholdings list that will be completed before the end of this planning period and include in the updated management plan.</i>	100%
Objective 12: Propose nominations of selected properties as additions to the FWC acquisition list. (June 2011-June 2021) <i>Comments: FWC staff developed an OCPB for the CLWEA, and the FWC has identified nominations to the FWC Additions and Inholdings list that will be completed before the end of this planning period and implement into the updated management plan.</i>	100%
Objective 13: Pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow. (June 2011-June 2021) <i>Comments: FWC staff continues to work to identify and pursue any potential conservation acquisition needs.</i>	100%
Objective 14: Periodically (at least every three to five years) continue to contact and meet with adjacent landowners for willingness to participate in the Conservation Action Strategy. (June 2011-June 2021) <i>Comments: FWC staff regularly interact with multiple adjoining landowners and discuss with them about the voluntary Landowners Assistance Program, however the Conservation Action Strategy for this area has not yet been approved for implementation.</i>	0%
Objective 15: Coordinate landowner assistance/conservation stewardship partnership workshop as deemed appropriate. (June 2011-June 2021) <i>Comments: The FWC assessed the need and feasibility of a landowner's assistance/conservation stewardship partnership workshop and determine it unnecessary at this time.</i>	100%
Goal 10: Research Opportunities: Explore and pursue cooperative research opportunities.	

Objective 1: Explore and pursue cooperative research opportunities through Archbold Biological Station, universities, and/or Florida Fish and Wildlife Research Institute. (June 2011-June 2021) <i>Comments: The FWC evaluates the need to pursue further partnerships to enhance the management of the area.</i>	100%
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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 CLWEA 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, it is the FWC's intent to provide quality fish and wildlife resource based public outdoor recreational opportunities on the CLWEA. 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.

The FWC manages the lands in the Wildlife and Environmental Area system using a proactive natural community focused approach. As applied by the FWC, natural resource management starts by classifying lands into distinct natural communities. The FWC then conducts management activities to maintain or enhance each community's structure and function. Land management that has a positive influence on natural community conditions benefits the species occurring in these habitats.

5.1 Land Management Review

On-site reviews of conservation and recreation lands that exceed 1,000 acres and are titled in the name of the Board of Trustees are required every five years by section 259.036, F.S. These reviews determine whether the lands are being managed for the purposes for which they were acquired and whether they are being managed in accordance with their land management plan adopted pursuant to s. 259.032, F.S. According to statute, the review team "shall evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions or archaeological features. The review shall also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan."

A land management review of the CLWEA was conducted in March of 2018, and the results of that review and the FWC responses to recommendations are included as Appendix 12.9. It was determined that the CLWEA is being managed in accordance with the purposes for acquisition and that management practices, including public access, are in compliance with the management plan.

5.2 Adaptive Management

Adaptive management is "learning by doing";¹ 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.^{1, 2} 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.^{2, 3} 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.^{2, 3}

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. The FWC will monitor conservation actions, species, habitats and major threats to the conservation of the natural and historical resources of the CLWEA.

5.2.1 Monitoring

A well-developed monitoring protocol is also one of the principal, required criteria for the management of the CLWEA. 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.²

For natural communities, monitoring protocols are established through the FWC's Objective-Based Vegetation Management (OBVM, Section 5.5.1) program, which monitors how specific vegetative attributes are responding to FWC management. For imperiled and locally important fish and wildlife species, monitoring protocols are established through the FWC's Wildlife Conservation Prioritization and Recovery (WCPR, Section 5.6.2) program. FWC staff may monitor additional fish and wildlife species when deemed appropriate. Exotic and invasive plant and animal species (Section 5.7) are also monitored as needed and appropriate. Recreational uses are monitored through the FWC's Public Access Services Office (PASO) program, and work in conjunction with the establishment and adjustment of public access carrying capacities (Section 5.8.3). Historical resources (Section 5.11) 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 CLWEA 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, PASO, Recreation Master Plans, etc.) underway to accomplish needed conservation actions that are planned to manage the natural resources of the CLWEA 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 CLWEA, the FWC will focus on managing for native habitat diversity, emphasizing maintenance of high-quality natural communities and restoration or enhancement 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 appropriate. Retention of the native old growth component of forests, while also providing for natural regeneration, remains an important consideration. The CLWEA has high-quality native communities including mesic and

scrubby flatwoods, baygall, basin swamp, basin marsh, depression march, sandhill, scrub and wet flatwoods that the FWC will continue to manage and protect. On degraded upland sites, the FWC intends to initiate natural community restoration as necessary and appropriate.

The FNAI has conducted surveys and mapped the current vegetative communities and historic vegetation communities on the CLWEA. 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 manage the 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 the 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 the 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 the 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, the FWC land managers will identify those natural communities that will influence and guide management decisions, known as the actively managed natural communities. Through the 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, the 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. The 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 the 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 provide FWC staff with baseline data indicating natural community structure, distribution and condition on the area. Comparing the subsequent monitoring results 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 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.



Conversion of native uplands to pastures, alteration to 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 likely necessary actions needed to restore the area to 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 CLWEA 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. Roller chopping can be a valuable management tool, enabling the use of prescribed fires in areas heavily invaded by dense woody vegetation. As roller chopping can have negative impacts on herbaceous ground cover and wildlife species such as the gopher tortoise; the FWC will use caution when using roller chopping as a management tool.

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.

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 2-4 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 has been developed and implemented for the

CLWEA (Appendix 12.10). This plan includes, but is not limited to, delineation of burn management units, detailed descriptions of prescribed fire methodology, safety and smoke management guidelines.

During the previous 10-year planning period, 100 % of the area's fire-adapted communities have been treated with prescribed fire. Approximately 100 % of the fire-adapted communities are maintained within the recommended fire return intervals. As detailed in the goals and objectives in Section 6 below, the FWC plans to conduct prescribed burning on the area's fire adapted communities resulting in 100% of the area being maintained within the recommended fire return intervals during this planning period. Potential projected challenges with continuing to successfully implement prescribed fire on the area are described further in Section 7. The continuing benefits of prescribed fire on the area's wildlife habitats along with other ongoing habitat restoration activities that are being implemented on the CLWEA are discussed in more detail below.

5.3.3 Habitat Restoration

Significant habitat management activities have taken place within many of the natural communities of the CLWEA over the course of the previous management period beginning in 2011. Since 2011, all management units with fire-adapted natural communities have been treated with prescribed fire, most on a repeated basis as established within the management plan. This has aided in the restoration of native ground cover and improved wildlife habitat throughout the CLWEA. In addition to conducting prescribed burning, roller chopping has been conducted on 85 acres, and mowing has been conducted on 535 acres to further improve the habitat value of the natural communities at the CLWEA and specifically encourage better habitat conditions for listed wildlife such as the gopher tortoise. Within the scrub and sandhill, 88 acres of sand pines were cut to set back the successional stage of the habitat, allow for increased sunlight, promote grassy ground cover species and encourage habitat conditions for the gopher tortoise. Timber harvesting will be conducted on 243 acres of wet flatwoods and mesic flatwoods to improve conditions for cutthroatgrass and natural community structure and habitat value for wildlife such as the gopher tortoise.

The FWC has established the OBVM to describe the structural character of managed natural communities, allowing FWC staff to make informed management decisions. Additional resource management regimes that will be implemented as needed, include prescribed burning, exotic and invasive species treatment, mechanical treatments, etc. Communities on the CLWEA that may undergo some level of habitat restoration or enhancement include mesic flatwoods, wet flatwoods, sandhill, scrub and improved pasture and ruderal communities. Chemical and mechanical treatments may also be implemented in some select hardwood habitats in the sandhill and scrub to restore these areas to an earlier successional condition. Continuing habitat management activities on the area will

focus on enhancing natural communities, maintaining recommended fire return intervals for fire adapted communities, and controlling exotic and invasive plant species. Ideally, vegetation control will be through regular prescribed fire with mowing and roller chopping supporting and supplementing fire when needed. Exotic and invasive species control is more extensively discussed in Section 5.5 below. Further habitat management and improvement objectives planned for the area are delineated in Section 6 below.

5.4 Fish and Wildlife Management Imperiled and Locally Important Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration

5.4.1 Fish and Wildlife

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 CLWEA. 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 and wet flatwoods, pasture, scrubby flatwoods, baygall and basin swamp. Natural communities that are less represented on the CLWEA include depression march, dome swamp, sandhill, scrub and successional hardwood forest.

The size and natural community diversity of the CLWEA 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 CLWEA provides resources for many migratory birds including waterfowl, passerines, raptors and others. Habitats important to migratory species will be protected, maintained or enhanced.

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 the FWC's comprehensive species management strategy for rare and imperiled wildlife and their respective habitats.

5.4.2 Imperiled and Locally-Important 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 the OBVM to monitor how specific vegetative parameters are responding to the FWC management and uses the WCPR program to ensure management is having the desired effect on wildlife.

The goal of the WCPR is to provide assessment, recovery and planning support for the FWC-managed areas to enhance management of locally-important species and the recovery of imperiled species. The WCPR program objectives include prioritizing what the FWC does for imperiled and important species on the 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 the FWC manages.

The WCPR program helps the FWC take a proactive, science-based approach to species management on the FWC-managed lands, 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 locally-important species which are the focus of the WCPR program. Staff combine 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 identifies monitoring protocols to verify progress towards meeting the objectives. By providing the 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>), as well as select locally important species found on the area.

In summary, for the FWC-managed areas, the WCPR program helps assess imperiled and locally-important wildlife species needs and opportunities, prioritize what the FWC does for imperiled and locally-important 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, the FWC will facilitate fulfilling the needs of locally important and imperiled wildlife species on the CLWEA. In the long-term, by implementing these strategies on

FWC-managed lands and continuing to assess wildlife species' needs, the FWC will continue to play an integral role in aiding the recovery of imperiled species and preventing the future imperilment of declining wildlife species.

The WCPR Strategy for the CLWEA (Appendix 12.11) address several wildlife species, including gopher frog, gopher tortoise, sand skink, Southeastern American kestrel and Florida mouse. During the previous planning period, the FWC conducted a gopher tortoise survey to monitor the local population, a sand skink survey to determine if sand skinks are located on the area and monitored three southeastern American kestrel nest boxes. Gopher tortoise surveys will continue to be conducted on the area every five years and FWC staff will continue to monitor southeastern American kestrel nest boxes. These imperiled species projects, along with other ongoing imperiled species management activities, will continue to be implemented in accordance with the CLWEA WCPR Species Management Strategy.

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 CLWEA. 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 CLWEA and treated annually by the FWC include Alligator weed, caesarweed, camphor tree, Chinaberry, cogongrass, guineagrass, Japanese climbing fern, lantana, shrub verbena, old world climbing fern, paragrass, Peruvian primrose willow, rosary pea; blackeyed susan, sword fern, tropical soda apple and water spangles. Exotic and invasive plant species have been identified as occurring at varying densities on approximately 1,147 acres of the CLWEA. However, the FWC's methodology for determining the number of acres "infested" with invasive and 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 and 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 and exotic plant occurrences, as well as treating any new occurrences as they are identified through continued monitoring.

Additionally, the FWC will continue efforts to control the introduction of exotic and invasive species, as well as pests and pathogens, on the CLWEA 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, the 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 CLWEA 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. Feral hog populations may also be controlled by trapping, as necessary, to aid in minimizing the negative impacts caused by feral hog populations on the area. However, due to the purpose of acquisition and lease restrictions for the CLWEA, other feral hog control measures may need to be evaluated.

Currently, maintenance and control of invasive and exotic plant species (Table 5) continues to be a significant management challenge at the CLWEA. During the 10-year planning period, the FWC continued to implement extensive exotic and invasive species control and maintenance activities throughout the CLWEA. These included exotic plant species treatments on a total of 1,147 acres within areas classified as infested, resulting in an overall 90% of the CLWEA currently being in a maintenance condition. An estimated 10% of the CLWEA remains classified in an undesired condition, thus requiring continued intensive treatments. The FWC will continue to focus control and maintenance activities on areas identified as having invasive exotic plant occurrences, as well as treating any new occurrences as they are identified through continued monitoring activities.

5.6 Public Access and Recreational Opportunities

5.6.1 Americans with Disabilities Act

When public facilities are developed on areas managed by the 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 ADA⁴ where:

1. Compliance will cause harm to historical resources, 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 CLWEA. To accomplish this, FWC will work with recreational stakeholders and the general public to continue to implement, and update if necessary the Recreation Master Plan for the CLWEA that will continue to be used to further design and develop 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 (Appendix 12.12).

Roads, including those that have public and/or FWC staff vehicular access, and trails are monitored and maintained by FWC staff as needed and appropriate. The FWC will regularly maintain all marked and unmarked trails as necessary, including replacing signs and clearing the trails, as outlined in the Recreation Master Plan. Several locations on the CLWEA are classified and maintained as an access road and a trail, due to the multiple uses and the ongoing maintenance requirements.

5.6.3 Public Access Carrying Capacity

Baseline carrying capacities for users on the 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 the 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 CLWEA can currently support 86 visitors per day. 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 CLWEA 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 part of the Recreation Master Plan update and implementation process.

5.6.4 Wildlife Viewing

The CLWEA is home to a variety of resident wildlife found within its mesic flatwoods, and other natural communities. The CLWEA's size and variety of habitat types create outstanding wildlife viewing opportunities.

5.6.5 Hunting

Currently, hunting is prohibited on the CLWEA, however hunting opportunities are available on nearby public lands.

5.6.6 Fishing

Currently, there are no fishing opportunities on the CLWEA however fishing opportunities are available on nearby public lands.

5.6.7 Roads and Trails

Currently, the CLWEA offers over 4.5 miles of marked, multi-use trails, and 6.6 miles of unmarked trails. There are no public access roads available on the CLWEA. However, there are approximately 10.5 miles of roads used and maintained by FWC staff for vehicular use. Many of the area's marked and unmarked trails are along the maintenance roads used by FWC staff. All marked and unmarked trails are available to the public for hiking, biking, and equestrian use only. Roads and trails on the CLWEA are further depicted in Figure 13.

5.6.8 Bicycling

Bicycling is permitted year-round on the CLWEA.

5.6.9 Equestrian

Currently, the CLWEA offers over 4.5 miles of marked, multi-use trails, and 6.6 miles of unmarked trails that area available for equestrian users. The main entrance of the CLWEA contains a parking area suitable for trailers.

5.6.10 Camping

Currently, camping is prohibited on the CLWEA, however camping opportunities are available on nearby public lands.

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 the FWC-managed lands is governed by specific guidelines. These guidelines may be found on the following the FWC website: [http://myfwc.com/media/1074886/FWC Geocache Guidelines.pdf](http://myfwc.com/media/1074886/FWC_Geocache_Guidelines.pdf).

To facilitate wildlife viewing recreational opportunities on the area, the FWC has continued to establish and maintain hiking trails, kiosk, trail map and website. During the previous 10-year planning period, the FWC completed several public accesses, recreational and facility improvements on the CLWEA, including development of multi-use trail system and interpretive signage. Further planned public access facility improvements are detailed in Section 6 below. Ongoing public access and recreational opportunity management challenges are addressed in Section 7 below. In addition, the FWC will continue to implement public access, recreational and educational opportunities on the area in accordance with the CLWEA Recreational Master Plan.

5.7 Hydrological Preservation and Restoration

5.7.1 Hydrological Assessment

The CLWEA does not contain any major waterbodies on the area. However, the FWC will continue to work with the SWFWMD and the DEP on monitoring groundwater resources and water quality. During the previous planning period the FWC obtained a hydrological assessment to determine potential hydrological restoration activities. The FWC will continue to cooperate with the SWFWMD on any activities occurring on the area, as needed and appropriate.

5.7.2 Water Resource Monitoring

In cooperation with the SWFWMD natural water regimes will be re-established to the extent feasible and appropriate. This is consistent with the purpose for the acquisition of the land and relates directly to the water quantity and quality aspects of the ecosystem.

Currently, the FWC cooperates with the DEP and the SWFWMD for the monitoring of surface and ground water quality and quantity and will continue to cooperate with those agencies to develop and implement any additional surface water quality and quantity monitoring protocols for the CLWEA. In this capacity, the FWC will primarily rely on the expertise of the SWFWMD and the DEP to facilitate these monitoring activities. As necessary, the FWC may independently conduct or contract for water resource monitoring on the CLWEA, as guided by the DEP and the SWFWMD.

5.8 Forest Resource Management

A Timber Assessment of the timber resources of the CLWEA was conducted by the Florida Forest Service in 2010, and subsequently updated in 2016. The management of timber resources has been considered in the context of the Timber Assessment and the overall land management goals and activities.

Timber resources include some areas in need of thinning for habitat improvement. Thinning of the forest over-story, hydrological restoration and reintroduction of prescribed burning are the most important factors in re-establishment of natural communities and the enhancement of wildlife habitats in these areas. 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 the OBVM 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 selected sites may also be used to increase the rate of reforestation and to ensure diversity, as needed and appropriate. Forested wetlands are managed for stands with old growth characteristics. Snags will be protected to benefit cavity-nesting species.

5.9 Historical Resources

Procedures outlined by the DHR will be followed to preserve the historical sites of the CLWEA. The FWC will consult with the DHR in an attempt to locate any additional historical features on the area. In addition, the FWC will ensure management staff has the DHR Archaeological Resources Monitoring training. 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 for management of these resources, and prior to any facility development or other ground disturbing activities. Furthermore, as appropriate

and necessary, the FWC will contact professionals from the DHR for assistance prior to any ground-disturbing activity on the CLWEA.

To date, the DHR Master Site File indicates no known historic sites on the CLWEA. The FWC will work to coordinate with the DHR to schedule a historical resource survey during this planning period.

5.10 Capital Facilities and Infrastructure

The 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 CLWEA include ranch house, field office, 1940's house, shop, 10.5 miles of roads, public use entrance and a grove pump house.

As described in Section 5.6, there are approximately 10.5 miles of roads used by FWC staff to access various parts of the CLWEA for management purposes only. There is no public vehicular access available on these roads; however, some areas have marked and unmarked trails along the roads and can be utilized for hiking, biking and equestrian use. The CLWEA has approximately 4.5 miles of marked trails and 6.6 miles of unmarked trails. Figure 13 further depicts the location of roads and trails.

As described in Section 2.4.1 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).

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 the 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 the 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 the 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 the 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 (Figure 11) 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 CLWEA. 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 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 the 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 identified 3,263 acres of potential additions or privately held inholdings for the CLWEA (Figure 12). In addition, 22,097 acres of the Lake Wales Ridge Ecosystem Florida Forever project remain to be acquired. Upon completion of the CAS, additions to the FWC Florida Forever Additions and Inholdings acquisition list may be recommended.

5.12 Research Opportunities

The FWC intends to cooperate with researchers, universities, and others as feasible and appropriate. For the CLWEA, 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 CLWEA must have prior approval by the 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 CLWEA as set forth in the lease agreements with the Board of Trustees. In keeping with the lease agreements, and 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 the DHR to ensure the requirements of the Management Procedures Guidelines - Management of Archaeological and Historical Resources document (Appendix 12.14) are followed with regard to any ground-disturbing activities. In addition, the FFS assists the FWC by providing technical assistance on forest resource management. Also, the FWC cooperates and consults with the SWFWMD and DEP for the monitoring and management of both ground and surface water resources and the overall management of the CLWEA.

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 CLWEA. 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 CLWEA 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 CLWEA. 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 Apiaries

Currently, there are no apiaries operating on the CLWEA, and the most recent apiary assessment of the CLWEA has determined no suitable sites. However, use of apiaries is conditionally approved for the CLWEA, 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 12.7). Location, management and administration of apiaries on the CLWEA will be guided by the FWC Apiary Policy (Appendix 12.8).

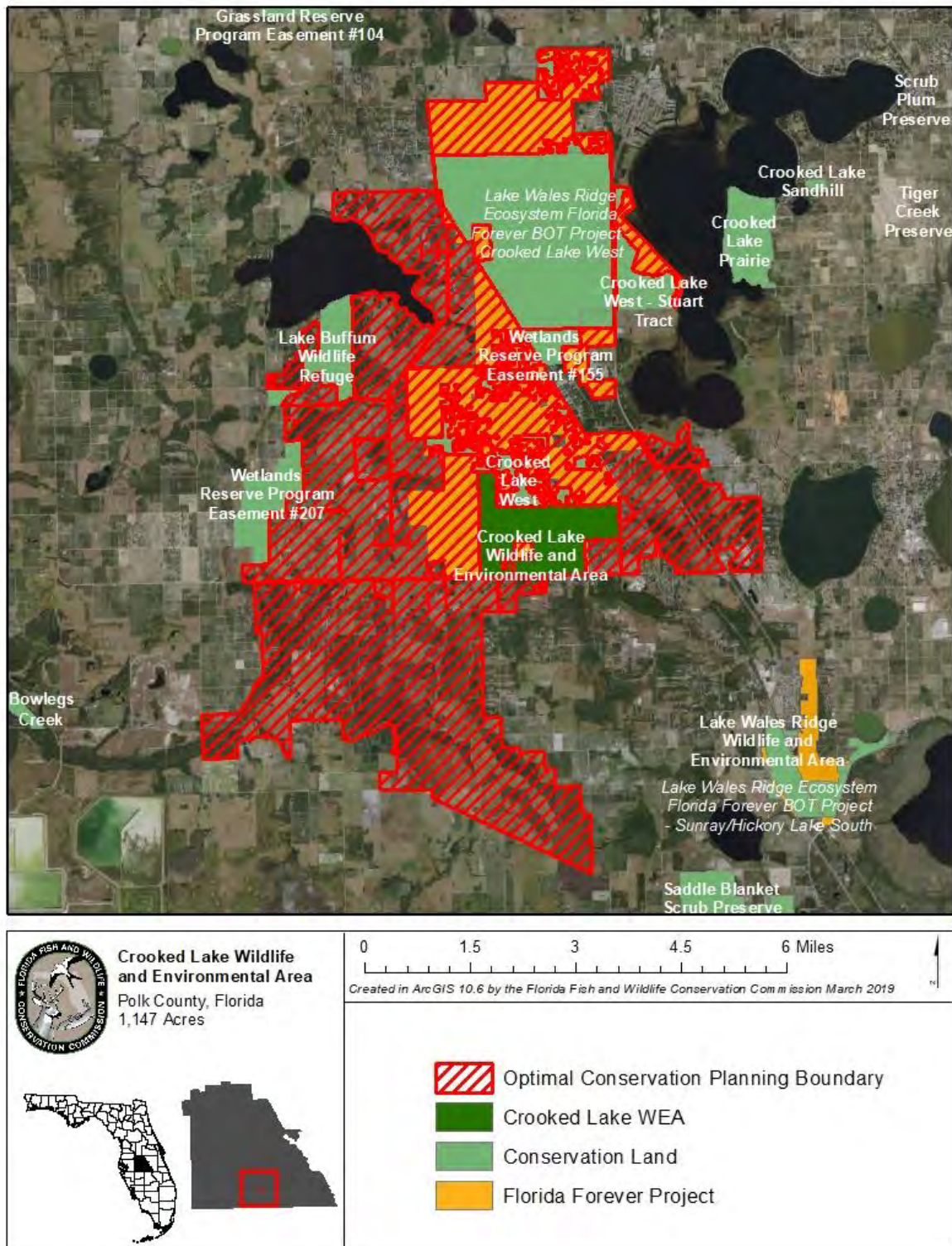


Figure 11. Optimal Conservation Planning Boundary for the CLWEA

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

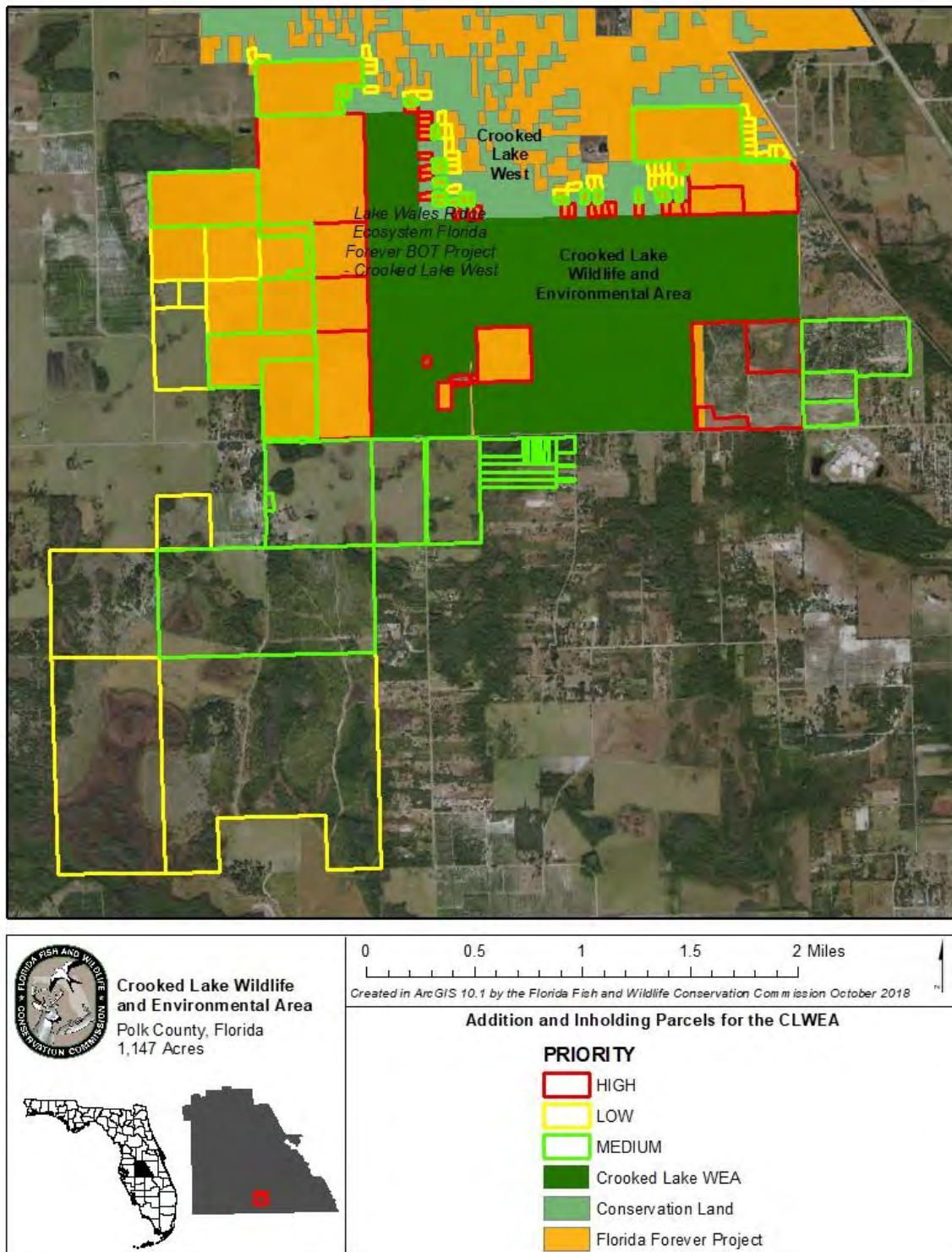


Figure 12. Addition and Inholding Parcels for the CLWEA

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 coastal 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.⁵

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;^{6, 7, 8} more frequent invasions and outbreaks of exotic invasive species;⁹ and loss of habitat in coastal areas due to sea level rise.¹⁰ 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.¹¹ 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, the 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, the 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 the 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, the FWC will participate in organizations such as the Peninsular Florida Land Conservation Cooperative or similar organizations so that the FWC continues to gain understanding and share knowledge of key issues related to potential climate change. In addition, the 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.

To address the potential impacts of climate change on the CLWEA, Goals and Objectives have been developed as a component of this Management Plan (Section 6.10). 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 CLWEA 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 to achieve an overall desired future outcome for the CLWEA. 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 Utilize OBVM monitoring to evaluate the actively managed natural communities and adjust management activities as needed.

Long-term

- 6.1.2 Conduct selective timber harvest for the purposes of habitat enhancement on 243 acres.
- 6.1.3 Utilize OBVM monitoring to evaluate actively managed natural communities and adjust management efforts to meet desired future conditions.
- 6.1.4 Continue to implement prescribed burn plan. (Appendix 12.10)
- 6.1.5 Continue to conduct habitat/natural community enhancement and improvement on 150 acres per year including roller chopping, maintaining fire lines and mowing.

6.2 Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration

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

Long-term

- 6.2.1 Continue to implement WCPR Strategy by managing identified habitats and monitoring identified species, including two imperiled species (Southeastern American kestrel and gopher tortoise) and at least three functional Southeastern American kestrel nest boxes
- 6.2.2 As described in the WCPR Strategy, conduct a gopher tortoise survey.
- 6.2.3 Continue to collect and record opportunistic wildlife species occurrence data.
- 6.2.4 Update the WCPR Strategy.

6.3 Other Wildlife (Game and Nongame) Habitat Maintenance, Enhancement, Restoration, and Population Restoration.

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

Long-term

- 6.3.1 Determine presence of two locally important wildlife species (gopher frog and Florida mouse), as identified in the WCPR strategy.
- 6.3.2 Continue to collect and record opportunistic wildlife species occurrence data.

6.4 Exotic and Invasive Species Maintenance and Control

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

Long-term

- 6.4.1 Continue to annually inspect at least 200 acres for the level of infestation of FLEPPC Category I and Category II invasive exotic plant species and treat as needed and appropriate (alligator weed, Caesar's weed, camphor tree, chinaberry, cogongrass, Guinea grass, Japanese climbing fern, lantana, shrub verbena, old world climbing fern, paragrass, Peruvian primrose willow, rosary pea; blackeyed susan, sword fern, tropical soda apple and water spangles).
- 6.4.2 Continue to explore potential control measures for feral hogs on the area.

6.5 Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities.

Long-term

- 6.5.1 Update the Recreation Master Plan if acquisitions and/or other changes warrant.
- 6.5.2 Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 86 visitors per day.
- 6.5.3 Continue to provide kiosk, trail map and website for interpretation and education.
- 6.5.4 Continue to maintain/design/develop 4.5 miles of marked trails and 6.6 miles of unmarked trails existing on site.
- 6.5.5 Monitor trails annually for visitor impacts.
- 6.5.6 Continue to implement the Recreation Master Plan.
- 6.5.7 Cooperate with other agencies, County, stakeholders and regional landowners to investigate regional recreational opportunities including linking hiking, and multi-use trail systems between adjacent public areas.

6.6 Hydrological Preservation and Restoration

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

Long-term

- 6.6.1 To enhance natural hydrological functions, continue to install and maintain low-water crossings and culverts as appropriate.
- 6.6.2 Continue to implement hydrological restoration plan.
- 6.6.3 Continue to cooperate with the Southwest Florida Water Management District for the monitoring of surface and ground water quality and quantity.

6.7 Forest Resource Management

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

Long-term

- 6.7.1 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.

Long-term

- 6.8.1 Coordinate with DHR to schedule and conduct a historical resource survey.
- 6.8.2 Ensure all known sites are recorded in the Florida Division of Historical Resources Master Site file.
- 6.8.3 Cooperate with DHR in designing site plans for development of infrastructure.
- 6.8.4 Coordinate with DHR for cultural resource management guideline staff training.
- 6.8.5 Continue to follow DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of cultural and historic resources.

6.9 Capital Facilities and Infrastructure

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

Long-term

- 6.9.1 Monitor trails and infrastructure annually for visitor impacts.
- 6.9.2 Continue to maintain six facilities. (ranch house, field office, 1940's house, shop, public use entrance and grove pump house)
- 6.9.3 Continue to maintain 10.5 miles of roads.
- 6.9.4 Continue to maintain 4.5 miles of marked trails and 6.6 miles of unmarked trails existing on site.
- 6.9.5 Construct/replace new office facility on the area.
- 6.9.6 Install boundary fencing as needed and appropriate.

6.10 Land Conservation and Stewardship Partnerships

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

Long-term

- 6.10.1 Continue to identify and evaluate potential important wildlife habitat, landscape-scale linkages, wildlife corridors and operational management needs, and update the OCPB for the CLWEA as appropriate and necessary.
- 6.10.2 Continue to contact and inform adjoining private landowners about the FWC Landowners Assistance Program, and coordinate with public entities to pursue conservation stewardship partnerships.
- 6.10.3 Continue to evaluate and identify FWC inholdings and additions priority parcels for potential conservation acquisition and pursue acquisitions as funding allows.
- 6.10.4 Continue to maintain a GIS shapefile and other necessary data to facilitate nominations within the FWC OCPB for the FWC landowner assistance and conservation acquisition programs.
- 6.10.5 Continue to update the FWC Conservation Action Strategy for the CLWEA as necessary.
- 6.10.6 Continue to identify potential non-governmental land stewardship organization partnerships and grant program opportunities.
- 6.10.7 Determine the efficacy of conducting a landowner assistance/conservation stewardship partnership workshop(s) and pursue as necessary and appropriate.
- 6.10.8 Continue to evaluate and determine if any portions of the CLWEA are no longer needed for conservation purposes, and therefore may be designated as surplus lands.

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 CLWEA.

Long-term

- 6.11.1 Coordinate with the FWC-FWRI Climate Change Adaptation Initiative to identify potential impacts of projected climate change on fish and wildlife resources and operational management of the CLWEA.
- 6.11.2 As appropriate, update the CLWEA Prescribed Fire Plan, WCPR Strategy and Recreation Master Plan to incorporate new scientific information regarding projected climate change.

- 6.11.3 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.

6.12 Cooperative Management, Special Uses, and Research Opportunities

Goal: Provide access and use of the CLWEA to current cooperative managers and continue collaborative management and research efforts.

Long-term

- 6.12.1 Continue to cooperate with researchers, universities and others as appropriate.
- 6.12.2 Coordinate and cooperate with Department of Defense military branches to allow for training opportunities for military personnel and other initiatives as appropriate and compatible with the conservation of the CLWEA.

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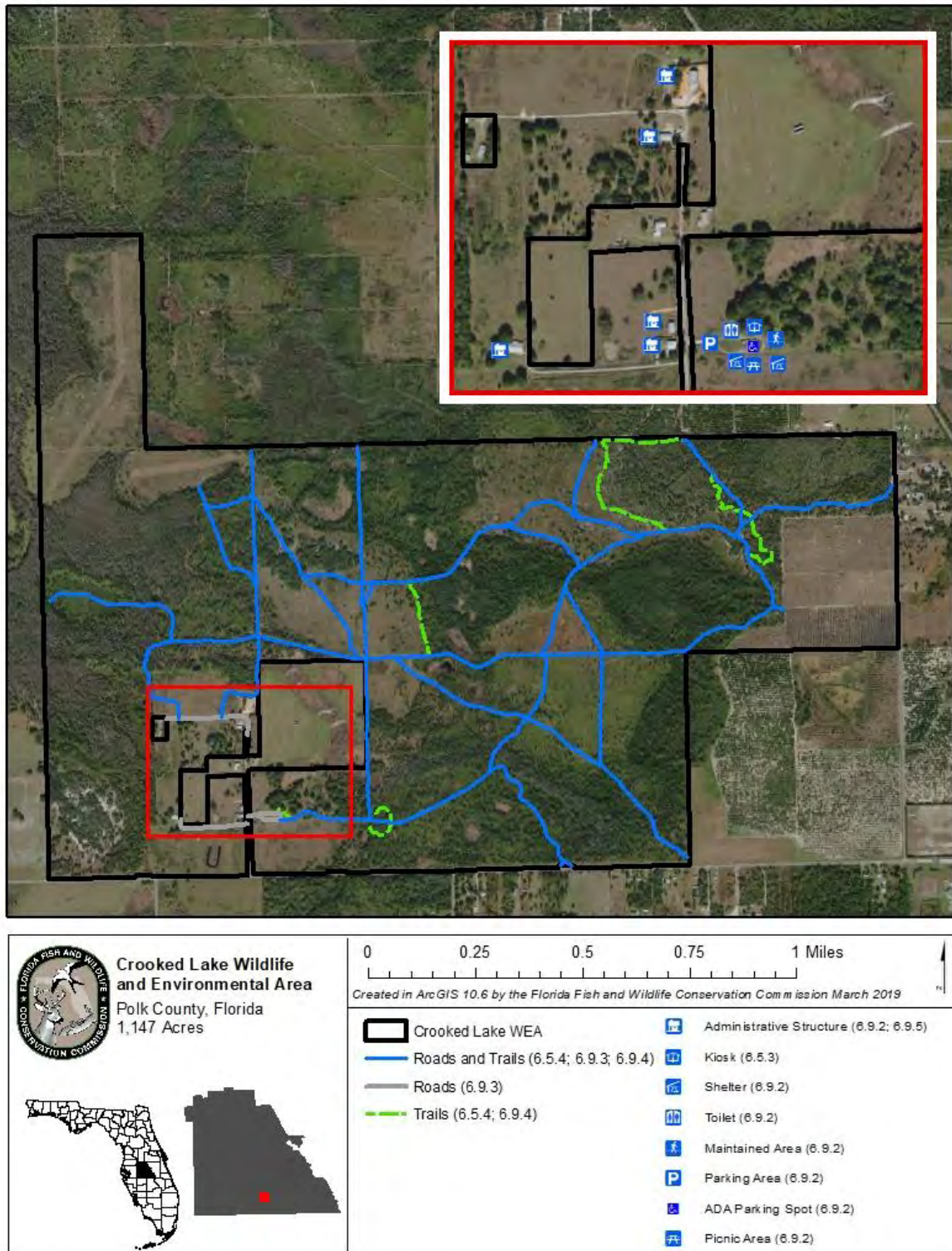


Figure 13. Project Locations for the CLWEA

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

7 Resource Management Challenges and Strategies

The following section identifies and describes further management needs and challenges associated with the CLWEA 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.

7.1 Challenge 1: Currently, the FWC aims to meet FWC law enforcement and management staff standards and needs.

- 7.1.1 Strategy: Agency staff levels will continue to be evaluated to determine if increased staffing or other alternatives can improve management needs.
- 7.1.2 Strategy: Pursue funding for increased law enforcement, management staffing and additional private sector contract services as appropriate.
- 7.1.3 Strategy: Explore potential volunteer resources for assisting with management.

7.2 Challenge 2: Exotic and invasive plants and animals from adjacent private lands are spreading to the CLWEA.

- 7.2.1 Strategy: Coordinate with the FWC's Landowner Assistance Program to work with adjacent landowners to control and manage exotic and invasive plants on adjacent properties.
- 7.2.2 Strategy: Coordinate with other governmental and private organizations to obtain resources to control and manage exotic and invasive species on adjacent properties.
- 7.2.3 Strategy: Coordinate with management staff at the adjacent Polk County properties to control the spread of exotic and invasive plants and animals.

7.3 Challenge 3: The CLWEA is not a well-known public outdoor recreation destination.

- 7.3.1 Strategy: Work with local and Polk County tourism boards to promote the CLWEA.
- 7.3.2 Strategy: Cross-promote the CLWEA with other regional public conservation lands.
- 7.3.3 Strategy: Work with Polk County to install directional signage along area roads.

7.4 Challenge 4: Potential future development on adjacent lands can result in incompatible land uses increasing management challenges for the area.

- 7.4.1 Strategy: Coordinate with Polk County to ensure land use and zoning designations adjacent to the CLWEA will continue to be compatible with the management of the area.

7.5 Challenge 5: There are inholdings within the CLWEA that can cause management challenges.

- 7.5.1 Strategy: Explore conservation strategies for the inholdings, including, but not limited to, fee simple or less-than-fee acquisition to ensure long term conservation of the site.
- 7.5.2 Strategy: Maintain inholdings within the OCPB.
- 7.5.3 Strategy: Coordinate with existing landowners regarding management of exotic and invasive plant species.

7.6 Challenge 6: The CLWEA's proximity to major roadways and residential areas presents significant smoke management challenges during prescribed burning.

- 7.6.1 Strategy: Use available tools and resources to minimize smoke impact and increase outreach for areas of potential impact.

8 Cost and Funding Sources

The following represents the actual and unmet budgetary needs for managing the lands and resources of the CLWEA. 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 grants and potential project-specific mitigation, may be sought to supplement existing funding as needed.

The cost estimate below, although exceeding what the 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 CLWEA. Cost estimate categories are those currently recognized by the FWC and the Land Management Uniform Accounting Council. More information on these categories, as well as the Fiscal Year 2017-2018 operational plan showing detailed cost estimates by activity and categories of expenditures, may be found in Appendix 12.16.

Crooked Lake WEA Management Plan Cost

Estimate

Maximum expected one-year expenditure

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	Priority schedule:
Exotic Species Control	\$70,815	(1)	(1) Immediate (annual)
Prescribed Burning	\$46,560	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$558	(1)	(3) Other (5+ years)
Timber Management	\$279	(1)	
Hydrological Management	\$3,820	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$74,951	(1)	
Subtotal	\$196,982		
 <u>Administration</u>			
General administration	\$13,672	(1)	
 <u>Support</u>			
Land Management Planning	\$25,655	(1)	
Land Management Reviews	\$3,716	(3)	
Training/Staff Development	\$4,093	(1)	
Vehicle Purchase	\$416,780	(2)	
Vehicle Operation and Maintenance	\$59,161	(1)	
Other (Technical Reports, Data Management, etc.)	\$4,146	(1)	
Subtotal	\$513,552		
 <u>Capital Improvements</u>			
New Facility Construction	\$36,170	(2)	
Facility Maintenance	\$305,909	(1)	
Subtotal	\$342,079		
 <u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$9,153	(1)	
 <u>Law Enforcement</u>			
Resource protection	\$1,048	(1)	
 <u>Total</u>	\$1,076,485	*	

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

Crooked Lake WEA Management Plan Cost

Estimate

Ten-year projection

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	Priority schedule:
Exotic Species Control	\$622,186	(1)	(1) Immediate (annual)
Prescribed Burning	\$409,077	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$4,899	(1)	(3) Other (5+ years)
Timber Management	\$2,450	(1)	
Hydrological Management	\$33,559	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$658,530	(1)	
Subtotal	\$1,730,701		
<u>Administration</u>			
General administration	\$120,128	(1)	
<u>Support</u>			
Land Management Planning	\$225,412	(1)	
Land Management Reviews	\$10,637	(3)	
Training/Staff Development	\$35,960	(1)	
Vehicle Purchase	\$1,466,667	(2)	
Vehicle Operation and Maintenance	\$519,795	(1)	
Other (Technical Reports, Data Management, etc.)	\$36,430	(1)	
Subtotal	\$2,294,902		
<u>Capital Improvements</u>			
New Facility Construction	\$104,477	(2)	
Facility Maintenance	\$2,687,747	(1)	
Subtotal	\$2,792,224		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$80,415	(1)	
<u>Law Enforcement</u>			
Resource protection	\$9,204	(1)	
<u>Total</u>	\$7,027,574	*	

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

9 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 the 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 the 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 | ✓ |

10 Compliance with Federal, State, and Local Governmental Requirements

The operational functions of the 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 the 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 CLWEA 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 the FWC as described in its Agency Strategic Plan (Appendix 12.7). 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, 373, 375, 378, 379, 403, 487, 597, and 870 FS.

The FWC has developed and utilizes an Arthropod Control Plan for the CLWEA in compliance with Chapter 388.4111 F.S. (Appendix 12.17). This plan was developed in cooperation with the local Polk County arthropod control agency. This plan is also in conformance with the Local Government Comprehensive Plan as approved and adopted for Polk County, Florida, (Appendix 12.18).

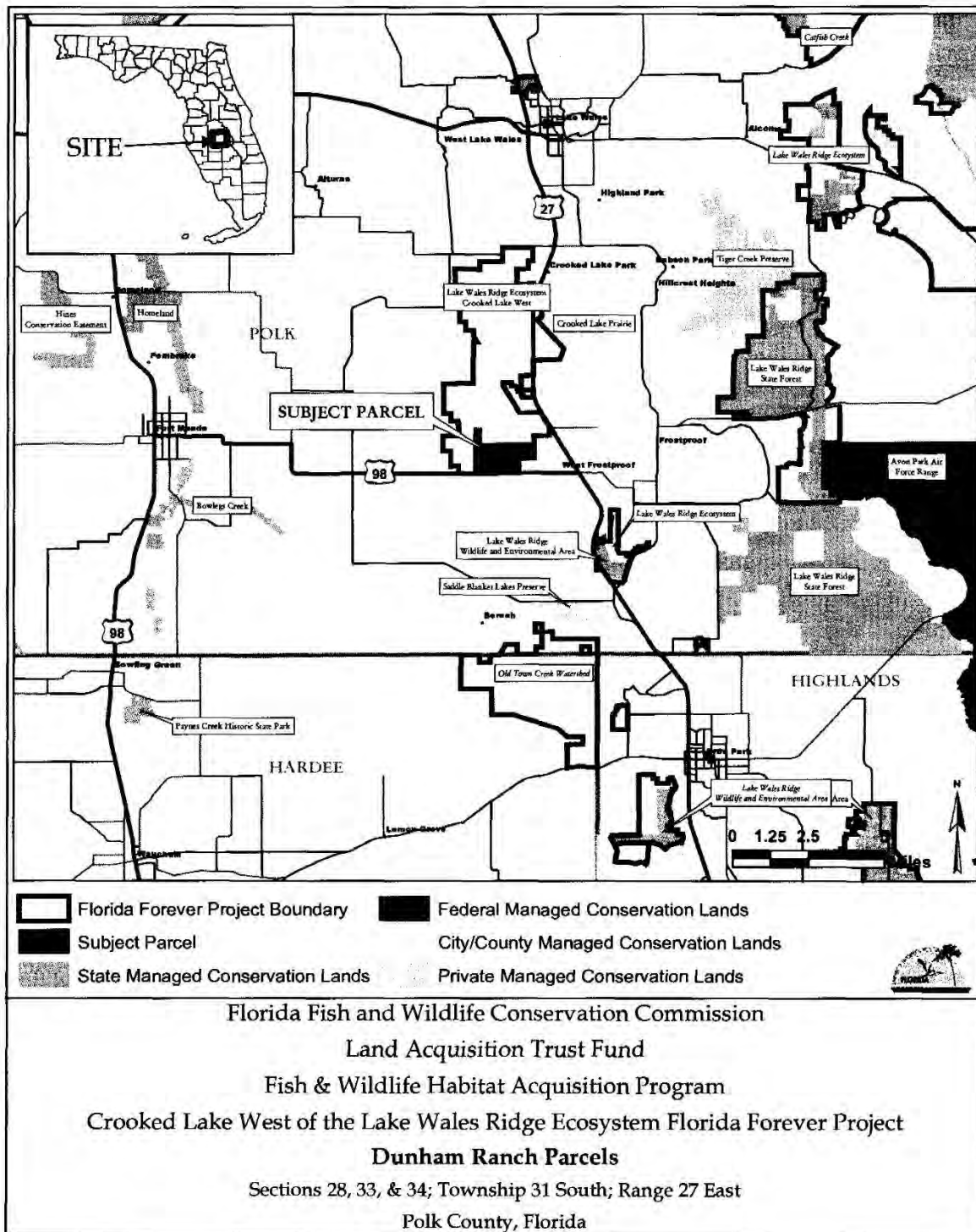
11 Endnotes

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12 Appendices

12.1 Lease Agreement



SAL2

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

1,147 acres

LEASE AGREEMENT

CROOKED LAKE WILDLIFE AND ENVIRONMENTAL AREA

Lease Number 4593

This lease is made and entered into this 22ND day of DECEMBER, 2008, between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, hereinafter referred to as "LESSOR", and FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, hereinafter referred to as "LESSEE".

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 that 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, State of Florida Department of Environmental Protection.
2. DESCRIPTION OF PREMISES: The property subject to this lease is situated in the County of Polk, State of Florida and is more particularly described in Exhibit "A" attached hereto and hereinafter referred to as "leased premises". Unless stated otherwise, all sovereignty lands located within the boundaries of Exhibit "A" shall be considered a part of leased premises.
3. TERM: The term of this lease shall be for a period of fifty years, commencing on December 22, 2008, and ending on December 21, 2058, unless sooner terminated pursuant to the provisions of this lease.

4. PURPOSE: LESSEE shall 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 259.032(11), Florida Statutes, 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.

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 Section 253.034, Florida Statutes, within twelve months of the effective date of this lease. The Management Plan shall be submitted for approval to the State of Florida Department of Environmental Protection, Division of State Lands, Office of Environmental Services, Mail Station 140, 3800 Commonwealth Boulevard, Tallahassee, Florida 32399-3000. 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 emphasize the original management concept as approved by LESSOR at the time of acquisition, which established the primary public purpose for which the leased premises were acquired. The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by LESSEE and LESSOR. 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.

Page 2 of 19 Pages
Lease No.4593

R11/07

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 the leased premises by preparing and delivering to the Division of Risk Management, State of Florida 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, State of Florida Department of Environmental Protection, Mail Station 130, 3800 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.
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 the disturbance of archaeological and historic sites on state-owned lands is prohibited unless prior authorization has been obtained from the State of Florida Department of State, Division of Historical Resources. 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

Page 3 of 19 Pages
Lease No.4593

R11/07

easements are expressly prohibited without the prior written approval of LESSOR. Any easement 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. 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 will initiate surveying services to locate and mark boundary lines of specific parcels when necessary for immediate agency management and will 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 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 a party in any litigation or other legal or administrative proceeding.

Page 4 of 19 Pages
Lease No.4593

R11/07

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 their routine operating funds for the resolution of any title defect, survey matter, or environmental contamination associated with the lease 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 a party in any litigation or other legal or administrative proceeding.

15. SURRENDER OF PREMISES: Upon termination or expiration 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, written notification shall be made to the Bureau of Public Land Administration, Division of State Lands, State of Florida Department of Environmental Protection, Mail Station 130, 3800 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, at least six months prior to the release of all or any part 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 permanent 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

Page 5 of 19 Pages
Lease No.4593

R11/07

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 and improvements located thereon do not meet all conditions set forth in paragraphs 18 and 21 herein, LESSEE shall pay all costs 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, LESSEE 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. 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.

19. 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.

20. 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. Further, no trees, other than non-native species, shall be removed or major land alterations done without the prior written approval of LESSOR. Removable equipment placed on the leased premises by LESSEE which do not

Page 6 of 19 Pages
Lease No.4593

R11/07

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.

21. 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, removing all trash or litter, maintaining all planned improvements as set forth in the approved Management Plan, meeting all building and safety codes. LESSEE shall maintain any and all existing roads, canal, ditches, culverts, risers and the like in as good condition as the same may be on the effective date of this lease.

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

23. 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 this lease 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.

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

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

Page 7 of 19 Pages
Lease No.4593

R11/07

to, mortgages or construction liens against the leased premises or against any interest of LESSOR therein.

26. 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.

27. NOTICES: All notices given under this lease shall be in writing and shall be served by certified mail including, but not limited to, notice of any violation served pursuant to Section 253.04, Florida Statutes, to the last address of the party to whom notice is to be given, as designated by such party in writing. LESSOR and LESSEE hereby designate their address as follows:

LESSOR: Board of Trustees of the Internal Improvement Trust
Fund of the State of Florida
Department of Environmental Protection
Bureau of Public Land Administration
Division of State Lands
3800 Commonwealth Boulevard, MS 130
Tallahassee, Florida 32399-3000

LESSEE: Florida Fish and Wildlife Conservation Commission
620 South Meridian Street, Room 321
Tallahassee, Florida 32399-1600

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 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

Page 8 of 19 Pages
Lease No.4593

R11/07

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, 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.

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 hereafter lawfully assessed and levied against the leased premises.

Page 9 of 19 Pages
Lease No.4593

R11/07

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, handicap, 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.
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 pursuant to subsection 18-2.020(8), Florida Administrative Code. 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. SPECIAL CONDITIONS: The following special conditions shall apply to

this lease: None.
Page 10 of 19 Pages
Lease No.4593

R11/07

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

DAVE FEWELL
Witness

DAVE FEWELL
Print/Type Witness Name

ROBIN J. SMITH
Witness

ROBIN J. SMITH
Print/Type Witness Name

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

"LESSOR"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 22ND day of
December 2008, by Gloria C. Barber, as Operations and Management
Consultant Manager, Bureau of Public Land Administration, Division of State
Lands, State of Florida Department of Environmental Protection, acting as
agent on behalf of the Board of Trustees of the Internal Improvement Trust
Fund of the State of Florida.



DAVID L. FEWELL
Notary Public, State of Florida

Print/Type Notary Name

Commission Number:

Commission Expires:

Approved as to Form and Legality

By: David L. Fewell
DEP Attorney

Page 11 of 19 Pages
Lease No. 4593

R11/07

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

Sabrina Menendez
Witness
Sabrina Menendez
Print/Type Witness Name
Karen Ventinglier
Witness
Karen Ventinglier
Print/Type Witness Name

By: [Signature] (SEAL)
Nick Wiley
Type/Print Name
Title: Asst. Executive Director

STATE OF FLORIDA
COUNTY OF LEON

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

The foregoing instrument was acknowledged before me this 12 day of
December 2008, by Nick Wiley, as Asst. Exec. Dir., on behalf
of the Florida Fish and Wildlife Conservation Commission, who is/are
personally known to me or who has produced _____ as
identification.

[Signature]
Notary Public, State of Florida
Kathleen L. Hampton
Print/Type Notary Name

Commission Number:
Commission Expires:

NOTARY PUBLIC-STATE OF FLORIDA
Kathleen Louise Hampton
Commission # DD568288
Expires: JUNE 26, 2010
BONDED THRU ATLANTIC BONDING CO., INC.

This Instrument Prepared By and
Please Return To:
Wendi McAleese
American Government Services Corporation
3812 W. Linebaugh Avenue
Tampa, Florida 33618
AGS #: 21966

INSTR # 2008114958
BK 07669 PGS 1208-1214 PB(2) 7
RECORDED 07/07/2008 03:06:08 PM
RICHARD M WEISS, CLERK OF COURT
POLK COUNTY
DEED DOC 86,476.01
RECORDING FEES 61.00
RECORDED BY P Beresford

WARRANTY DEED
(STATUTORY FORM - SECTION 689.02, F.S.)

THIS INDENTURE, made this 27th day of June, A.D. 2008, between Kathleen C. Dunham, a single person and Shirley L. Cannon, a single person, whose address is P. O. Box 97, Frostproof, Florida, 33843-0097, grantor, and the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, whose post office address is c/o Florida Department of Environmental Protection, Division of State Lands, 3900 Commonwealth Boulevard, Mail Station 115, Tallahassee, FL 32399-3000, grantee,

(Whoever used herein the terms "grantor" and "grantee" include all the parties to this instrument and their heirs, legal representatives, successors and assigns. "Grantor" and "grantee" are used for singular and plural, as the context requires and the use of any gender shall include all genders.)

WITNESSETH: That the said grantor, for and in consideration of the sum of Ten Dollars and other good and valuable considerations, to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained and sold to the said grantee, and grantee's successors and assigns forever, the following described land situate, lying and being in Polk County, Florida, to-wit:

See Exhibit "A" attached hereto and by reference made a part hereof.

Property Appraiser's Parcel Identification Number: 333127-000000-042010, 333127-000000-041010, 333127-000000-041030, 333127-000000-010000, 333127-000000-041070, 333127-000000-041040, 283127-000000-043000, 343127-000000-010000

These lands are being acquired under the provisions of Section 259.041, Florida Statutes, as state conservation lands.

This conveyance is subject to easements, restrictions, limitations, and conditions of record if any now exist, but any such interests that may have been terminated are not hereby re-imposed.

AND the said grantor does hereby fully warrant the title to said land, and will defend the same against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF the grantor has hereunto set grantor's hand and seal, the day and year first above written.

Signed, sealed and delivered in
the presence of:

Shirley L. Cannon
(Signature of First Witness)

Shirley Oliver Tybrr
(Printed, Typed or Stamped Name
of First Witness)

Wendi McAleese
(Signature of Second Witness)

WENDI MCALEESE
(Printed, Typed or Stamped Name
of Second Witness)

Kathleen C. Dunham
Glenda C. Johns
Kathleen C. Dunham, by Glenda C. Johns, her attorney-
in-fact

Exhibit "A"
Page 13 of 19 Pages
Lease No. 4593

Kathaleen C. Dunham by

Shirley L. Cannon
(Signature of First Witness)

Shirley L. Cannon
Kathaleen C. Dunham, by Shirley L. Cannon, her attorney-
in-fact

Shirley Oliver Tyler
(Printed, Typed or Stamped Name
of First Witness)

Wendy McAleese
(Signature of Second Witness)

WENDY MCALEESE
(Printed, Typed or Stamped Name
of Second Witness)

Shirley Oliver Tyler
(Signature of First Witness)

Shirley L. Cannon
Shirley L. Cannon, individually

Shirley Oliver Tyler
(Printed, Typed or Stamped Name
of First Witness)

Wendy McAleese
(Signature of Second Witness)

WENDY MCALEESE
(Printed, Typed or Stamped Name
of Second Witness)

Exhibit "A"
Page 14 of 19 Pages
Lease No. 4593

STATE OF FLORIDA
COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 27th day of June, 2008, by
Glenda C. Johns, as attorney-in-fact for Kathaleen C. Dunham and Shirley L. Cannon, both individually and as attorney-
in-fact for Kathaleen C. Dunham. Such person (Notary Public must check applicable box):

- ☐ is personally known to me.
☐ produced a driver license.
☒ produced FL Photo IDs as identification.

(NOTARY PUBLIC SEAL)

Wendell McAleer
Notary Public

(Printed, Typed or Stamped Name of Notary Public)

Commission No.: _____

My Commission Expires: _____

Exhibit "A"
Page 15 of 19 Pages
Lease No. 4593

EXHIBIT "A"

The West ¼ of the NW ¼ of the SE ¼ of the SW ¼ of Section 33, Township 31 South, Range 27 East, Polk County, Florida.

AND

The SE ¼ of the NE ¼ of the SW ¼ of Section 33, Township 31 South, Range 27 East, Polk County, Florida, less the South ¼ thereof and less right of way for Rhoden Meyers Road.

AND

The East ½ of the NE ¼ of the NE ¼ of the SW ¼ and W ½ of the NE ¼ of the NE ¼ of the SW ¼ and E ½ of the NW ¼ of the NE ¼ of the SW ¼ and E ½ of the SW ¼ of the NE ¼ of the SW ¼, all in Section 33, Township 31 South, Range 27 East, Polk County, Florida.

AND

The N ½ and the E ½ of the SE ¼ and SW ¼ of the SE ¼ and the W ½ of the SW ¼ and the SE ¼ of the SW ¼, less the NW ¼, all of Section 33, Township 31 South, Range 27 East, Polk County, Florida.

LESS AND EXCEPT:

That part of the South ¼ of the Southwest ¼ of Section 33, Township 31 South, Range 27 East, as per Public Records of Polk County, Florida:

Being described as follows:

Commence on the Westerly boundary of Section 4, Township 32 South, Range 27 East, at a point 17.43 feet Southerly of the Northwest corner of said Section 4 (said corner also behind the Southwest corner of Section 33, Township 31 South, Range 27 East); run thence North 89°49'10" East 1074.58 feet; thence North 0°10'50" West 26.20 feet to the Point of Beginning; continue thence North 0°10'50" West 23.80 feet; thence North 89°49'10" East 200.00 feet; thence South 0°10'50" East 23.80 feet; thence South 89°48'10" West 200.00 feet to the Point of Beginning.

ALSO LESS AND EXCEPT:

Dunham Ranch Millgallon Park
Kathleen Dunham and Kathaleen Dunham
& Shirley L. Cannon, Joint Tenants
5.22.08

RCM
By RB Date 6.10.08

Page 1 of 4

Exhibit "A"
Page 16 of 19 Pages
Lease No. 4593

EXHIBIT "A"

That part of the South $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$ of Section 33, Township 31 South, Range 27 East, as per Public Records of Polk County, Florida:

Commence on the Westerly boundary of Section 4, Township 32 South, Range 27 East, at a point 17.43 feet Southerly of the Northwest corner of said Section 4 (said corner also being the Southwest corner of Section 33, Township 31 South, Range 27 East); run thence North $89^{\circ}49'10''$ East 3424.58 feet; thence North $0^{\circ}10'50''$ West 24.40 feet to the Point of Beginning; continue thence North $0^{\circ}10'50''$ West 25.00 feet; thence North $89^{\circ}49'10''$ East 250.00 feet; thence South $0^{\circ}10'50''$ East 24.90 feet; thence South $89^{\circ}45'44''$ West 50.00 feet; thence South $89^{\circ}37'08''$ West 200.00 feet to the Point of Beginning.

ALSO LESS AND EXCEPT: (Parcel 2)

Commence at the Southeast corner of the Southwest $\frac{1}{4}$ of said Section 33, thence North $00^{\circ}24'53''$ West along the East line of said Southwest $\frac{1}{4}$ a distance of 1322.23 feet to the Northeast corner of the Southeast $\frac{1}{4}$ of said Southwest $\frac{1}{4}$; thence South $89^{\circ}38'47''$ West along the North line of said Southeast $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ a distance of 196.36 feet to a point on the West maintained right of way line of Rhoden Myer Road as shown in Map Book 5, page 235, said point being the Point of Beginning; thence continue South $89^{\circ}38'47''$ West along said North line a distance of 464.88 feet to the Northeast corner of the East $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$ of said Southwest $\frac{1}{4}$; thence South $00^{\circ}26'24''$ East along the East line of said East $\frac{1}{2}$ a distance of 75.45 feet; thence North $86^{\circ}55'08''$ East a distance of 464.44 feet to said West right of way line; thence North $00^{\circ}34'52''$ West along said right of way a distance of 40.40 feet; thence North $04^{\circ}09'43''$ East along said right of way a distance of 12.99 feet to the Point of Beginning.

ALSO LESS AND EXCEPT: (Parcel 3)

Commence at the Southeast corner of the Southwest $\frac{1}{4}$ of said Section 33, thence North $00^{\circ}24'53''$ West along the East line of said Southwest $\frac{1}{4}$ a distance of 1322.23 feet to the Northeast corner of the Southeast $\frac{1}{4}$ of said Southwest $\frac{1}{4}$ and the Point of Beginning; thence South $89^{\circ}38'47''$ West along the North line of said Southeast $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ a distance of 148.57 feet to the East maintained right of way line of Rhoden Myer Road as shown in Map Book 5, page 235; thence South $05^{\circ}52'24''$ East along said East right of way line a distance of 6.65 feet; thence North $89^{\circ}45'55''$ East a distance of

Dunham Ranch Mitigation Park
Kathaleen Dunham and Kathaleen Dunham
& Shirley L. Cannon, Joint Tenants
6.22.06

Page 2 of 4

Exhibit "A"
Page 17 of 19 Pages
Lease No. 4593

EXHIBIT "A"

182.42 feet; thence North 08°37'47" East a distance of 7.10 feet to the North line of the Southwest ¼ of the Southeast ¼ of said Section 33; thence South 89°37'27" West along said North line a distance of 35.60 feet to the Point of Beginning.

AND

The West ½ of the NW ¼ of the NE ¼ of the SW ¼ of Section 33, Township 31 South, Range 27 East, Polk County, Florida.

AND

The West ½ of the SW ¼ of the NE ¼ of the SW ¼, LESS the North 255.68 feet of the West 170.37 of Section 33, Township 31 South, Range 27 East, Polk County, Florida.

LESS AND EXCEPT: (Parcel 1)

Commence at the Southeast corner of the Southwest ¼ of said Section 33, thence North 00°24'53" West along the East line of said Southwest ¼ a distance of 1322.23 feet to the Northeast corner of the Southeast ¼ of said Southwest ¼; thence North 00°26'16" West along said East line a distance of 661.26 feet to the Northeast corner of the South ½ of the Northeast ¼ of the Southwest ¼ of said Section 33; thence South 89°39'03" West along the North line of said South ½ a distance of 1147.01 feet to the Point of Beginning; thence South 00°11'33" East a distance of 266.36 feet; thence South 89°43'01" West a distance of 173.90 feet to a point on the West line of the West ½ of the Southwest ¼ of the Northeast ¼ of the Southwest ¼ of said Section 33; thence North 00°23'26" West along said West line a distance of 10.47 feet to the Southwest corner of the North 255.68 feet of the west 170.37 feet of said West ½ of the Southwest ¼ of the Northeast ¼ of the Southwest ¼; thence along the South and East line of said North 255.68 feet of the West 170.37 feet for the following 2 courses (1) North 89°39'03" East a distance of 170.37 feet; (2) North 00°23'26" West a distance of 255.68 feet to the North line of said West ½; thence North 89°39'03" East along said North line a distance of 4.45 feet to the Point of Beginning.

AND

The West ½ of the SW ¼ of Section 28, Township 31 South, Range 27 East, Polk County, Florida.

Dunham Ranch Mitigation Park
Kathleen Dunham and Kathleen Dunham
& Shirley L. Carroll, Joint Tenants
5.22.08

Page 3 of 4

Exhibit "A"
Page 18 of 19 Pages
Lease No. 4593

EXHIBIT "A"

AND

The North $\frac{1}{2}$ and the SW $\frac{1}{4}$, Section 34, Township 31 South, Range 27 East, Polk County, Florida.

LESS AND EXCEPT:

That part of the South $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ of Section 34, Township 31 South, Range 27 East, as per Public Records of Polk County, Florida.

Being described as follows:

Commence on the Westerly boundary of Section 3, Township 32 South, Range 27 East, at a point 1.39 feet Southerly of the Northwest corner of said Section 3 (said corner also being the Southwest corner of Section 34, Township 31 South, Range 27 East): run thence North $89^{\circ}49'10''$ East 1008.77 feet; thence North $0^{\circ}10'50''$ West 27.68 feet to a Point of Beginning; continue thence North $0^{\circ}10'50''$ West 22.32 feet; thence North $89^{\circ}49'10''$ East 200.00 feet; thence South $0^{\circ}10'50''$ East 22.50 feet; thence South $89^{\circ}31'59''$ West 60.00 feet; thence North $89^{\circ}43'20''$ West 100.00 feet; thence South West 40.00 feet to the Point of Beginning.

ALSO LESS AND EXCEPT:

The maintained right of way of Old Stokes Road.

Dunham Ranch Mitigation Park
Kathaleen Dunham and Kathleen Dunham
& Shirley L. Cannon, Joint Tenants
5/22/08

Page 4 of 4

Exhibit "A"
Page 19 of 19 Pages
Lease No. 4593

12.2 Public Hearing Notice, Advertisements, and Press Release

12.2.1 Public Hearing Notice

NOTICE

The Florida Fish and Wildlife Conservation Commission (FWC)
Announces a

PUBLIC HEARING for the **Crooked Lake** **Wildlife and Environmental Area** **Management Plan**

Polk County, Florida

7:00 P.M. Thursday, February 21, 2019

Polk County Administration Building
330 Church St. Room 431
Bartow, FL 33831

PURPOSE: To receive public comment regarding considerations for the FWC ten-year Land Management Plan for the Crooked Lake Wildlife and Environmental Area (CLWEA). This hearing is being held **EXCLUSIVELY** for discussion of the **DRAFT Crooked Lake WEA Management Plan**. This meeting is not being held to discuss area hunting or fishing regulations. For more information on the process for FWC rule and regulation development go online to:

<http://myfwc.com/about/rules-regulations/>

A Management Prospectus for the Crooked Lake WEA is available upon request. For a copy, please contact Dylan Imlah, Florida Fish and Wildlife Conservation Commission, Land Conservation and Planning, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (850) 487-9102.

12.2.2 Internal FWC Press Release

This bulletin was sent to the following groups of people:

Subscribers of HAB News Releases, W News Releases, WMA Wildlife Management Areas, or WV News Releases, who answered "Southwest" to "Help us customize our communications by telling us which region(s) are of interest to you. Click all that apply." (19272 recipients)



(Having trouble viewing this email? [View it as a Web page.](#))

Feb. 13, 2019

Photos available on FWC's Flickr site: Go to <https://www.flickr.com/gp/myfwcmedia/3m7152>

Suggested Tweet: Help plan the future of Crooked Lake Wildlife and Environmental Area at Feb. 21 public hearing in #Polk County.

<https://content.govdelivery.com/accounts/FLFFWCC/bulletins/22f5baf> #Florida #WMAzing



Help plan the future of Crooked Lake Wildlife and Environmental Area

A 10-year plan for the [Crooked Lake Wildlife and Environmental Area](#) will be presented on Thursday, Feb. 21 at a public hearing in Polk County.

People are invited to the 7 p.m. public hearing at the Polk County Neil Combee Administration Building, 330 Church St., Room 431, in Bartow.

Florida Fish and Wildlife Conservation Commission (FWC) staff will present the draft land management plan for the FWC-managed Crooked Lake WEA, and people will be encouraged to comment and ask questions. For more information on the [upcoming local public hearing](#), go to MyFWC.com/Conservation and select “Terrestrial Conservation” then “Management Plans.”

This former cattle and citrus ranch was acquired to [manage habitats](#) critical to the gopher tortoise and other imperiled and locally important [wildlife](#). The wood stork, sandhill crane, southeastern American kestrel, southern fox squirrel, indigo snake, Florida mouse, gopher frog and American alligator are among the native species living here. Pine flatwoods, sandhill, scrub, swamps, hardwood forests and rare cutthroat grass provide quality habitat for numerous species of wildlife.

Visitors to this WEA in southeastern Polk County have many opportunities for outdoor [recreation](#), including wildlife viewing, hiking, biking and horseback riding.

“Crooked Lake WEA was purchased to ensure the conservation of fish and wildlife resources, other natural and cultural resources, and for fish- and wildlife-based public outdoor recreation,” said Dylan Imlah, FWC land conservation planner. “This draft plan will specify how we intend to do that.”

All lands purchased with public funds must have a management plan that ensures the property will be managed in a manner that is consistent with the intended purposes of the purchase. Hunting and fishing regulations are not included in this plan or meeting; those are addressed through a separate public process.

To obtain a copy of the land management prospectus for Crooked Lake WEA, call Dylan Imlah at 850-487-9102 or email Dylan.Imlah@MyFWC.com.

For more information and background on [management plans](#) and their goals, visit MyFWC.com/Conservation and select “Terrestrial Conservation Programs” then “Management Plans.”

For more on Crooked Lake WEA and other wildlife management areas, go to MyFWC.com, select “Things to Do” and click on [Recreation on Wild Lands](#).



Florida Fish and Wildlife
Conservation Commission
MyFWC.com

QUESTIONS? [Contact the FWC](#)

STAY CONNECTED:



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12.2.3 Newspaper

AFFIDAVIT OF PUBLICATION THE LEDGER Lakeland, Polk County, Florida

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared David Idleburgh who on oath says that he is an Account Executive for Advertising at The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being a

PUBLIC NOTICE

in the matter of FLORIDA FISH AND WILDLIFE

concerning PUBLIC HEARING NOTICE

was published in said newspaper in the issues of

2-10; 2019

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

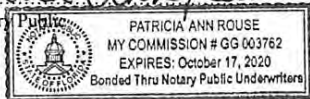
Signed

David Idleburgh
Advertising Account Executive
Who is personally known to me.

Sworn to and subscribed before me this 11th day of February, A.D. 2019

Patricia Ann Rouse
Notary Public

SEAL



12.2.4 Florida Administrative Register Ad

ID 21396665

Notice of Meeting/Workshop Hearing

FISH AND WILDLIFE CONSERVATION COMMISSION

Freshwater Fish and Wildlife

The Fish and Wildlife Conservation Commission announces a public meeting to which all persons are invited.

DATE AND TIME: February 21, 2019, 7:00 p.m.

PLACE: Polk County Administration Building, 330 Church Street, Room 431, Bartow, FL 33831

GENERAL SUBJECT MATTER TO BE CONSIDERED: To receive public comment regarding considerations for the FWC ten-year Land Management Plan for the Crooked Lake Wildlife and Environmental Area (CLWEA). This hearing is being held EXCLUSIVELY for discussion of the DRAFT Crooked Lake WEA Management Plan. This meeting is not being held to discuss area hunting or fishing regulations.

A copy of the agenda may be obtained by contacting: Dylan Imlah, Florida Fish and Wildlife Conservation Commission, Land Conservation and Planning, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (850)487-9102.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 14 days before the workshop/meeting by contacting: Dylan Imlah, (850)487-9102. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Dylan Imlah, Florida Fish and Wildlife Conservation Commission, Land Conservation and Planning, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (850)487-9102.

12.3 Public Input

12.3.1 Management Advisory Group Meeting Results

Crooked Lake Wildlife and Environmental Area (CLWEA)

Management Advisory Group (MAG)

Consensus Meeting Results

January 9, 2019 in in Lakeland, Florida

The intent of convening a consensus meeting is to involve a diverse group of stakeholders in assisting the Florida Fish and Wildlife Conservation Commission (FWC) in development of a rational management concept for lands within the agency's managed area system. FWC does this by asking spokespersons for these stakeholders to participate in a half-day meeting to provide ideas about how FWC-managed lands should be protected and managed.

The MAG consensus meeting was held on the morning of January 9, 2019 at Circle B Reserve in Lakeland, Florida in Polk County. The ideas found below were provided by stakeholders for consideration in the 2019-2029 Management Plan (MP) with priority determined by vote. These ideas represent a valuable source of information to be used by biologists, planners, administrators, and others during the development of the MP. Upon approval by FWC, the Acquisition and Restoration Council (ARC), and the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), the MP will guide the activities of FWC personnel over the ten-year duration of the management plan and will help meet agency, state, and federal planning requirements.

Numbers to the left of bold-faced ideas listed below represent the total number of votes and the score of each idea. Rank is first determined by the number of votes (vote cards received for each idea) and then by score. Score is used to break ties when two or more ideas have the same number of votes. A lower score indicates higher importance because each voter's most important idea (recorded on card #1) received a score of 1, and their fifth most important idea (recorded on card #5) received a score of 5. Ideas not receiving any votes are listed, and were considered during the development of the MP, but carry no judgment with regard to priority.

Statements following the bold-faced ideas represent a synopsis of the clarifying discussion of ideas as transcribed and interpreted by the FWC recorder at the meeting. As indicated above, the ideas below are presented in priority order:

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
1.	[6]	[20]	3. Control exotic plants and animals. Particularly trapping hogs, if that's an option.
2.	[5]	[6]	1. Manage natural communities to promote wildlife / plant diversity. Continue to manage and update the area specific burn plan, and manage for gopher tortoises.
3.	[5]	[20]	16. Protect water quality / quantity. Work with the Southwest Florida Water Management District, and continue to reference hydrological assessment.
4.	[4]	[17]	17. Update Recreational Master Plan.
5.	[3]	[8]	10. Develop and implement burn plan.
6.	[3]	[11]	13. Continue to develop capital facilities and infrastructure. Look towards building new offices, building shops, restrooms, etc.
7.	[2]	[4]	9. Improve wayfinding signage. Improved signage - letting users know what's allowed and what's not.
8.	[1]	[1]	2. Improve drainage.
9.	[1]	[2]	14. Restoration in conjunction with exotic plant control. Implement whatever is needed for exotic plant control, and work on ground cover restorations.
10.	[1]	[2]	15. Expand trails. Consider networking with neighboring conservation lands.
11.	[1]	[5]	12. Work with Florida Forest Service on wildfire control and Rx fire.

The following items received no votes. All ideas represent valuable input, and are considered in development of the MP, but carry no rank with regard to the priority perceptions of the MAG.

12.	[]	[]	4. Potential hog hunts. Potentially trapping hogs.
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<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
13.	[]	[]	5. Enhance compatible user group activities. Create a way to capture usage; would be helpful to know who is using the area and what they're using it for. Work towards engaging user groups.

Crooked Lake Wildlife and Environmental Area

MAG Meeting Participants

<u>Name</u>	<u>Affiliation</u>
Active Participants	
Josh Birchfield	FWC Area Biologist
George McCorkle	FWC Law Enforcement
Candice Knothe	Polk County Parks and Natural Resources
Michael Edwards	Florida Forest Service
Casey Beavers	Florida Department of Environmental Protection
Janet Schneider	Florida Sport Horse Club
Marla Wotpika	Adjacent Private Landowner
Supportive Participants	
Jeff Mcgrady	FWC Habitat and Species Conservation (HSC), Regional Biologist
Josh Agee	FWC HSC, Assistant Regional Biologist
Cully Lord	FWC HSC, District Biologist
Luis Gonzalez	FWC HSC, Landowner Assistance Program
Jennifer Myers	FWC HSC, Regional Conservation Biologist
Katherine Burke	FWC Public Access Services Office (PASO)
Tom M. Matthews	FWC PASO
Christian Earls	FWC Law Enforcement
Karen Turbeville	Florida Sport Horse Club
Michael Charron	Florida Sport Horse Club

Invited but Unable to Attend

Dan Hipes	Florida Natural Areas Inventory
Jason O'Donoughue	Division of Historical Resources
Will Van Gelder	Southwest Florida Water Management District
Cheryl Millett	The Nature Conservancy
Rick Wilson	District 2 County Commissioner
Ed Murawski	Florida Native Plant Society – Heartland Chapter
Reinier Munguia	Lake Region Audubon Society
Jan Wells	Florida Trail Association
FWC Planning Personnel	
Dylan Imlah	Land Conservation Planner, Facilitator
Tom Houston	Recorder
Diana Kilgore	Record

12.3.2 Public Hearing Report

**PUBLIC HEARING REPORT
FOR
CROOKED LAKE WILDLIFE AND ENVIRONMENTAL AREA
MANAGEMENT PLAN
HELD BY THE
CROOKED LAKE WILDLIFE AND ENVIRONMENTAL AREA
MANAGEMENT ADVISORY GROUP
AND THE
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION**

February 21, 2019– Polk County, Florida

The following report documents the public input that was received at the Crooked Lake Wildlife and Environmental Area (CLWEA) Management Advisory Group's (MAG) public hearing for the update to the Management Plan for CLWEA that was held at 7:00-9:00 PM, on February 21, 2019 at the Polk County Administration Building in Bartow, Florida.

CLWEA Management Advisory Group Introduction:

The meeting was introduced by Ms. Janet Schneider, a CLWEA Management Advisory Group participant, who represented the CLWEA MAG. Ms. Schneider indicated that she was one of seven stakeholders that attended the Florida Fish and Wildlife Conservation Commission (FWC) facilitated CLWEA MAG meeting held on January 9th, 2019. Ms. Schneider stated that the Draft Management Plan was being presented tonight by FWC staff, and that hardcopies of the draft plan and the CLWEA MAG meeting report were available at the front door for the public's review. Ms. Schneider thanked everyone for attending and then introduced Ms. Dylan Imlah, Land Conservation Planner, FWC, to facilitate and coordinate the presentation of an overview of CLWEA, FWC's planning process, and the draft components of the CLWEA Draft Management Plan.

Presentation on an Overview of CLWEA and the FWC Planning Process:

Ms. Dylan Imlah welcomed everyone and thanked the public for their attendance. Ms. Imlah then went over an orientation of the material and explained that the purpose of the public hearing was to solicit public input regarding the Draft Management Plan for CLWEA, and not hunting and fishing regulations, indicating there is a separate public input process for FWC rule and regulation development. Ms. Imlah then described the materials that were available at the door for public review, including the CLWEA Draft Management Plan and the MAG Meeting Report and Accomplishment Report. Ms. Imlah then presented the agenda for the public hearing and facilitated the introduction of all FWC staff in attendance to the audience. Ms. Imlah then presented an overview and orientation of CLWEA, including a description of the natural communities, data about CLWEA visitation, revenue and economic benefits generated for the state and region by the area, wildlife species, recreational opportunities found on the area, surrounding conservation lands, surrounding Florida Forever Program Land Acquisition Projects, acquisition history, etc. She also explained FWC's planning process for the management of the public conservation land and asked if there were any questions regarding that process.

Questions, Answers and Discussion on the CLWEA Overview and FWC's Planning Process:

Ms. Imlah facilitated an informal question and answers session where members of the public in attendance, without necessarily identifying themselves, could ask questions of the FWC staff, and discuss the answers. Ms. Imlah again emphasized that the exclusive purpose for the public hearing was to collect public input regarding the Draft Management Plan for CLWEA, and not to discuss area hunting, fishing and use regulations since, as was noted earlier, FWC has a separate process for input on hunting and fishing regulations.

No questions or comments were received at this stage of the CLWEA public hearing meeting.

Presentation of the CLWEA Draft Management Plan:

At this point, Ms. Imlah began the presentation of the CLWEA Draft Management Plan. Ms. Imlah then completed and concluded the presentation of the CLWEA Draft Management Plan.

Questions and Comments on the CLWEA Draft Management Plan Presentation:

Ms. Imlah asked if there were any comments or questions from the public regarding the Draft Management Plan and encouraged everyone to fill out a speaker card for public testimony. She informed them that all comments, questions, and public testimony will be duly considered equally by FWC.

Public Question 1: An unidentified member of the audience provided the following comments and questions:

How do you establish your carrying capacity for the area?

FWC Response: Ms. Imlah, Land Conservation Planner, responded:

Our carrying capacity is based off of the number of individuals that can be on the trails and utilizing the area facilities at one time. We have a formula that calculates this, and it is to ensure that the number of users at a given time does not exceed a threshold that could have negative impacts on the area.

Public Response: The same unidentified member of the audience continued this line of comments and questions:

What would you do if the area ever reached or exceeded its carrying capacity?

FWC Response: Ms. Imlah, Land Conservation Planner, responded:

This area has yet to run into this issue, as the usage on the area is very low, and we do not foresee running into this issue in the near future. However, if an event were to occur of some kind, we would try to get ahead of it and determine how many visitors we would have in order to ensure we do not reach our carrying capacity.

Public Question 2: An unidentified member of the audience provided the following comments and questions:

What happens to the gopher tortoises when you burn the areas they are located in?

FWC Response: Mr. Josh Birchfield, CLWEA Area Biologist responded:

They basically go into their burrow.

FWC Response: Ms. Imlah, Land Conservation Planner, responded:

Prescribed fire is actually a great tool for burning various types of habitat, especially gopher tortoise habitat. Gopher tortoise are species that have really adapted to fire and know how to react to it when it occurs.

Public Question 3: An unidentified member of the audience provided the following comments and questions:

How are the invitees to the Management Advisory Group Meeting determined? How do you decide what groups are able to participate?

FWC Response: Ms. Imlah, Land Conservation Planner, responded:

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan

We determine the invite list through a series of steps. First, we look at cooperating agencies such as FFS and DEP and ensure they are invited. Second, we look at local and county government municipalities to see who would be appropriate to invite. We also look at what types of user groups are able to utilize the area and reach out to those organizations and/or clubs. Finally, we are also highly dependent on area staff to inform us what groups they know of that utilize the area and/or have relationships with.

Public Response: The same unidentified member of the audience continued this line of comments and questions:

Ok, yes I was wondering because I see the Sierra Club was not invited to this meeting and our group is actively involved in a lot of these areas, and we would like to be included in the future.

FWC Response: Ms. Imlah, Land Conservation Planner, responded:

Absolutely, we would be happy to include Sierra Club on list for future Management Advisory Group Meetings.

Public Question 4: An unidentified member of the audience provided the following comments and questions:

There is a lot of land around this area is being threatened by development. Is the state looking at buying any more land to protect it?

FWC Response: Ms. Imlah, Land Conservation Planner, responded:

We do not have any acquisition projects currently occurring in this area.

FWC Response: Mr. Lance Jacobson, Land Conservation Planner, also responded:

The yellow areas on [the OCPB map] indicate Florida Forever Projects. Florida Forever Projects are essentially the state's conservation land acquisition list. So, while there may not be any projects currently being acquired in this area, there are lands that have been identified for conservation.

No further questions or comments were received at this stage of the CLWEA public hearing meeting.

Public Testimony on the CLWEA Draft Management Plan:

One member of the public audience submitted a speaker card indicating their intention to provide formal public testimony. Ms. Imlah again emphasized that the public hearing was

for taking input regarding the CLWEA Draft Management Plan and called the first speaker to the podium.

Public Testimony: Mr. Tom Palmer from the Sierra Club provided a public speaker card to give public testimony.

Adjournment:

Ms. Imlah asked if there were any other members of the public that wished to give public testimony.

No other speakers offered further comments.

Then Ms. Imlah declared the public hearing adjourned.

12.3.3 Management Prospectus

Management Prospectus

Crooked Lake Wildlife and Environmental Area

February 2019

Florida Fish and Wildlife Conservation Commission



Introduction

The Crooked Lake Wildlife and Environmental Area (CLWEA) is managed by the Florida Fish and Wildlife Conservation Commission (FWC) for the conservation and protection of natural and historical resources and resource-based, public outdoor recreation. The area is managed to conserve the important natural communities on site that provide habitat for a wide range of imperiled and more common wildlife species.

The CLWEA is made up of well-managed natural communities that provide numerous wildlife species with quality habitat, as well as excellent nature and wildlife viewing opportunities for Florida's residents and visitors. Located in a relatively rural area of Polk County the area is approximately 1,147 acres and made up of forested uplands and wetlands.

The land management at the CLWEA has focused on the maintenance of critical habitats for several important species, most notably the gopher tortoise, whose habitats are critical and beneficial for other upland species. The CLWEA also offers a network of multi-use trails for hikers, bicyclists and equestrians.

The CLWEA is owned by the Board of Trustees of the Internal Improvement Fund (Board of Trustees). The FWC holds the lease and has lead management authority for all resources within the established boundary. Original acquisition of the area was agreed upon by the FWC and Polk County for use as a gopher tortoise mitigation park in 2007.

This resource and management prospectus has been developed in conformance with the requirements of Section 259. 032, Florida Statutes, to provide the Management Advisory Group stakeholders and the general public with a general understanding of and purpose for the CLWEA, prior to the required public hearing to solicit public input on the CLWEA management plan.

Nearby Conservation Lands and Florida Forever Projects

The CLWEA is located in the vicinity of an extensive network of conservation lands, including lands managed by Polk County, the Florida Forest Service (FFS), the Nature Conservancy (TNC), the Department of Environmental Protection (DEP) and the FWC (Figure 4). Several Florida Forever projects are also located in the vicinity of the area. Tables 1 and 2 list the conservation lands and Florida Forever Projects within a 15-mile radius of the CLWEA, including lands managed by public and private entities that conserve cultural 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.

Table 1: Florida Forever Projects Within 15 Miles of the CLWEA

Florida Forever Projects	Remaining Acres
Arbuckle Creek Watershed	5,849
Bombing Range Ridge	31,862
Hardee Flatwoods	1,676
Lake Wales Ridge Ecosystem	22,097
Old Town Creek	1,266

Table 2: Conservation Lands Within 15 Miles of the CLWEA

Federal Government	Managing Agency
Avon Park Air Force Range	USDOD-AF
Everglades Headwaters National Wildlife Refuge and Conservation	USFWS
Idols Aside Conservation Easement	USFWS
Grassland Reserve Program Easement #104 and 106	USDOA-NRCS
Wetlands Reserve Program Easement #141, 155, 164, 207, 208, and 212	USDOA-NRCS
State of Florida	Managing Agency
Bowlegs Creek	DEP-DWRM
Camp Meeting Ground Branch Conservation Easement	DEP-DWRM
Charlie Creek Cattle Company Agricultural and Conservation Easement # 1 and 2	DACS-FFS
Clear Springs	DEP-DWRM

Table 2: Conservation Lands Within 15 Miles of the CLWEA

Crews Groves Conservation Easement	DEP-DSL
FPC Hines Conservation Easement	DEP-DWRM
Fussell Farms Old Town Creek Agricultural and Conservation Easement	DACS-FFS
Homeland	DEP-DWRM
Hookers Prairie Link Conservation Easement	DEP-DWRM
Lake Wales Ridge State Forest	DACS-FFS
Lake Wales Ridge Wildlife and Environmental Area	FWC
Morgan Conservation Easement	DEP-DSL
Morgan Lake Wales Preserve Conservation Bank	
Conservation Easement	FWC
Paynes Creek Historic State Park	DEP-DRP
Polk Lake	DEP-DWRM
South Fort Meade Hardee County Conservation Easement	DEP-DWRM
South Peace River	DEP-DWRM

Local Government	Managing Agency
Crooked Lake Prairie	Polk County
Crooked Lake Sandhill	Polk County
Crooked Lake West	Polk County
Crooked Lake West-Britt Tract	Polk County
Crooked Lake West-Stuart Tract	Polk County
FX Bar Ranch Conservation Easement	Polk County
Hickory Lake Scrub County Park	Polk County
IMC – Peace River Park	Polk County
Lake Wales Trailways	City of Lake Wales
Laurent/Peace River	Polk County
Peace River Hammock	Polk County
SUMICA	Polk County
Sun ‘n Lake Preserve	Highlands County

Private Organizations	Managing Agency
Bok Tower Gardens Knoll	Bok Tower Gardens Foundation, Inc.
Bok Tower Gardens Pine Ridge Preserve	Bok Tower Gardens Foundation, Inc.
Bok Tower Gardens Planted Pines	Bok Tower Gardens Foundation, Inc.
Bok Tower Gardens Preserve	Bok Tower Gardens Foundation, Inc.

Collany Wetland Mitigation Bank	Collany Mitigation, LLC
Hancock Commons Tract	TNC
Lake Buffum Wildlife Refuge	Green Horizon Land Trust
Saddle Blanket Scrub Preserve	TNC
Scrub Plum Preserve	Green Horizon Land Trust
Sun Ray Scrub	TNC
Tiger Creek Preserve	TNC
TNC/Dellock	TNC

Acronym Key	Agency Name
DACS-FFS	FL Department of Agricultural and Consumer Service-Florida Forest Service
DEP-DRP	FL Department of Environmental Protection-Division of Recreation and Parks
DEP-DSL	FL Department of Environmental Protection-Division of State Lands
DEP-DWRM	FL Department of Environmental Protection-Division of Water Resource Management
FWC	FL Fish and Wildlife Conservation Commission
TNC	The Nature Conservancy
USDOD-AF	U.S. Department of Defense- Air Force
USFWS	U.S. Fish and Wildlife Service
USDOA-NRCS	U.S. Department of Agriculture- Natural Resources Conservation Service

Acquisition History

The CLWEA was approved for acquisition by the FWC as a gopher tortoise mitigation park to be managed by the FWC on December 5, 2007. The FWC implemented the Mitigation Park Program in 1988 to provide land use regulatory programs with an alternative to on-site wildlife mitigation under Section 379.212, FS, which establishes the Fish and Wildlife Habitat Program for the purpose of acquiring, assisting other agencies or local governments in acquiring, or managing lands important to the conservation of fish and wildlife. Under this authority, the FWC, or its designee, is responsible for managing these lands for the primary purpose of maintaining and enhancing their habitat value for fish and wildlife.

On February 18, 2008, the Polk County Board of County Commissioners (Polk County), the FWC, and the Division of State Lands (DSL) entered into a Multi-Party Acquisition Agreement. The agreement allowed the FWC and Polk County to cooperate in the acquisition and future management of the CLWEA. The Board of Trustees approved the purchase of the CLWEA, formerly known as Dunham Ranch, under the FWC Fish and Wildlife Habitat Program on March 11, 2008. Actual purchase was completed on June 27, 2008. The CLWEA land acquisition also lies

within the Crooked Lake Unit of the Lake Wales Ridge Ecosystem Florida Forever Project.

Purpose of Acquisition

The CLWEA was acquired as the Dunham Ranch parcel within the Crooked Lake West Site of the Lake Wales Ridge Ecosystem Florida Forever Project as a Mitigation Park under the FWC Fish and Wildlife Habitat Acquisition Program in cooperation with Polk County. The purpose of this acquisition is for the FWC to manage habitat important for the protection of imperiled wildlife. The CLWEA contributes to the realization of goals for the FWC Gopher Tortoise Management Plan and assists with completion of the Lake Wales Ridge Ecosystem Florida Forever Project. Management goals primarily emphasize conservation of fish and wildlife resources under general guidance of the FWC agency strategic plan.

Property Title Interest and Encumbrances

Title to the CLWEA, is held by the Board of Trustees. On December 22, 2008, the Board of Trustees, entered into a lease agreement with the FWC as lessee and lead manager of the CLWEA. The term of this lease is 50 years.

The boundary survey of the CLWEA lists 11 easements. Two easements, one being 0.82 acres in area, and another being 1.27 acres, are for ingress/egress. There is a drainage easement on 0.23 acres, and there are eight utility easements ranging in size from 0.01 to 0.23 acres. Each of these easements are described in the Official Record Book of Polk County as referenced on the boundary survey.

Additionally, on the CLWEA, there is an expired Citrus Grove Contract and two Housing Agreements. The Citrus Grove Management Contract covers a 54.4-acre citrus grove succumbed to citrus greening. The contract was dissolved in June 2014, and the trees were subsequently removed. The Housing Agreements are with FWC employees for the CLWEA residences and the contract term is indefinite.

Additionally, the FWC 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, 372, 375, 378, 379, 403, 487, 597, and 870 of the Florida Statutes. These laws establish the authority of the FWC with regard to protection and management of the State's fish and wildlife resources.

Natural Resources

Through the services of the Florida Natural Areas Inventory (FNAI), the FWC has mapped the current natural and anthropogenic communities of the CLWEA which describes 17

natural and anthropogenic community types existing on the CLWEA, (Table 3, and Figure 5). Figure 6 also maps out the historic natural communities of the CLWEA, which depicts the composition of native plant communities on the area prior to substantial alteration of the region's hydrology and land for agricultural and development uses. Additionally, plant species found at the CLWEA have been recorded (Table 4), and there are 11 rare plants (Table 5) and 15 exotic and invasive plants (Table 6) within the CLWEA.

The FNAI element occurrence records include several threatened or endangered species and species of special concern. Known locations of FNAI element occurrences from the most recent GIS databases are displayed in Figure 7. As defined by the FNAI, an “element” is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, 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.

Table 11: Vegetative Communities Found at the CLWEA

Community Type	GIS Acres	Percentage
Agriculture	56.60	4.9%
Artificial pond	1.31	0.1%
Basin marsh	15.52	1.4%
Basin swamp	168.94	14.7%
Baygall	101.23	8.8%
Depression marsh	14.36	1.3%
Developed	6.58	0.6%
Dome swamp	0.39	<0.1%
Mesic flatwoods	117.68	10.3%
Pasture – improved	270.76	23.6%
Pasture – semi-improved	82.16	7.2%
Road	39.06	3.4%
Sandhill	5.29	0.5%
Scrub	18.99	1.7%
Scrubby flatwoods	64.95	5.7%
Successional hardwood forest	20.50	1.8%
Wet flatwoods	162.54	1.4%

Table 4. Plant Species Observed at the CLWEA

Common Name	Scientific Name
Adam's needle	<i>Yucca filamentosa</i>

Airplant
 American beautyberry
 American pokeweed
 Arrowfeather threeawn
 Atlantic St. John's wort
 Bahiagrass
 Baldwin's spikerush
 Ballmoss
 Beaked panicum
 Beaksedge
 Big carpetgrass
 Bigflower pawpaw
 Blackberry
 Blackroot
 Bladderwort
 Blue huckleberry
 Blue maidencane
 Bluestem
 Bogbutton
 Bottlebrush threeawn
 Bracken fern
 Broomsedge bluestem
 Bulltongue arrowhead
 Bushy bluestem
 Camphorweed
 Canadian horseweed
 Canadian toadflax
 Candyroot
 Capillary hairsedge
 Carolina laurelcherry
 Carolina redroot
 Carolina yellow-eyed grass
 Carpetgrass
 Cat greenbrier
 Centipede grass
 Chalky bluestem
 Chamber bitter
 Chapman's oak
 Clustered mille graines
 Coastal lovegrass

Tillandsia sp.
Callicarpa americana
Phytolacca americana
Aristida purpurascens
Hypericum tenuifolium
Paspalum notatum
Eleocharis baldwinii
Tillandsia recurvata
Panicum anceps
Rhynchospora sp.
Axonopus furcatus
Asimina obovata
Rubus sp.
Pterocaulon pycnostachyum
Utricularia sp.
Gaylussacia frondosa var. tomentosa
Amphicarpum muhlenbergianum
Andropogon sp.
Lachnocaulon sp.
Aristida spiciformis
Pteridium sp.
Andropogon virginicus
Sagittaria lancifolia
Andropogon glomeratus
Pluchea sp.
Conyza canadensis
Linaria canadensis
Polygala nana
Bulbostylis ciliatifolia
Prunus caroliniana
Lachnanthes caroliniana
Xyris caroliniana
Axonopus sp.
Smilax glauca
Eremochloa ophiuroides
Andropogon virginicus var. glaucus
Phyllanthus urinaria
Quercus chapmanii
Oldenlandia uniflora
Eragrostis virginica

Coastalplain chaffhead
 Coastalplain dawnflower
 Coastalplain honeycomb-head
 Coastalplain milkwort
 Coastalplain staggerbush
 Common blue violet
 Common buttonbush
 Common ragweed
 Coral greenbrier
 Crabgrass
 Creeping primrosewillow
 Crimson bluestem
 Crowngrass
 Dahoon
 Dogfennel
 Downy milkpea
 Dwarf huckleberry
 Dwarf live oak
 Dwarf sundew
 Earleaf greenbrier
 Early blue violet
 Early whitetop fleabane
 Eastern milkpea
 Eastern poison ivy
 Elderberry
 Elliott's milkpea
 Elliott's yellow-eyed grass
 Erectleaf witchgrass
 False rosemary
 Fascicled beaksedge
 Feay's palafox
 Fetterbush
 Fewflower gayfeather
 Flatsedge
 Floatingheart
 Florida alicia
 Florida bluestem
 Florida greeneyes
 Fourleaf vetch
 Fourpetal St. John's wort

Carphephorus corymbosus
Stylisma patens
Balduina angustifolia
Polygala setacea
Lyonia fruticosa
Viola sororia
Cephalanthus occidentalis
Ambrosia artemisiifolia
Smilax walteri
Digitaria sp.
Ludwigia repens
Schizachyrium sanguineum
Paspalum sp.
Ilex cassine
Eupatorium capillifolium
Galactia volubilis
Gaylussacia dumosa
Quercus minima
Drosera brevifolia
Smilax auriculata
Viola palmata
Erigeron vernus
Galactia regularis
Toxicodendron radicans
Sambucus nigra ssp. canadensis
Galactia elliottii
Xyris elliottii
Dichanthelium erectifolium
Conradina canescens
Rhynchospora fascicularis
Palafoxia feayi
Lyonia lucida
Liatris pauciflora
Cyperus sp.
Nymphoides sp.
Chapmannia floridana
Andropogon floridanus
Berlandiera subacaulis
Vicia acutifolia
Hypericum tetrapetalum

Fringed yellow stargrass
Frostweed
Gallberry
Golden-aster
Goldenrod
Gopher apple
Greenbrier
Groundnut
Groundsel tree
Hairy indigo
Highbush blueberry
Hoary-pea
Hottentot fern
Humped bladderwort
Indian cupscale
Jester lichen
Knotweed
Laurel greenbrier
Lesser florida spurge
Licoriceweed
Little bluestem
Live oak
Lizard's tail
Loblolly bay
Longhorn false rein orchid
Longleaf pine
Lopsided Indiangrass
Lovegrass
Maidencane
Manyflower marshpennywort
Marshpennywort
Mazus
Meadowbeauty
Mexican clover
Milkwort
Moistbank pimpernel
Muscadine
Myrtle oak
Myrtleleaf St. John's wort
Nakedstem dewflower

Hypoxis juncea
Helianthemum sp.
Ilex glabra
Chrysopsis sp.
Solidago sp.
Geobalanus oblongifolius
Smilax sp.
Apios sp.
Baccharis halimifolia
Indigofera hirsuta
Vaccinium corymbosum
Tephrosia sp.
Thelypteris interrupta
Utricularia gibba
Sacciolepis indica
Cladonia leporina
Polygonum sp.
Smilax laurifolia
Euphorbia polyphylla
Scoparia dulcis
Schizachyrium scoparium
Quercus virginiana
Saururus cernuus
Gordonia lasianthus
Habenaria quinqueseta
Pinus palustris
Sorghastrum secundum
Eragrostis sp.
Panicum hemitomom
Hydrocotyle umbellata
Hydrocotyle sp.
Mazus sp.
Rhexia sp.
Richardia sp.
Polygala sp.
Lindernia dubia
Vitis rotundifolia
Quercus myrtifolia
Hypericum myrtifolium
Murdannia nudiflora

Narrowleaf silkgrass	<i>Pityopsis graminifolia</i>
Narrowleaf sunflower	<i>Helianthus angustifolius</i>
Netted chain fern	<i>Woodwardia areolata</i>
Netted nutrush	<i>Scleria reticularis</i>
Netted pawpaw	<i>Asimina reticulata</i>
Nutrush	<i>Scleria sp.</i>
Nuttall's meadowbeauty	<i>Rhexia nuttallii</i>
Oak	<i>Quercus sp.</i>
October flower	<i>Polygonum polygamum</i>
Pale meadowbeauty	<i>Rhexia mariana</i>
Panic grass	<i>Panicum sp.</i>
Partridge pea	<i>Chamaecrista fasciculata</i>
Peelbark St. John's wort	<i>Hypericum fasciculatum</i>
Pickernelweed	<i>Pontederia cordata</i>
Pinebarren flatsedge	<i>Cyperus retrorsus</i>
Pinebarren frostweed	<i>Helianthemum corymbosum</i>
Pinebarren goldenrod	<i>Solidago fistulosa</i>
Pineland daisy	<i>Chaptalia tomentosa</i>
Pineland pinweed	<i>Lechea sessiliflora</i>
Pinewoods milkweed	<i>Asclepias humistrata</i>
Pinweed	<i>Lechea sp.</i>
Pond cypress	<i>Taxodium ascendens</i>
Possumhaw	<i>Viburnum nudum</i>
Pricklypear	<i>Opuntia humifusa</i>
Primrosewillow	<i>Ludwigia sp.</i>
Purple bluestem	<i>Andropogon glomeratus var. glaucopsis</i>
Purple thistle	<i>Cirsium horridulum</i>
Queen-devil	<i>Hieracium gronovii</i>
Queen's delight	<i>Stillingia sylvatica</i>
Rabbitbells	<i>Crotalaria rotundifolia</i>
Red chokeberry	<i>Aronia arbutifolia</i>
Red maple	<i>Acer rubrum</i>
Rice button aster	<i>Symphyotrichum dumosum</i>
Rosy camphorweed	<i>Pluchea baccharis</i>
Rough hedgehyssop	<i>Gratiola hispida</i>
Roundleaf bluet	<i>Houstonia procumbens</i>
Roundleaf thoroughwort	<i>Eupatorium rotundifolium</i>
Roundpod St. John's wort	<i>Hypericum cistifolium</i>
Rustweed	<i>Polypremum procumbens</i>
Rusty staggerbush	<i>Lyonia ferruginea</i>

Saltmarsh fingergrass
Sand blackberry
Sand cordgrass
Sand live oak
Sand pine
Sandyfield beaksedge
Savannah yellow-eyed grass
Saw palmetto
Sawtooth blackberry
Scrub oak
Scrub palmetto
Sedge
Sensitive plant
Sesban
Shaggy hedgehyssop
Shiny blueberry
Shortleaf gayfeather
Shortspike bluestem
Skullcap
Skyblue lupine
Slash pine
Slender flattop goldenrod
Small venus's looking-glass
Smallfruit beggarticks
Soft rush
Sour orange
South florida slash pine
Southern dewberry
Southern needleleaf
Spadeleaf
Spanish moss
Spikerush
Splitbeard bluestem
St. John's wort
Starry rosinweed
Sugarcane plumegrass
Swamp bay
Swamp laurel oak
Swamp tupelo

Eustachys glauca
Rubus cuneifolius
Spartina bakeri
Quercus geminata
Pinus clausa
Rhynchospora megalocarpa
Xyris flabelliformis
Serenoa repens
Rubus pensilvanicus
Quercus inopina
Sabal etonia
Carex sp.
Mimosa sp.
Sesbania sp.
Gratiola pilosa
Vaccinium myrsinites
Liatris tenuifolia
Andropogon brachystachyus
Scutellaria sp.
Lupinus diffusus
Pinus elliotii
Euthamia caroliniana
Triodanis biflora
Bidens mitis
Juncus effusus ssp. solutus
Citrus x aurantium
Pinus elliotii var. densa
Rubus trivialis
Tillandsia setacea
Centella asiatica
Tillandsia usneoides
Eleocharis sp.
Andropogon ternarius
Hypericum sp.
Silphium asteriscus
Saccharum giganteum
Persea palustris
Quercus laurifolia
Nyssa sylvatica var. biflora

Sweetbay	<i>Magnolia virginiana</i>
Tall elephantsfoot	<i>Elephantopus elatus</i>
Tarflower	<i>Bejaria racemosa</i>
Tenangle pipewort	<i>Eriocaulon decangulare</i>
Thistle	<i>Cirsium sp.</i>
Thoroughwort	<i>Eupatorium sp.</i>
Threadleaf arrowhead	<i>Sagittaria filiformis</i>
Threeawn	<i>Aristida sp.</i>
Threeflower tick-trefoil	<i>Desmodium triflorum</i>
Tick-trefoil	<i>Desmodium sp.</i>
Toothed midsorus fern	<i>Blechnum serrulatum</i>
Tropical carpetgrass	<i>Axonopus compressus</i>
Turkey oak	<i>Quercus laevis</i>
Vanillaleaf	<i>Carphephorus odoratissimus</i>
Violet	<i>Viola sp.</i>
Virginia chain fern	<i>Woodwardia virginica</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Virginia willow	<i>Itea virginica</i>
Viviparous spikerush	<i>Eleocharis vivipara</i>
Wand goldenrod	<i>Solidago stricta</i>
Ware's hairsedge	<i>Bulbostylis warei</i>
Warty panicgrass	<i>Panicum verrucosum</i>
Water oak	<i>Quercus nigra</i>
Wax myrtle	<i>Morella cerifera</i>
White twinevine	<i>Funastrum clausum</i>
White waterlily	<i>Nymphaea odorata</i>
Whitehead bogbutton	<i>Lachnocaulon anceps</i>
Winged sumac	<i>Rhus copallinum</i>
Wiregrass	<i>Aristida stricta var. beyrichiana</i>
Witchgrass	<i>Dichanthelium sp.</i>
Woodsorrel	<i>Oxalis sp.</i>
Yellow hatpins	<i>Syngonanthus flavidulus</i>
Yellow jessamine	<i>Gelsemium sempervirens</i>
Yellow pondlily	<i>Nuphar advena</i>
Yellow-eyed grass	<i>Xyris sp.</i>

Zarabacoa comun

Desmodium incanum

Zigzag bladderwort

Utricularia subulata

Table 5: Imperiled Plant Species Known to Occur at the CLWEA

Common Name	Scientific Name	Status
Austin's daffodil	<i>Stylisma abdita</i>	SE; FT
Britton's beargrass	<i>Nolina brittoniana</i>	ST
Cinnamon fern	<i>Osmunda cinnamomea</i>	ST
Cut-throat grass	<i>Panicum abscissum</i>	SE
Edison ascyrum	<i>Hypericum edisonianum</i>	SE; FE
Garberia	<i>Garberia heterophylla</i>	CE
Giant wild-pine	<i>Tillandsia utriculata</i>	CE
Non-crested eulophia	<i>Eulophia ecristata</i>	SE
Pigeon wings	<i>Clitoria fragrans</i>	SE; FE
Royal fern	<i>Osmunda regalis</i>	SE
Tufted wireweed	<i>Polygonella basiramia</i>	SE

Acronym	Status
CE	Commercially Exploited
FE	Federally Endangered
FT	Federally Threatened
SE	State Endangered
SL	State Listed
ST	State Threatened

Table 6. Invasive and Exotic Plant Species Observed at the CLWEA

Common Name	Scientific Name	FLEPPC Category
Alligator weed	<i>Alternanthera philoxeroides</i>	II
Caesar's weed	<i>Urena lobata</i>	I
Camphor tree	<i>Cinnamomum camphora</i>	I
Chinaberry	<i>Melia azedarach</i>	II
Cogongrass	<i>Imperata cylindrica</i>	I
Guinea grass	<i>Panicum maximum</i>	II
Japanese climbing fern	<i>Lygodium japonicum</i>	I
Lantana, shrub verbena	<i>Lantana camara</i>	I
Old world climbing fern	<i>Lygodium microphyllum</i>	I
Paragrass	<i>Urochloa mutica</i>	I
Peruvian primrosewillow	<i>Ludwigia peruviana</i>	I
Rosary pea; blackeyed susan	<i>Abrus precatorius</i>	I

Sword fern	<i>Nephrolepis cordifolia</i>	I
Tropical soda apple	<i>Solanum viarum</i>	I
Water spangles	<i>Salvinia minima</i>	I

Natural Community Descriptions

Basin Marsh (15.52 acres)

Basin marsh is an herb-dominated community that occurs in large, often irregularly shaped depressions. Basin marshes are regularly inundated freshwater herbaceous wetlands that may occur in a variety of situations, but in contrast to depression marshes, are not small or shallow inclusions within a fire-maintained natural community. Plant species composition is heterogenous, both within and between marshes, but can generally be divided into submersed, floating-leaved, emergent, and grassy zones from deepest to shallowest portions; shrub patches may be present within any of these zones. Basin marsh on the CLWEA is typically surrounded by basin swamp in several small patches throughout the center portion of the property.

Basin Swamp (168.9 acres)

Basin swamps are forested wetlands of primarily deciduous trees occurring in large depressions or as inclusions in non-pyrogenic habitats such as a bottomland forest. These communities usually contain standing water for a significant portion of the year, and therefore are dominated by hydrophytic trees and shrubs capable of withstanding extended hydroperiods. While basin swamps at the CLWEA historically graded to wet flatwoods, northern sections of this community now directly adjoin improved pasture.

The canopy of this community is often closed and formed by mature trees. As with most basin swamps, pond cypress is the dominant canopy tree. Associated canopy species include red maple, sweetbay, swamp tupelo, South Florida slash pine and swamp laurel oak. These same species also occur in the subcanopy. Shrub cover is variable throughout this community and typical species are common buttonbush, dahoon holly, Virginia willow, fetterbush, sweetbay, wax myrtles, and highbush blueberry. Herbaceous cover is proportional to canopy density and common ground cover species include chalky bluestem, toothed midsorus fern, cinnamon fern, beaked panicum, pickerelweed, lizard's tail, hottentot fern, netted chain fern, and Virginia chain fern. Prolong moisture and high humidity favors an abundance of epiphytes such as ballmoss, southern needleleaf, and Spanish moss. Vines are not common within the basin swamp but increase in frequency along the more open ecotones. Recorded species include white twinevine, laurel greenbrier, eastern poison ivy, and muscadine. Exotic invasive plant species observed within basin swamps include Peruvian primrose willow, Japanese climbing fern, sword fern, water spangles, and tropical soda apple.

This community occurs in the western half of the property and forms large, irregular shaped swamps that continue off-site to the west. The size and internal character of these habitats differentiate basin swamp from dome swamp. Dome swamps are typically more round and affected by fire; in some instances dome swamp communities can burn completely through.

Baygall (101.23 acres)

Baygalls are generally characterized as densely forested, peat-filled seepage depressions that often form at the base of sandy slopes. The canopy is composed of tall, densely packed, generally straight-growing evergreen hardwoods, dominated by sweetbay, swamp bay, and loblolly bay. A more or less open understory of shrubs and ferns commonly occurs, while sphagnum mats are often interlaced with convoluted tree roots.

At the CLWEA this community occurs in areas that contain standing water and prohibit the development of wet flatwoods or wet prairie by reducing fire frequencies. The baygall community also lines some of the more interior portions of seepage drains found throughout the property, often occurring with swamp and small stream channels. The canopy of this community is often closed and well-formed and contains a predominance of sweetbay. Red maple, South Florida slash pine, and pond cypress are also found in the canopy stratum. Sweetbay also commonly occurs in the sub canopy with loblolly bay, dahoon holly, fetterbush, sweetbay, wax myrtle, swamp bay, sawtooth blackberry, and possumhaw. Herbaceous species, by contrast, are characteristically sparse. Common herbaceous species associated with baygall community at the CLWEA include cinnamon fern, royal fern, lizard's tail, sphagnum moss, hottentot fern, netted chain fern, and Virginia chain fern. Epiphytes are not common but southern needleleaf and Spanish moss are occasionally seen. Vines are sometimes common and include laurel greenbrier and muscadine. Exotic plants occur at a single observed location and are old world climbing fern and Caesar's weed.

Depression Marsh (14.36 acres)

Depression marshes are typically small wetlands that are round in shape and are dominated by herbaceous species. These marshes often dry out during periods of low rainfall, and as a result, burn more frequently and more completely than basin marshes. The substrate is usually sand with deepening peat toward the center. Because water depth in depression marshes usually increases toward the center vegetation typically forms distinctive zones corresponding to water depth and permanence. This community occurs in fire-maintained matrix communities such as flatwoods, upland pine, or sandhill. Depression marshes at the CLWEA exist primarily within a wet flatwoods matrix.

Canopy trees are present in several depression marshes and are represented by swamp tupelo, South Florida slash pine and pine cypress. Shrubs are not uncommon although

species diversity is limited to peelbark St. John's wort, dahoon holly, wax myrtle, swamp tupelo, and South Florida slash pine. Herbaceous plants account for the greatest percentage of cover and include blue maidencane, shortspike bluestem, soft rush, yellow pondlily, white waterlily, beaked panicum, maidencane, pickerelweed, and Virginia chain fern.

This community is only found in the central portion of the property and often forms deep, open water areas with floating aquatic bed species. Depression marshes in the north-central sections of the property are often weakly connected hydrologically and form linked drainage through the wet flatwoods matrix.

Dome swamp (0.39 acres)

Dome swamp is an isolated forested wetland community occurring in shallow basins within a fire-maintained community. Fire occurs occasionally along the periphery, spreading from the surrounding uplands but is infrequent in the deeper portions of the swamp due to decreased fuels and wetter conditions. Trees in the center are generally taller than those on the edges, giving the stand its characteristic dome-shaped profile.

Pond cypress is the primary canopy tree species but sweetbay and South Florida slash pine are also present. Shrub densities are variable and typical species are fetterbush, dahoon holly, wax myrtle, pond cypress, and highbush blueberry. Herbs occurring within dome swamp include smallfruit beggarticks, soft rush, maidencane, picherellweed, threadlead, arrowhead, and Virginia chain fern. Conditions are favorable for epiphytes and observed species include ballmoss, airplant and Spanish moss. Vines are limited to laurel greenbrier.

Mesic Flatwoods (117.68 acres)

Mesic flatwoods are open, pine canopy forests with a diverse understory of shrubs and herbs occurring on low, flat terrain. Fire is an important factor in maintaining high plant diversity and naturally occurs during the later spring/early summer lightning season.

Canopy trees in this community include red maple, sand pine, South Florida slash pine, longleaf pine, sand live oak, and swamp laurel oak. South Florida slash pine is often the dominant canopy associate and occurs in sparse densities. Co-dominants in the subcanopy are red maple, swamp bay, South Florida slash pine, swamp laurel oak and water oak. The dominant shrub species observed at the CLWEA include Atlanta St. John's wort, fourpetal St. John's wort, gallberry, coastalplain staggerbush, fetterbush, wax myrtle, dwarf live oak, winged sumac, saw palmetto, and shiny blueberry. Herbasceous cover is low in relation to shrub densities although common herbs include bottlebrush threeawn, wiregrass, coastalplain chaffhead, witchgrass, tall elephantsfoot, slender flattop goldenrod, bracken

fern, blackroot, little bluestem and the rare cutthroat grass. The only epiphyte present is Spanish moss, and this occurs infrequently. Vines are a small component of this community but include yellow jessamine and muscadine. Invasive plants in mesic flatwoods include cogongrass, tropical soda apple, and Caesar's weed.

Sandhill (5.29 acres)

Sandhill is characterized by a canopy of widely spaced pine trees with a sparse midstory of deciduous oaks, and a moderate to dense groundcover of grasses, herbs and low shrubs occurring over a rolling topography composed of deep sands.

At the CLWEA, sandhill only occurs in the extreme northeastern section of the property. This community still contains intact groundcover but fire suppression is evident in the dense shrub layer. This community also blends into scrub and/or scrubby flatwoods along its perimeter. The advancement of the shrub component often makes the distinction between sandhill and scrub difficult. Some areas of historic sandhill community have been converted to semi-improved pasture with pasture grass establishment and clearing disturbances. These areas still contain some rare and exceptional species including, but not limited to, gopher tortoise and Britton's beargrass. Soil disturbances in these areas should be avoided.

The sandhill canopy of the CLWEA is often dense to moderately dense and includes sand pine, South Florida slash pine, and sand live oak. This community lacks a distinct subcanopy although many small trees and tall shrubs fill this general stratum. The diverse, yet often dense shrub layer includes coastalplain staggerbush, fetterbush, sand pine, Chapman's oak, sand live oak, turkey oak, the rare garberia, scrub palmetto, saw palmetto, and Adam's needle. Within the herbaceous layer, wiregrass associates include Florida greeneyes, coastalplain chaffhead, starry rosinweed, and lopsided indiagrass. Epiphytes are common and are represented by ballmoss and Spanish moss. Exotic plant species observed in sandhill are rosary pea, cogongrass, and Guinea grass. Fire suppression and woody encroachment are common in this community. Multiple fire applications are needed to reduce the fuel loads and open the shrub layer. This will provide more light penetration to the forest floor and to associated groundcover species.

Scrub (18.99 acres)

Scrub occurs in many forms but is often characterized by thickets of scrub oaks and other shrubs occurring on xeric, sandy soils with numerous open patches of bare sand. The ground cover is generally very sparse and is typically dominated by ground lichens, or, rarely, herbaceous species.

At the CLWEA, scrub is limited to one area in the extreme northeast portion of the property. In this community, the canopy is often denser than ideal conditions due to fire exclusion. The canopy includes sand pine and sand live oak. These same species also occur as shrubs, together with Chapman's oak, scrub oak, scrub palmetto, and saw palmetto. Epiphytes are abundant and include ballmoss and Spanish moss. Vines are infrequent in this community but include earleaf greenbrier. Invasive cogongrass is an infrequently documented component of this scrub community commonly found adjacent to the property boundary. Woody vegetation in this community is dense due to a lack of prescribed fire in years past. Herbaceous vegetation is generally absent. The perimeter of this site contains a wide firebreak that has disturbed much of this community. Slash from clearing activities has been pushed into this community and will either smother species in the groundcover layer or, when fire is applied to this community, the slash piles will burn hot enough to sterilize the soil. This scrub community grades into sandhill to the west and south. Mechanical clearing and roller chopping in this community should be avoided due to the fragility of soil in this xeric community. Often xeric communities do not recover from even moderate soil disruption.

Scrubby flatwoods (64.95 acres)

Scrubby flatwoods is a community characterized as having an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of bare white sand.

This community as the CLWEA occurs in the extreme southwestern portion of the property and as an included ecotone of the sandhill community where sandhill meets mesic flatwoods. Much of this community has been disturbed in the past by cattle, clearing, and pasture grass seeding. Areas of this community that contain sufficient levels of disturbance have been classified as semi-improved pasture.

The canopy layer at the CLWEA is highly variable in density and height and includes sand pine, longleaf pine, sand live oak, and live oak. The shrub layer is dominated by coastal plain staggerbush, Chapman's oak, sand live oak, scrub oak, scrub palmetto, and saw palmetto. Herbaceous cover is quite low but associated species commonly include broomsedge bluestem, arrowfeather threeawn, wiregrass, frostweed, and sandyfield beaksedge. Epiphytes are common and include ballmoss and Spanish moss. Vines are infrequent within scrubby flatwoods and are limited to earleaf greenbrier.

Successional hardwood forest (20.50 acres)

Successional hardwood forest is characterized by a canopy of fast-growing hardwoods such as live oak, laurel oak, water oak, and/or sweetgum, often with remnant pines. The subcanopy and shrub layers of these forests are often dense and dominated by smaller

individuals of the canopy species, and vines are often abundant. Successional hardwood forests can contain remnant species of the former natural community. At the CLWEA, disturbance levels within this community are high and are attributable to livestock, fire suppression, and wood encroachment.

Canopy trees are limited to live oak and the shrub layer includes saw palmetto. Non-native bahiagrass is the only recorded herbaceous species. Among epiphytic species are ballmoss and Spanish moss. These habitats are present only as a result of former natural community disturbance.

Wet flatwoods (162.54 acres)

Wet flatwoods are forests with an open pine canopy and an understory of hydrophytic herbs and shrubs. Wet flatwoods that burn frequently have a sparse understory of shrubs and a dense complement of herbs.

A large percentage of this community has been lost to improved pasture creation at the CLWEA. Disturbance from pasture grass seeding is evident in many wet flatwoods communities as well. The randomness of pasture grass seed dispersal often makes differentiating between wet flatwoods and semi-improved pasture difficult.

Wet flatwoods occur in two unique forms at the CLWEA. Most of the centrally located wet flatwoods sites contain unusually high amounts of water and often support dense stands of young to mature South Florida slash pine. The remainder of the site contains wet flatwoods situations that are well-drained and where standing water typically does not occur. These areas are broad ecotones between upland communities and swamps and/or baygall habitats.

Canopy trees in the wet flatwoods community are represented by tougher mature examples of South Florida slash pine. Elements of the subcanopy include dahoon holly, sweetbay, South Florida slash pine, and swamp laurel oak. A diverse assemblage of shrubs occurs in wet flatwoods although coverage is variable across this community. Shrub species include gallberry, fetterbush, wax myrtle, swamp bay, South Florida slash pine, swamp laurel oak, live oak, winged sumac, sawtooth blackberry and saw palmetto. Within the diverse herbaceous layer is blue maidencane, bluestem, broomsedge bluestem, chalky bluestem, big carpetgrass, Baldwin's spikerush, tenangle pipewort, slender flattop goldenrod, cogongrass, soft rush, rare cutthroat grass, panic grass, bahiagrass, crowngrass, sesban, Virginia chain fern, and Elliott's yellow-eyed grass. Epiphytes are generally sparse and limited to Spanish moss. Vines are not a common component but include laurel greenbrier, and muscadine. Exotic plant species, while generally uncommon in wet flatwoods, are problematic in areas disturbed by cattle grazing, feral hogs and forestry operations. Invasive species include Peruvian primrosewillow, Guinea grass, and tropical soda apple.

Altered Community Descriptions

The CLWEA also has 6 additional altered communities that are listed and described by FNAI as follows.

Agriculture (56.60 acres)

The east side of the CLWEA was previously a orange grove that succumbed to citrus greening. Currently, a few orange trees were left to provide cover, and long-term maintenance will include periodic mowing to maintain low groundcover. There are no plans to actively restore this acreage to native conditions during this Strategy; however, the cleared grove will function to provide habitat for gopher tortoises and other focal species on the area.

Artificial Pond (1.31 acres)

Includes water retention ponds, cattle ponds, etc.

Developed (6.58 acres)

Includes check stations, parking lots, buildings, recreational, industrial and residential areas.

Pasture – Improved (270.76 acres) and Semi-Improved (82.16 acres)

Improved pastures have been cleared of their native vegetation. They are dominated by planted, non-native plant species, and they contain evidence of current or recent cultural activities such as mowing or grazing. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted in non-native or domesticated native forage species. However, they still retain scattered patches of native vegetation with natural species composition and structure (most often small areas of mesic flatwoods). Area staff currently manage pastures with annual mowing to reduce the density of herbaceous species such as dog fennel and to treat dense areas of shrubby species such as wax myrtle. Pasture management also includes the treatment of cogongrass and burning on a 1-3 year rotation. To provide travel corridors and cover for wildlife, the FWC plans to strategically plant trees in these pastures, including containerized longleaf pine seedlings. Area staff also plan to plant seedlings in the former orange grove.

Full restoration of these communities would take drastic alteration to current conditions and groundcover, which would have an immediate, negative impact on species such as gopher tortoises. Rather than conduct this restoration, planned future management will include planting and burning to create a flatwoods-like structure in these pasture communities. These management actions will keep the pastures in a condition that is

suitable for use by gopher tortoises, Southern fox squirrels (*Sciurus niger*), Florida sandhill cranes (*Grus canadenses pratensis*), and the southeastern American kestrel (*Falco sparverius paulus*). Further, native plant species such as cutthroat grass are already moving into some of the pastures from adjacent native habitat, and we will encourage this establishment through future management actions. Planned management will allow for the open conditions that these native plant species require and allow for a slow conversion of the habitat to a native structure that should continue to benefit a suite of locally important and imperiled species.

Road (39.06 acres)

Includes paved and unpaved roadways.

Fish and Wildlife

As described above, the CLWEA has a variety of natural communities and habitat types that support a wide array of imperiled, rare, and more common wildlife species. Active wildlife management practices make the CLWEA an excellent place to view wildlife. The CLWEA sandhill, baygall, basin marsh, and other natural communities provide critical habitat for resident and migratory wildlife.

The FWC maintains an inventory of fauna occurring on the CLWEA listed in the following tables, including mammals (Table 4), birds (Table 5), and reptiles and amphibians (Table 6). In addition to the species listed in the tables below, one exotic wildlife species has been documented on the CLWEA (feral hog).

Table 4: Mammal Species Observed at the CLWEA

Common Name	Scientific Name
Bobcat	<i>Lynx rufus</i>
Coyote	<i>Canis latrans</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Eastern gray squirrel	<i>Sciurus carolinensis</i>
Eastern spotted skunk	<i>Spilogale putorius</i>
Florida panther	<i>Puma conolor coryi</i>
Raccoon	<i>Procyon lotor</i>
Southern fox squirrel	<i>Sciurus niger shermani</i>
Southeastern shrew	<i>Sorex longirostris</i>
Virginia opossum	<i>Didelphis virginiana</i>
White-tailed deer	<i>Odocoileus virginianus</i>

Table 5: Bird Species Observed at the CLWEA

Common Name	Scientific Name
American kestrel	<i>Falco sparverius</i>
Anhinga	<i>Anhinga anhinga</i>
Barred owl	<i>Strix varia</i>
Belted kingfisher	<i>Megaceryle alcyon</i>
Black-bellied whistling duck	<i>Dendrocygna autumnalis</i>
Blue jay	<i>Cyanocitta cristata</i>
Eastern bluebird	<i>Sialia sialis</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eastern meadowlark	<i>Sturnella magna</i>
Eastern screech owl	<i>Megascops asio</i>
Eastern wild turkey	<i>Meleagris gallopavo</i>
Florida sandhill crane	<i>Grus canadensis pratensis</i>
Gray catbird	<i>Dumetella carolinensis</i>
Great blue heron	<i>Ardea herodias</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>
Great egret	<i>Ardea alba</i>
Killdeer	<i>Charadrius vociferus</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Northern bobwhite quail	<i>Colinus virginianus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern harrier	<i>Circus cyaneus</i>
Osceola turkey	<i>Meleagris gallopavo osceola</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Short-tailed hawk	<i>Buteo brachyurus</i>
Southeastern American kestrel	<i>Falco sparverius paulus</i>
Southern bald eagle	<i>Haliaeetus leucocephalus leucocephalus</i>
Swallow-tailed kite	<i>Elanoides forficatus</i>
Turkey vulture	<i>Cathartes aura</i>
White ibis	<i>Eudocimus albus</i>
Wild turkey	<i>Meleagris gallopavo</i>
Wood stork	<i>Mycteria americana</i>

Table 6: Reptiles and Amphibians Observed at the CLWEA

Common Name	Scientific Name
American alligator	<i>Alligator mississippiensis</i>

Anole	<i>Anolis carolinensis</i>
Banded water snake	<i>Nerodia fasciata fasciata</i>
Black racer	<i>Coluber constrictor</i>
Brown water snake	<i>Nerodia taxispilota</i>
Common snapping turtle	<i>Chelydra serpentina</i>
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>
Eastern narrow-mouthed frog	<i>Gastrophryne carolinensis</i>
Florida scrub lizard	<i>Sceloporus woodi</i>
Gopher frog	<i>Rana capito (Lithobates capito)</i>
Gopher tortoise	<i>Gopherus polyphemus</i>
Ringneck snake	<i>Diadophis punctatus</i>
Scarlet kingsnake	<i>Lampropeltis elapsoides</i>
Southern toad	<i>Anaxyrus terrestris</i>
Spadefoot toad	<i>Scaphiopus holbrookii</i>
Yellow rat snake	<i>Elaphe obsoleta</i>

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 CLWEA has a mean wildlife value of 5.9. The FWC's IWHRS map for the CLWEA is shown in Figure 10.

Rare and Imperiled Species

A diversity of wildlife species is found on the CLWEA. Known locations of FNAI element occurrences from the most recent GIS databases are displayed in Figure 7. As defined by FNAI, an "element" is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, 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. Table 7 lists the imperiled wildlife species that have been documented by FWC staff as occurring on the CLWEA.

Table 7: Imperiled Wildlife Species Found at the CLWEA

Common Name	Scientific Name	Status
American alligator	<i>Alligator mississippiensis</i>	FT(S/A)
Florida panther	<i>Puma concolor coryi</i> *	FE
Florida sandhill crane	<i>Grus canadenses pratensis</i>	ST
Gopher tortoise	<i>Gopherus polyphemus</i>	ST
Southeastern American kestrel	<i>Falco sparverius paulus</i>	ST
Wood stork	<i>Mycteria americana</i>	FT

Abbreviation	Status
FE	Federal Endangered
FT(S/A)	Federal Threatened due to Similarity of Appearance
FT	Federal Threatened
ST	State Threatened
SSC	State Species of Special Concern

At its November, 2016, Commission meeting, the FWC approved Florida's Imperiled Species Management Plan (<http://myfwc.com/wildlifehabitats/imperiled/plan/>), which included changes to the listing status for many wildlife species. Subsequent rule changes (68A-27.003 and 68A-27.005 FAC) reflecting changes came into effect in January, 2017. All federally listed species that occur in Florida are included in Florida's Endangered and Threatened Species list (<http://myfwc.com/media/1515251/threatened-endangered-species.pdf>) as federally-designated Endangered or federally-designated Threatened. Species that are not federally listed, but which have been identified by the FWC as being at some level of risk of extinction, are listed as state-designated Threatened. Additionally, the FWC continues to maintain a separate Species of Special Concern category. This category was reviewed as part of Florida's Imperiled Species Management Plan, with the majority of the species previously contained within the category either being removed from Florida's Endangered and Threatened Species list due to conservation success, or had their status changed to state-designated Threatened.

Management Intent

Management of wildlife on the CLWEA includes efforts designed to perpetuate all species of wildlife native to the area. 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 Objective-

based Vegetative Management (OBVM) to monitor how specific vegetative parameters are responding to FWC management. OBVM includes the delineation of management units, quantification of the desired future condition for the natural community, selection of an indicator-based management objective for each unit and monitoring of the indicator to determine attainment or progress towards accomplishing the objective. In this way, management can be adapted to best accomplish the management objective for each vegetation management unit. Management objectives, which apply to several vegetation management units, or the entire management area, may also be developed through a similar process.

In addition, the FWC uses the Wildlife Conservation Prioritization and Recovery (WCPR) program to ensure management is having the desired effect on wildlife as another important component of the FWC's comprehensive resource management approach to managing FWC-managed areas. The goal of WCPR is to provide assessment, recovery, and planning support for the FWC-managed areas to enhance management of locally important species and recovery of imperiled species. The WCPR program objectives include the following: prioritize what the FWC does for imperiled and locally important species on FWC-managed areas; ensure the actions taken on these areas are part of statewide conservation programs/priorities; and, inform others about the work accomplished on lands the FWC manages.

Conditions Affecting Intensity of Management

The natural and historical resources described in this management prospectus that occur at the CLWEA exemplify varying conditions and composition that affect the ongoing intensity and frequency of management activities necessary to effectively manage the area. These include natural community types, topography and soils, surface and ground water conditions, extent of historic disturbance, and already existing improvements.

Environmentally sensitive areas, such as erosion-prone sites, important habitats, and outstanding natural areas and wetlands have been identified, and are being appropriately managed and protected.

As described above, the FWC has completed an analysis of historic vegetation of natural community types on the CLWEA to determine the appropriate desired future conditions for the resources on the area. Upland wildlife management concentrates on appropriate vegetative manipulations, determined by the FWC's OBVM protocol, which includes the application of prescribed fire for the area's fire-adapted communities, as well as the development of a WCPR strategy for the area, to achieve conditions acceptable to a broad range of wildlife species. Ecological restoration of ground cover, control of invasive species, and reforestation will be used as determined appropriate as such resource management projects may be necessary to accomplish restoration objectives established to attain the

desired future condition. This is especially important for conservation of habitats and populations of imperiled or rare species. Landscape ecology is also important. Land use changes in the vicinity of a managed area may also affect the attainment of resource conservation goals for the area, and the effectiveness of necessary resource management projects.

CLWEA Management Plan

The CLWEA management plan focuses on ecosystem management and the protection and management of locally important, and rare and imperiled species. The FWC shall continue to assess the condition of wildlife resources and provide planning support to enhance management of locally important species and recovery of imperiled species on the CLWEA. The use of prescribed fire and other resource management activities shall continue to be implemented to maintain and restore natural communities and vegetation types to benefit native wildlife resources. Hydrological restoration may also be implemented where it is appropriate and feasible.

Timetable for Implementing Management Provisions

A Habitat Management Plan was developed for the CLWEA in 2011. An updated management plan is being developed for the area that is projected to be approved and implemented in 2019, which will establish the management goals and objectives, along with short-term (2 years) and long-term (1-10 years) completion timelines, necessary to implement future resource and operational management actions on the CLWEA. The management plan also establishes the current and future roles of cooperating entities including governmental agencies, non-governmental organizations, and other stakeholders.

The updated management plan for the CLWEA will stress ecosystem management, and the protection and management of locally important and imperiled species. To aid in this effort, as indicated earlier, historic analysis of natural communities and vegetation types on the area has been conducted. Quantified vegetation management objectives have also been developed for the area through the FWC's OBVM program. The FWC will continue to assess the condition of wildlife resources and provide planning support to enhance management of locally important species and recovery of imperiled species on the CLWEA through the FWC WCPR program. Use of prescribed fire and other resource management activities will also continue to be implemented on the area to maintain and restore natural communities and vegetation types to benefit native wildlife resources.

Estimate of Revenue-Generating Potential

An FWC economic analysis indicates that the CLWEA has the potential to generate an estimated annual economic impact, primarily through visitation, of \$6,133,292 for the State and Southwest Florida region if the visitation levels were to ever reach the carrying capacity of 86 visitors per day. If that level of visitation occurred, the estimated annual

economic impact has the potential to aid in the creation of an estimated 62 jobs. However, it should be noted that the current visitation rates for the area are estimated to be below the area's established carrying capacity.

Further potential of the CLWEA will depend upon future uses to be approved in the management plan. Additional economic impact from environmental lands such as the CLWEA might include sales of various permits and recreational user fees and ecotourism activities, if such projects could be economically developed. The annual area regulations can be consulted to clarify the necessary and required permits, fees, and regulations. The long-term values of ecosystem services to local and regional land and water resources, and to human health, through the protection of air and water quality are expected to be significant. The legislature appropriates funds for land management.

Recommendations as to Other Governmental Agency Involvement

The FWC will continue to cooperate with other state and local governmental agencies including the DEP, the Florida Forest Service, the South Florida Water Management District, Southwest Florida Water Management District, and Polk County in management of the property.

Estimate of Costs

Following is an estimate of costs to optimally operate and manage the CLWEA under the CLWEA Management Plan. Management of the CLWEA requires two full-time employee (FTE) positions to optimally manage the area. Salary requirements for these FTE positions, as well as those of other needed FWC staff, and costs to operate and manage the CLWEA are reflected in the cost estimate below. All land management funding is dependent upon annual legislative appropriations.

Crooked Lake WEA Management Plan Cost Estimate

Maximum expected one-year expenditure

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	Priority schedule:
Exotic Species Control	\$70,815	(1)	(1) Immediate (annual)
Prescribed Burning	\$46,560	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$558	(1)	(3) Other (5+ years)
Timber Management	\$279	(1)	
Hydrological Management	\$3,820	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$74,951	(1)	
Subtotal	\$196,982		
<u>Administration</u>			
General administration	\$13,672	(1)	
<u>Support</u>			
Land Management Planning	\$25,655	(1)	
Land Management Reviews	\$3,716	(3)	
Training/Staff Development	\$4,093	(1)	
Vehicle Purchase	\$416,780	(2)	
Vehicle Operation and Maintenance	\$59,161	(1)	
Other (Technical Reports, Data Management, etc.)	\$4,146	(1)	
Subtotal	\$513,552		
<u>Capital Improvements</u>			
New Facility Construction	\$36,170	(2)	
Facility Maintenance	\$305,909	(1)	
Subtotal	\$342,079		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$9,153	(1)	
<u>Law Enforcement</u>			
Resource protection	\$1,048	(1)	
<u>Total</u>	\$1,076,485	*	

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

Crooked Lake WEA Management Plan Cost Estimate

Ten-year projection

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	Priority schedule:
Exotic Species Control	\$622,186	(1)	(1) Immediate (annual)
Prescribed Burning	\$409,077	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$4,899	(1)	(3) Other (5+ years)
Timber Management	\$2,450	(1)	
Hydrological Management	\$33,559	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$658,530	(1)	
Subtotal	\$1,730,701		
<u>Administration</u>			
General administration	\$120,128	(1)	
<u>Support</u>			
Land Management Planning	\$225,412	(1)	
Land Management Reviews	\$10,637	(3)	
Training/Staff Development	\$35,960	(1)	
Vehicle Purchase	\$1,466,667	(2)	
Vehicle Operation and Maintenance	\$519,795	(1)	
Other (Technical Reports, Data Management, etc.)	\$36,430	(1)	
Subtotal	\$2,294,902		
<u>Capital Improvements</u>			
New Facility Construction	\$104,477	(2)	
Facility Maintenance	\$2,687,747	(1)	
Subtotal	\$2,792,224		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$80,415	(1)	
<u>Law Enforcement</u>			
Resource protection	\$9,204	(1)	
<u>Total</u>	\$7,027,574	*	

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

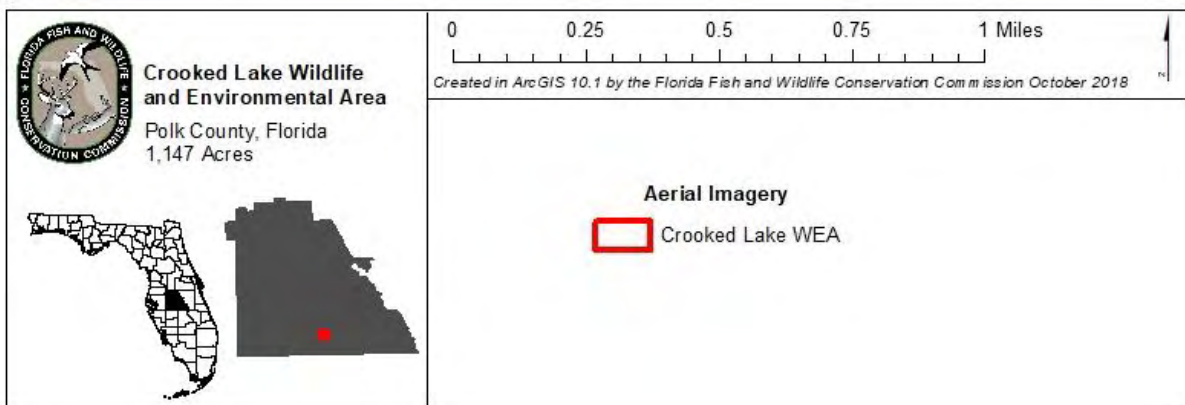
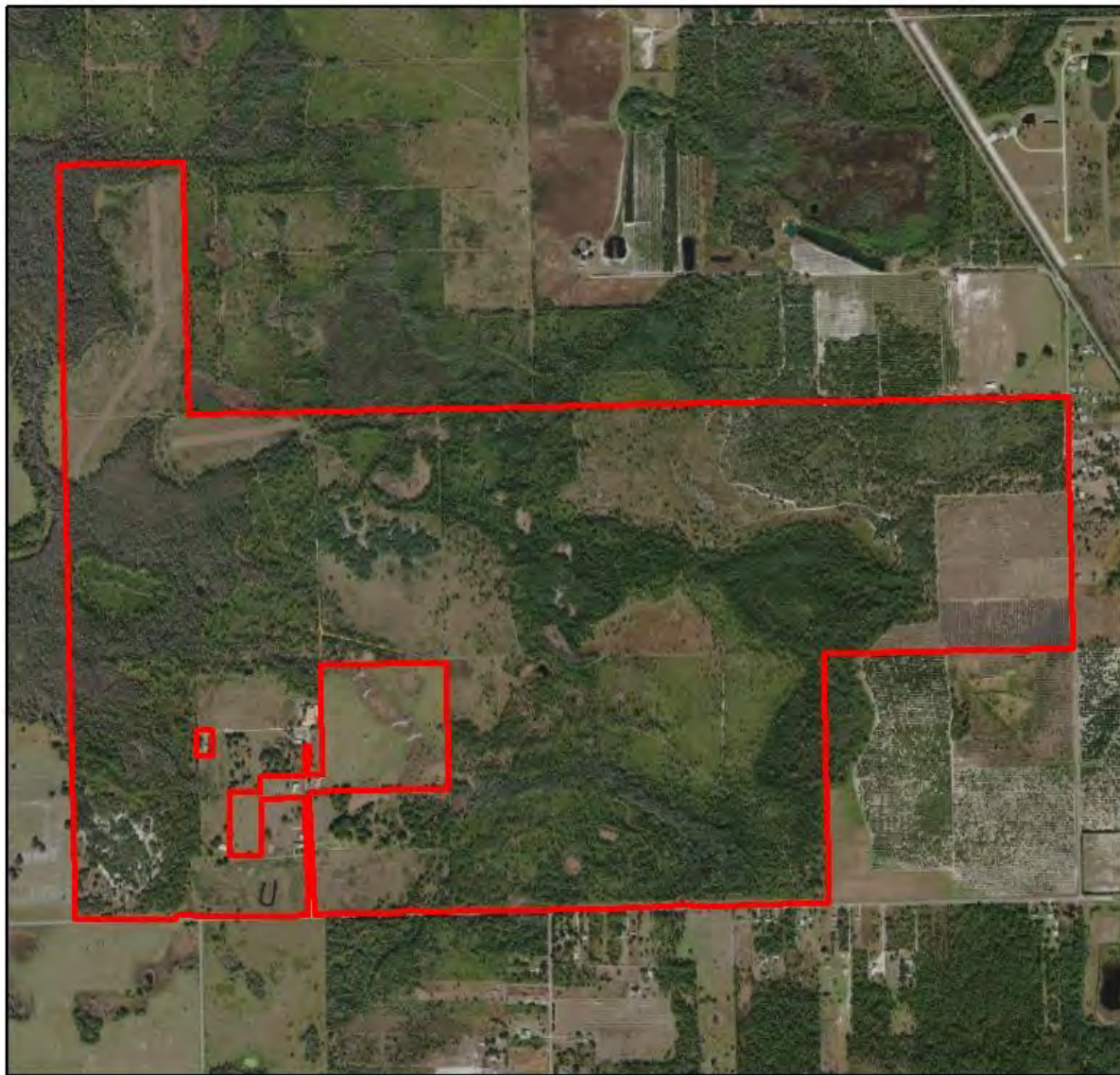


Figure 1. Aerial Map of the CLWEA

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

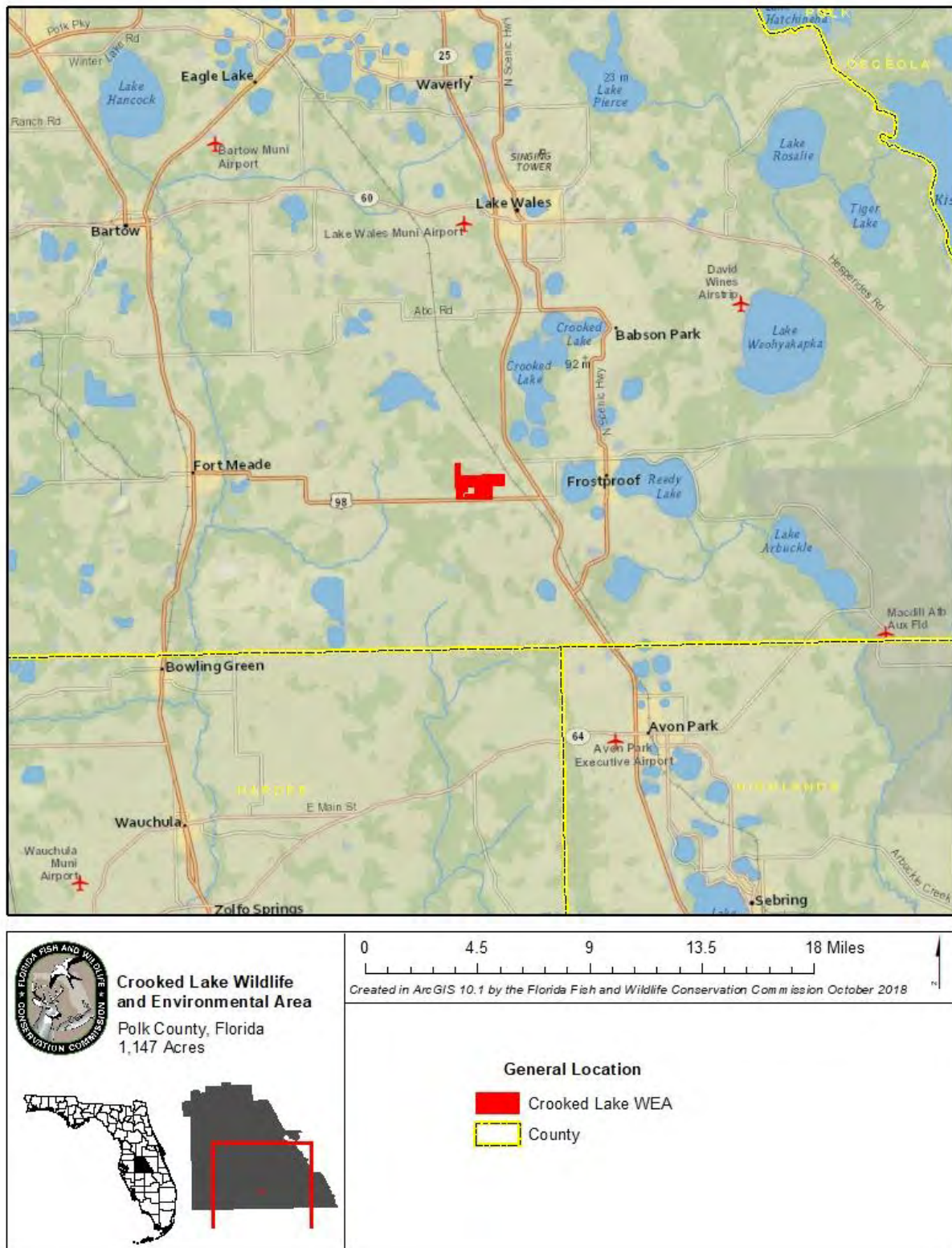


Figure 2. General Location of the CLWEA

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

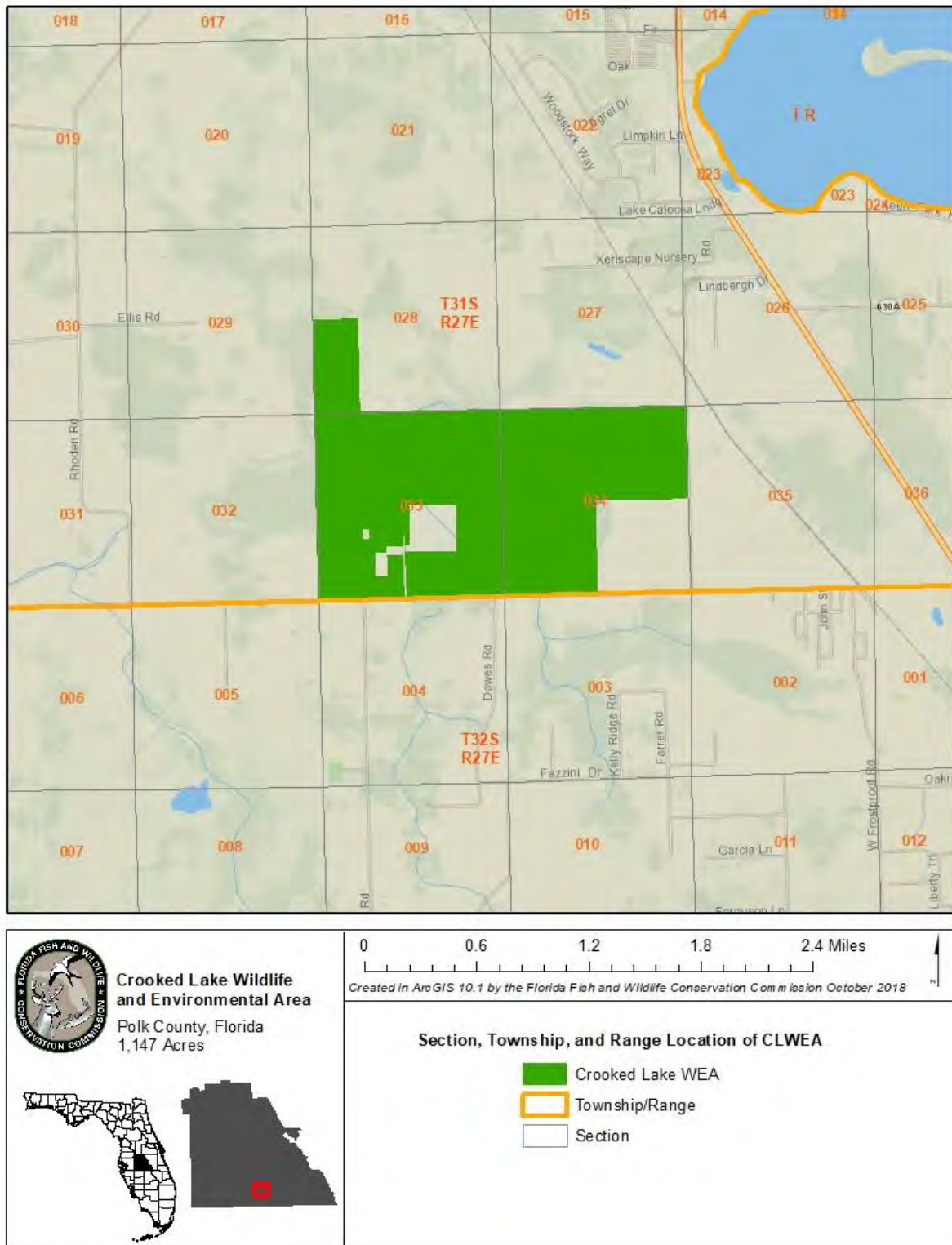


Figure 3. CLWEA Proximity Map with Section, Township, and Range

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

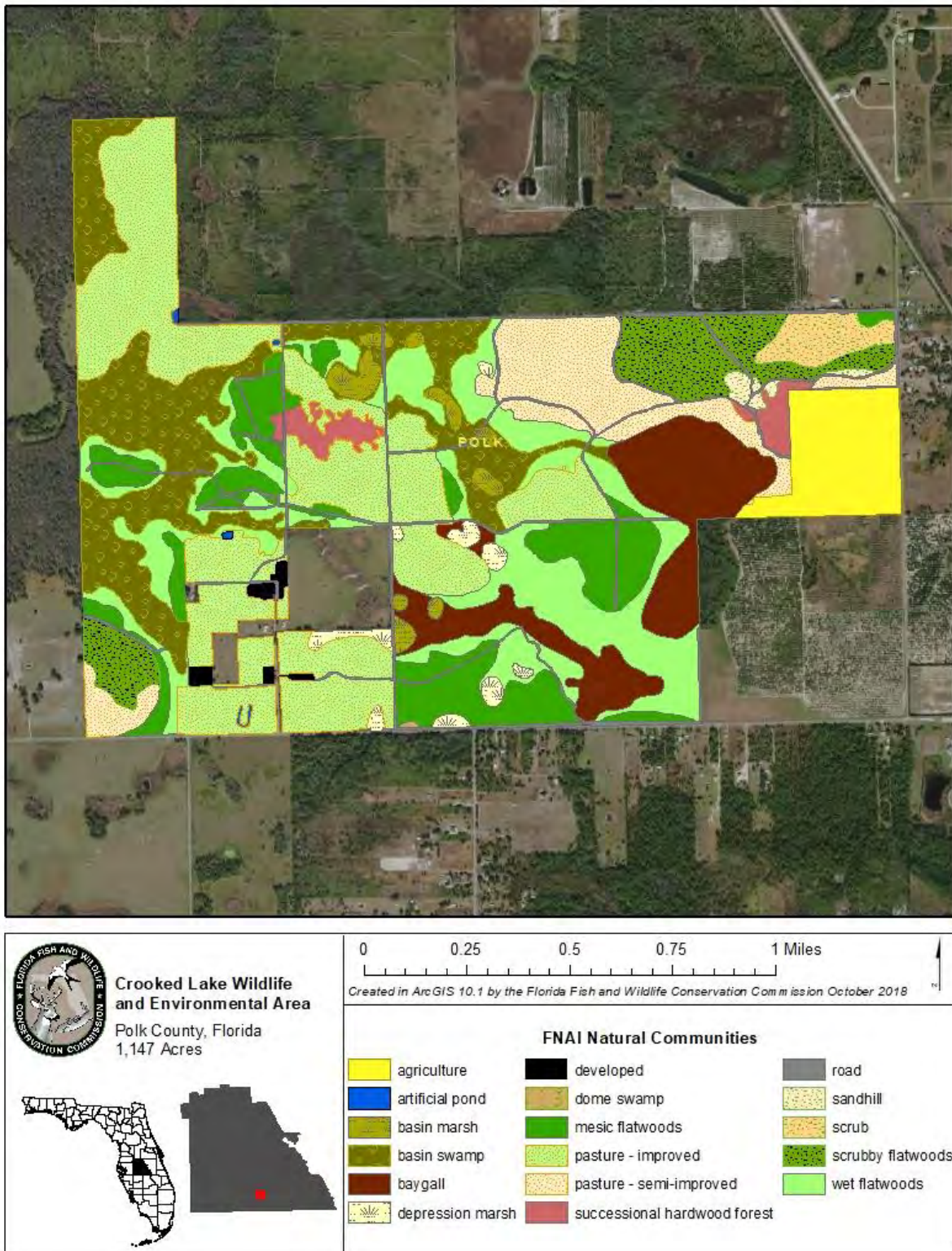


Figure 5. FNAI Natural Communities Map

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

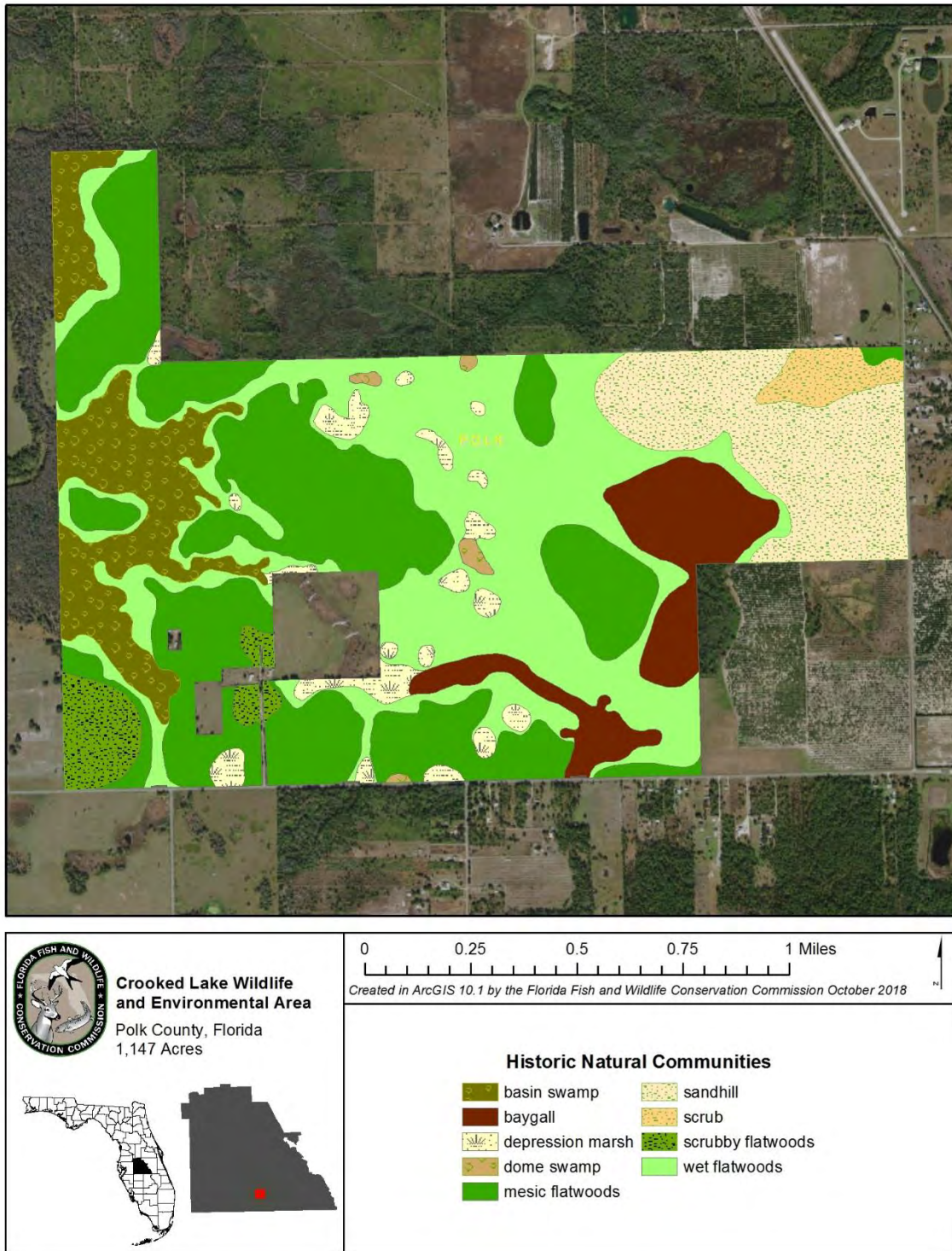


Figure 6. FNAI Historic Natural Communities for the CLWEA

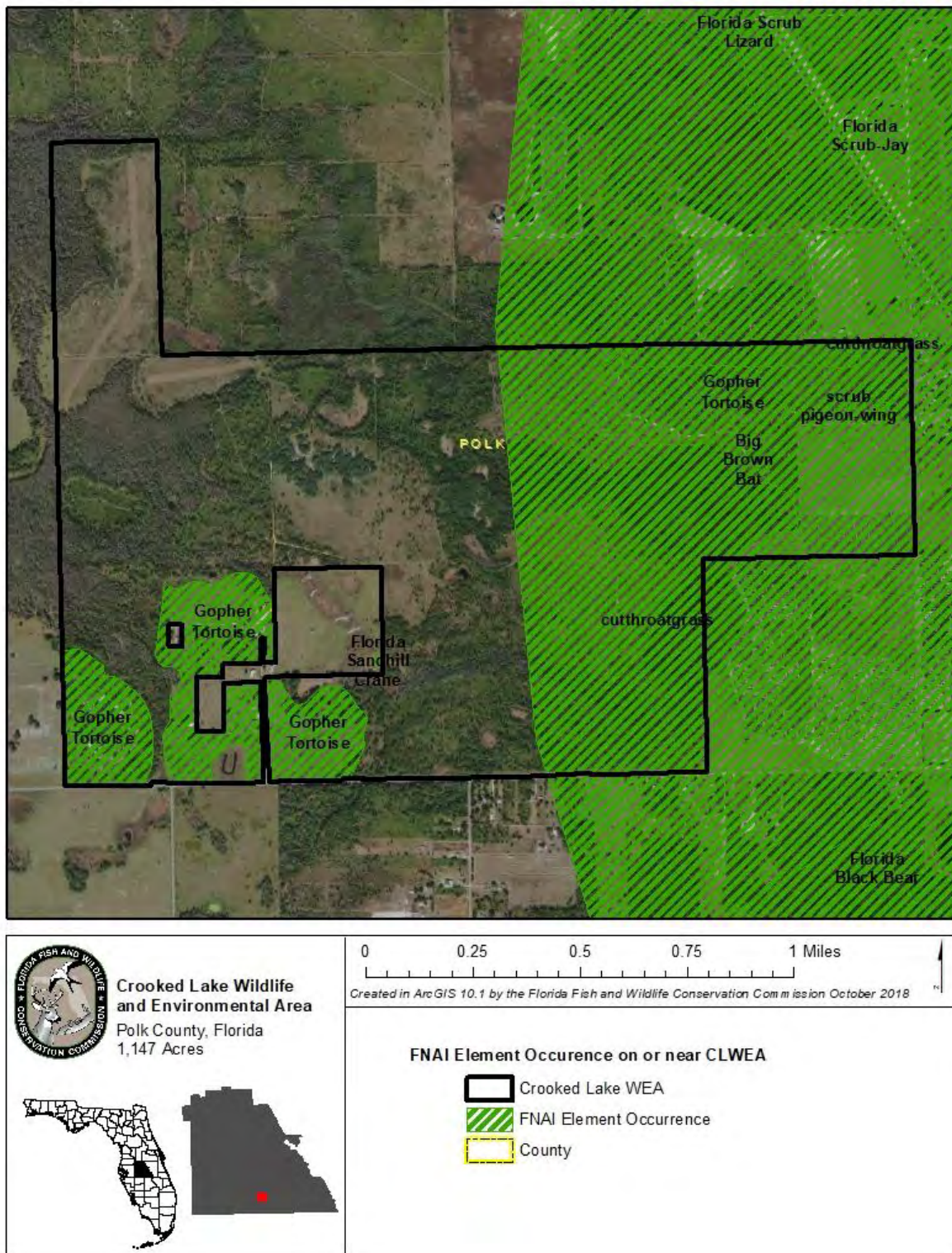


Figure 7. FNAI Element Occurrences

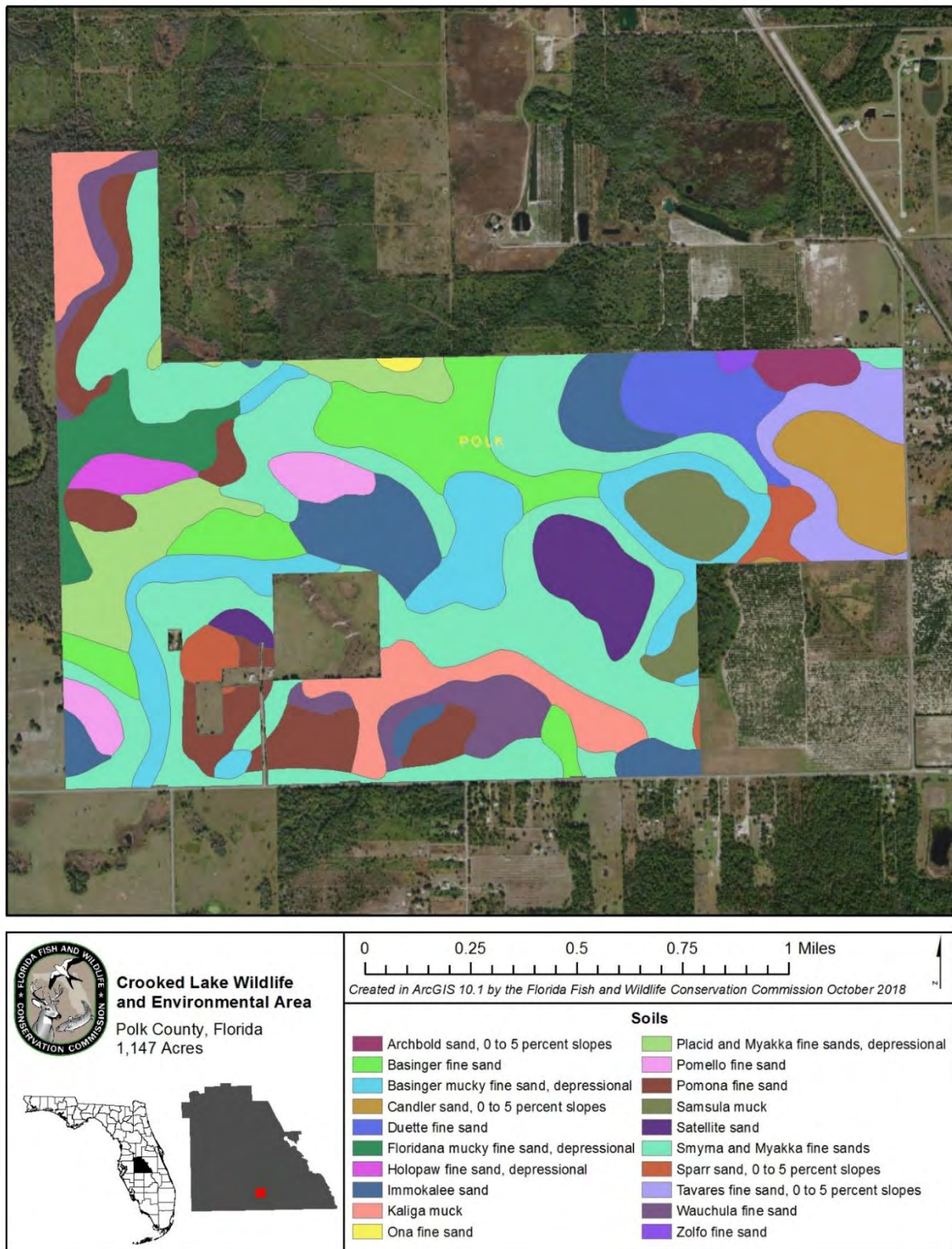


Figure 8. The CLWEA Soil Types

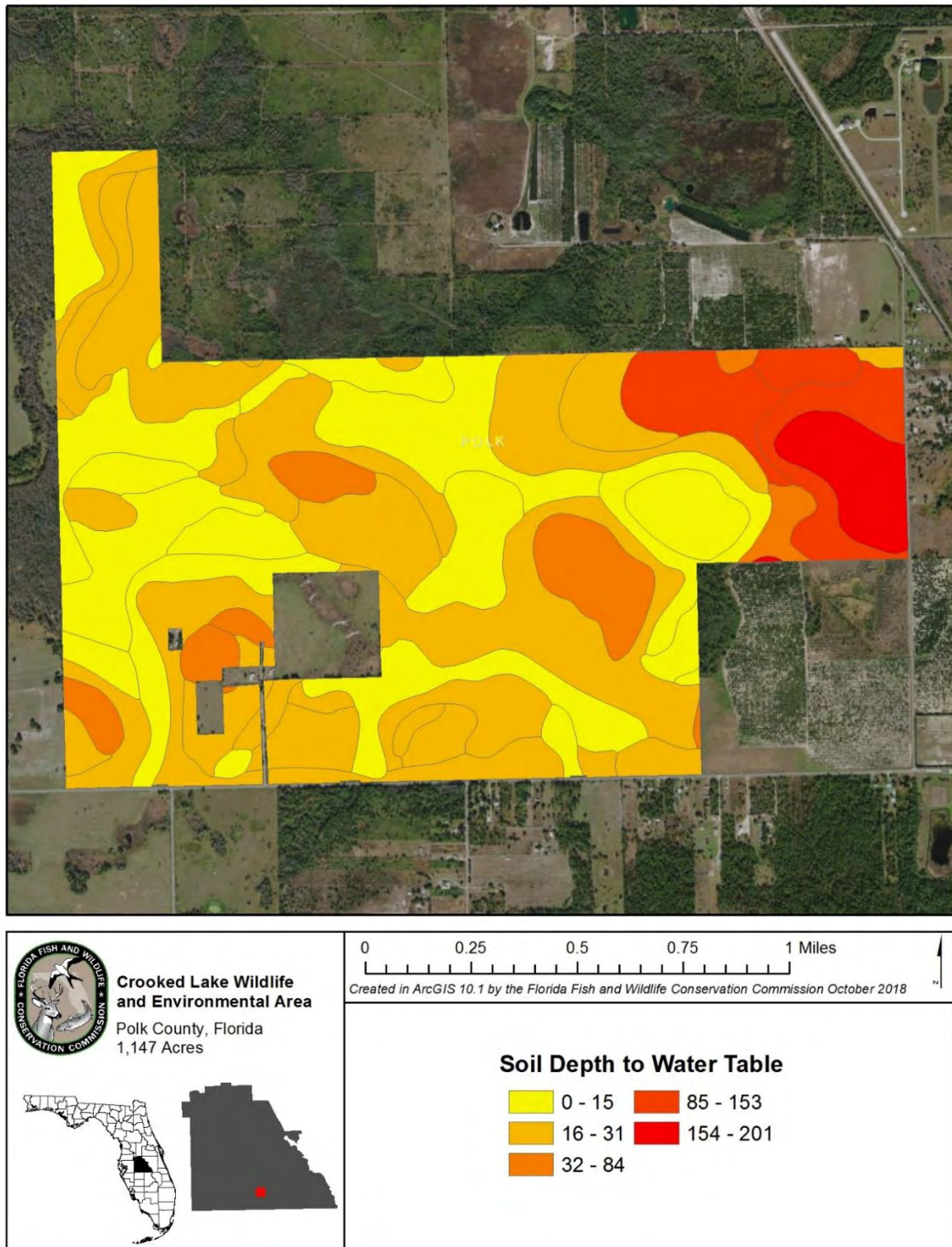


Figure 9. The CLWEA Soil Depth to Water Table (cm)

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

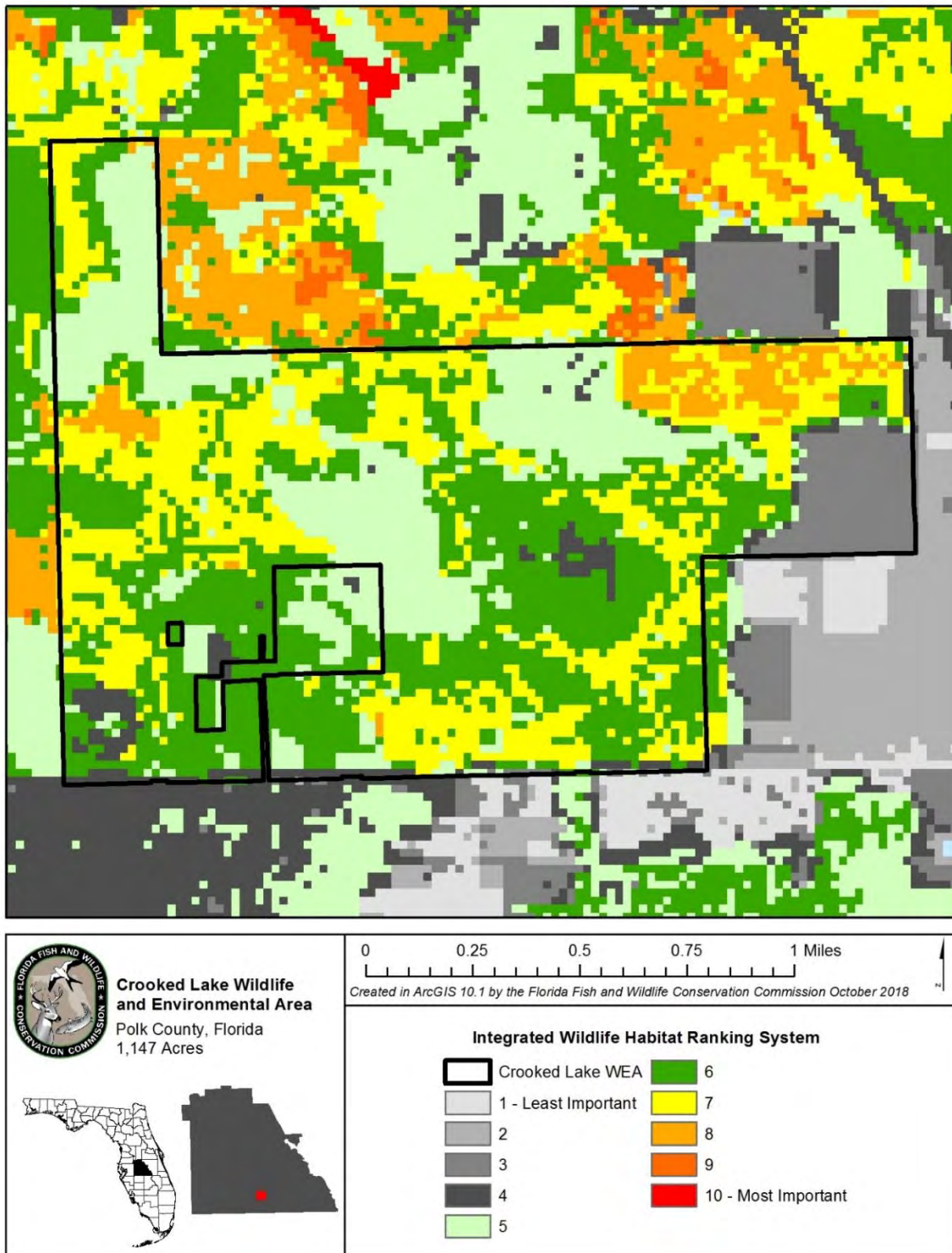


Figure 10. The CLWEA Integrated Wildlife Habitat Ranking

12.4 Soil Series Descriptions

Map Unit Description

Polk County, Florida

[Minor map unit components are excluded from this report]

Map unit: 3 - Candler sand, 0 to 5 percent slopes

Component: Candler (90%)

The Candler component makes up 90 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of eolian deposits and/or sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY002FL Longleaf Pine-turkey Oak Hills ecological site. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 7 - Pomona fine sand

Component: Pomona, non-hydric (70%)

The Pomona, non-hydric component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pomona, hydric (20%)

The Pomona, hydric component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 13 - Samsula muck

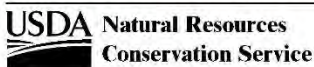
Component: Samsula (80%)

The Samsula component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 60 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 14 - Sparr sand, 0 to 5 percent slopes

Component: Sparr (85%)

The Sparr component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on rises on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most



Survey Area Version: 9
Survey Area Version Date: 12/19/2013

Page 1 of 7

Map Unit Description

Polk County, Florida

Map unit: 14 - Sparr sand, 0 to 5 percent slopes

Component: Sparr (85%)

restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 23 inches during July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R154XY008FL Upland Hardwood Hammocks ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 15 - Tavares fine sand, 0 to 5 percent slopes

Component: Tavares (85%)

The Tavares component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY002FL Longleaf Pine-turkey Oak Hills ecological site. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 17 - Smyrna and Myakka fine sands

Component: Myakka (40%)

The Myakka component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 4 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Smyrna, non-hydric (40%)

The Smyrna, non-hydric component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Smyrna, hydric (15%)

The Smyrna, hydric component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Polk County, Florida

Map unit: 19 - Floridana mucky fine sand, depressional

Component: Floridana, depressional (80%)

The Floridana, depressional component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 11 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 21 - Immokalee sand

Component: Immokalee, non-hydric (75%)

The Immokalee, non-hydric component makes up 75 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Immokalee, hydric (10%)

The Immokalee, hydric component makes up 10 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces, coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 22 - Pomello fine sand

Component: Pomello (80%)

The Pomello component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 23 - Ona fine sand

Component: Ona, non-hydric (80%)

The Ona, non-hydric component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This

Map Unit Description

Polk County, Florida

Map unit: 23 - Ona fine sand

Component: Ona, non-hydric (80%)

component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Ona, hydric (10%)

The Ona, hydric component makes up 10 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 25 - Placid and Myakka fine sands, depressional

Component: Placid, depressional (60%)

The Placid, depressional component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 6 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka, depressional (30%)

The Myakka, depressional component makes up 30 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 32 - Kaliga muck

Component: Kaliga (85%)

The Kaliga component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over stratified loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 60 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Polk County, Florida

Map unit: 33 - Holopaw fine sand, depressional

Component: Holopaw, depressional (70%)

The Holopaw, depressional component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 36 - Basinger mucky fine sand, depressional

Component: Basinger, depressional (85%)

The Basinger, depressional component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 14 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 40 - Wauchula fine sand

Component: Wauchula, non-hydric (65%)

The Wauchula, non-hydric component makes up 65 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Wauchula, hydric (15%)

The Wauchula, hydric component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 47 - Zolfo fine sand

Component: Zolfo (90%)

The Zolfo component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during June, July, August, September, October, November. Organic matter

Map Unit Description

Polk County, Florida

Map unit: 47 - Zolfo fine sand

Component: Zolfo (90%)

content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 70 - Duette fine sand

Component: Duette (85%)

The Duette component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 77 - Satellite sand

Component: Satellite (90%)

The Satellite component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 23 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 83 - Archbold sand, 0 to 5 percent slopes

Component: Archbold (90%)

The Archbold component makes up 90 percent of the map unit. Slopes are 0 to 5 percent. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 87 - Basinger fine sand

Component: Basinger (80%)

The Basinger component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the R154XY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

12.5 Definitions of Management Plan Terms

Management Plan Goals and Objectives

Terms and Definitions

Assessment: Assessment—when a historic resource professional determines the possible effects—positive or negative—that an action or inaction may have on a historical resource (e.g., site, building, object or structures) by analyzing its current condition and documenting any modifications and changes to its original state as well as identifying any potential human or natural threats to its existence.

Capital Improvement: Capital improvement" or "capital project expenditure" means those activities relating to the acquisition, restoration, public access, and recreational uses of such lands, water areas, and related resources deemed necessary to accomplish the purposes of this chapter. Eligible activities include, but are not limited to: the initial removal of invasive plants; the construction, improvement, enlargement or extension of facilities' signs, firelanes, access roads, and trails; or any other activities that serve to restore, conserve, protect, or provide public access, recreational opportunities, or necessary services for land or water areas. Such activities shall be identified prior to the acquisition of a parcel or the approval of a project. The continued expenditures necessary for a capital improvement approved under this subsection shall not be eligible for funding provided in this chapter.

Desired future condition: Desired Future Condition is a description of the land or resource conditions that are believed necessary if management goals and objectives are fully achieved. Desired Future Condition varies by specific habitat and ecosystem. It can also vary, based upon a specific agency's management goals.

Evaluation: Review by a professional in archaeology, history or architecture as to the integrity and significance of the site, building or structure. The criteria of the National Register of Historic Places will be applied.

Facility: all developed structures and improvements provided for a specific purpose or contained within a clearly defined area.

Fire management plan: An element of the land management plan or an independent document that outlines the goals and objectives of a fire management program (prescribed and wildfire) for a predetermined period of time.

Historic: An object, site or structure that is 50 years or older.

Hydrological assessment: A documented, systematic evaluation by a qualified professional of the existing and historical quantity, quality, movement and function of water resources (e.g., computer modeling).

Imperiled species: A species or subspecies that is listed by the U.S. Fish and Wildlife Service as Endangered or Threatened; Florida Fish and Wildlife Conservation Commission (FWC) as Endangered, Threatened, or Special Concern; Florida Department of Agriculture and Consumer Services (FDACS) as Endangered or Threatened; or is tracked by Florida Natural Areas Inventory (FNAI) as globally or state Critically Imperiled or Imperiled. Imperiled Species does NOT refer to species that are on the FDACS list of commercially exploited plants that are not Endangered or Threatened.

Improve: the enhancement or expansion of facilities, roads and trails.

Maintenance: the daily or regular work of keeping facilities, roads and trails in proper condition.

Monitoring: Periodic examination of the site, building or structure to determine the current condition and threats such as erosion, structural deterioration, vegetation intrusion, poaching or vandalism. An updated Florida Master Site File form is used to complete this assessment.

Natural community/habitat/ecological improvement: Similar to restoration but on a smaller less intense scale. Typically includes small scale vegetation management activities, spot treatments of exotic plants, or minor habitat manipulations. Any habitat alteration that increases the diversity of a habitat or increases the population of a particular species.

Natural community/habitat/ecological restoration: The process of assisting the recovery and natural functioning of degraded natural communities to desired future condition, including the re-establishment of biodiversity, ecological processes, vegetation structure, and physical characters. Activities may include vegetative treatments (e.g., hardwood removal, mechanical treatment, pine tree thinning, etc.), groundcover establishment, non-commercial tree plantings, erosion control, hydrological manipulation (filling ditches), and beach management.

Not in maintenance condition: Species composition and/or structure is outside the targeted range. The natural community is in need of more frequent or recurring management treatments that are beyond maintenance activities. Examples include natural communities with exotic plant or animal infestations that are at levels requiring significant treatment, natural communities that have exceeded maximum targeted fire return intervals, and natural communities in need of restoration treatments.

Poor, fair, good condition: Evaluating the condition of cultural resources is accomplished using a three-part evaluative scale, expressed as good, fair and poor. These terms describe the present condition, rather than comparing what exists against the ideal. “Good” describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. “Fair” describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A “fair” assessment is cause for concern. “Poor” describes an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action is needed to reestablish physical stability.

Population survey: Using broadly accepted methodologies to detect changes in population trends over time.

Public access: access by the general public to state lands and water, including vessel access made possible by boat ramps, docks, and associated support facilities, where compatible with conservation and recreation objectives.

Recorded: A Florida Master Site File form has been completed and filed with the Florida Department of State, Division of Historical Resources.

Recreational/visitor opportunity: measure of potential number of users based on existing resource conditions and developed facilities.

Repair (major): the restoration of facilities, road and trails to proper condition after damage or failure.

Restoration underway: restoration planning/design, executing, evaluating and reporting.

Restored/Maintenance condition: (refers to natural community) - within the range of target species composition and structure such that no significant, non-recurring alterations to structure or species composition are needed for ecological restoration. Invasive exotic plants or animals are absent or at levels requiring minimal recurring treatments, and prescribed fire rotations are within target intervals. Refers to Natural Communities. Includes NCs that meet DFC, and NCs that have received restoration action (such as thinning, clear-cut and native species planting) and only require time and recurring maintenance actions such as prescribed fire, maintenance level exotics control, or sustainable forestry practices if applicable.

Road: a paved or unpaved motor vehicle route unless identified and managed as a trail.

Significant: Listed in or determined eligible for listing in the National Register of Historic Places as an individual property, element of a multiple listing or in an historic district. Cultural resource professionals are able to make the determination, but final determination rests with the Director of the Division of Historical Resources.

Sustainable forestry: The stewardship and harvest of forest products in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national and global levels, and that does not cause damage to other ecosystems.

Systematic survey: A sampling protocol designed to assess the occurrence or population status of a species or a suite of species (e.g., presence/absence, mark and recapture, transect survey, etc.).

Trail: a linear route or path which has been specifically prepared or designed for one or more recreational functions such as hiking, biking, horseback riding or multiple use. In many cases, unimproved service roads are also designated as trails.

Treatment: A mechanical, chemical, biological or manual action that changes the structure or composition of an area in order to facilitate restoration or improvement.

Visitor carrying capacity: An estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site.

Wildlife activities: wildlife-associated recreation such as birdwatching, fishing, hunting, etc.

12.6 FNAI Element Occurrence Data Usage Letter



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

April 11, 2014

David Alden
Land Conservation & Planning
Florida Fish and Wildlife Conservation Commission
Tallahassee, FL

Dear David,

By virtue of this letter we are updating and continuing our agreement that it is unnecessary for your office to request FNAI element occurrence data for each land management plan you prepare, under the following conditions:

- FNAI will continue to provide our Florida Element Occurrence GIS database to FWC on a quarterly update basis;
- The FNAI GIS data will be available to FWC staff for reference and incorporation as required in management plan review and preparation.

Our database manager, Frank Price, currently provides this update via ftp to FWC staff on a quarterly basis. Current FWC contacts for the quarterly update are Beth Stys and Ted Hoehn. We are pleased to continue this beneficial collaboration with the Florida Fish and Wildlife Conservation Commission.

Sincerely,

Gary Knight
Director
Florida Natural Areas Inventory



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

12.7 FWC Agency Strategic Plan

Florida Fish and Wildlife Conservation Commission Agency Strategic Plan 2014 – 2019

Theme One – Florida’s Fish and Wildlife Populations and Their Habitats

Goal 1: Ensure the sustainability of Florida’s fish and wildlife populations.

Strategies:

1. Manage listed species so they no longer meet Florida’s endangered and threatened listing criteria.
2. Manage species to keep them from meeting Florida’s endangered and threatened listing criteria.
3. Anticipate and address fish and wildlife species’ conservation needs in light of adaptation to long-term environmental changes.
4. Develop, acquire and apply the appropriate biological and sociological science to inform fish and wildlife conservation decisions.
5. Inform and guide partners regarding how their regulations, policies, procedures and other actions affect fish and wildlife conservation.
6. Protect fish and wildlife species through effective outreach and enforcement.

Goal 2: Ensure sufficient habitats exist to support healthy and diverse fish and wildlife populations.

Strategies:

1. Use science to determine quantity, quality and location of the habitats most critical to sustain healthy and diverse fish and wildlife populations.
2. Protect lands and waters critical to sustaining healthy and diverse fish and wildlife populations through diverse incentive programs.
3. Manage habitats to sustain healthy and diverse fish and wildlife populations.

Theme Two – Interactions with Fish and Wildlife, including Fishing, Hunting, Boating and Wildlife Viewing Opportunities

Goal 1: Provide residents and visitors with quality fishing, hunting, boating and wildlife viewing opportunities that meet their needs and expectations while providing for the sustainability of those natural resources.

Strategies:

1. Develop, acquire and use the appropriate biological and sociological science necessary to provide sustainable fishing, hunting, boating and wildlife viewing opportunities that meet the needs and expectations of user groups while providing for the sustainability of those resources.
2. Manage fish and wildlife populations to provide sustainable fishing, hunting, and wildlife viewing opportunities.
3. Develop and maintain widely available, diverse and accessible fishing, hunting, boating and wildlife viewing opportunities that meet the needs and expectations of residents and visitors while providing for the sustainability of those resources and emphasizing partnerships with both public and private landowners.
4. Recruit and manage sustainable levels of resident and visitor participation in fishing, hunting, boating and wildlife viewing.
5. Provide targeted fishing, hunting, boating and wildlife viewing programs for youth, the disabled and veterans.

Goal 2: Enhance the safety and outdoor experience of those who hunt, fish, boat and view wildlife.

Strategies:

1. Provide and promote opportunities for residents, and visitors to learn safety practices for fishing, hunting, boating and wildlife viewing.
2. Enhance the boating safety and waterway experience of residents and visitors through improved access, management, education and enforcement.
3. Promote Florida's outdoor environment as a safe and healthy recreational option for residents and visitors.
4. Address the growing disconnect between people and nature by marketing and providing opportunities and education for diverse age, race, gender, ethnic and other demographic sectors.

Goal 3: Use minimal regulations to manage sustainable fish and wildlife populations, manage access to fish and wildlife resources, and protect public safety.

Strategies:

1. Continually evaluate proposed and existing regulations, based on resource management benefits, public safety concerns, and economic and social impacts, to improve or eliminate regulations as warranted.
2. Coordinate with partners and stakeholders to ensure that appropriate authorities and regulations exist to maintain sustainable fish and wildlife populations.
3. Implement and enforce regulations in an informative, proactive and influential manner to enrich resident and visitors' outdoor experience while safeguarding the natural resources.

Goal 4: Minimize adverse environmental, social, economic and health and safety impacts from fish, wildlife and plants that are known, or have a potential, to cause adverse impacts.

Strategies:

1. Manage species and their habitats, as well as species and human interactions, to eliminate or reduce the adverse environmental, social, economic and health and safety impacts from native and non-native fish, wildlife and plants.
2. Effectively communicate to residents, visitors and businesses how to be safe and act responsibly when interacting with or possessing fish, wildlife and plants.
3. Manage captive and non-native wildlife movement and trade through proactive and responsive enforcement, regulation and education, with an emphasis on species that pose a high risk to our native fish and wildlife.
4. Enhance partnerships to address adverse environmental, social, economic and health and safety impacts from fish, wildlife and plants and ensure a consistent and integrated approach with FWC.

Theme Three – Sharing Responsibility for Fish and Wildlife Conservation and Management with an emphasis on developing conservation values in our youth

Goal 1: Ensure current and future generations support fish and wildlife conservation.

Strategies:

1. Expand and promote the Florida Youth Conservation Centers Network through leveraging FWC programs and staff, and developing public and private partnerships and sponsorships.
2. Develop and deliver standardized youth conservation curricula and fishing, hunting, boating and wildlife viewing outdoor activity programs, and assist with adapting programs and curricula to meet the needs of diverse communities.
3. Foster stewardship and shared responsibility for fish and wildlife conservation through conservation education programs.
4. Expand marketing and outreach to reach diverse audiences and engage all staff in priority outreach initiatives.

Goal 2: Ensure residents, visitors, stakeholders and partners are engaged in the processes of developing and implementing conservation programs.

Strategies:

1. Foster a common vision among partners and the FWC to maintain and enhance fish and wildlife populations and their habitats through interagency coordination, mutually beneficial goals and initiatives.
2. Engage residents, visitors, stakeholders and partners to understand their perspectives, develop and implement conservation programs, and implement fishing, hunting, boating and wildlife viewing management activities.
3. Use citizen science to enhance conservation programs.

Goal 3: Increase opportunities for residents and visitors, especially youth, to actively support and practice fish and wildlife conservation stewardship.

Strategies:

1. Inform residents and visitors about conservation stewardship and encourage their active involvement in achieving conservation of fish and wildlife.
2. Provide and promote opportunities for residents and visitors, especially youth, to participate in conservation stewardship activities, including FWC volunteer opportunities.

Goal 4: Encourage communities to conserve lands and waters critical to sustaining healthy and diverse fish and wildlife populations.

Strategies:

1. Provide communities with the necessary assistance to help them obtain the social and economic benefits of local conservation lands.
2. Provide residents and visitors with relevant information on the social and economic benefits of conservation, fishing, hunting, boating, and wildlife viewing.
3. Support community events and programs that promote fish and wildlife conservation.

Theme Four – Responsive Organization and Quality Operations

Goal 1: Integrate our commitment to benefit the community and enhance the economy through our conservation efforts and public service.

Strategies:

1. Identify and implement ways to support Florida businesses and job growth while managing fish and wildlife.
2. Identify and promote opportunities for staff to benefit local communities through participation in approved activities where FWC resources can be used (for example, the Florida State Employees' Charitable Campaign, the Guardian ad Litem Program, mentoring programs, FWC Disaster Response Teams, and American Red Cross Disaster Services).
3. Provide residents and visitors with reliable and current information on Florida's fish and wildlife.
4. Continue to attract visitors by providing top-quality fishing, hunting, boating and wildlife viewing opportunities.

Goal 2: Provide resources and support for the safety and protection of residents and visitors, our natural and cultural resources, and for emergency responses to critical incidents and environmental disasters.

Strategies:

1. Identify existing and emerging risks to the safety of residents and visitors and foster internal collaboration and external partnerships necessary to effectively manage, reduce or eliminate those risks.
2. Provide immediate and effective disaster response and recovery through mutual-aid efforts with local, state and federal partners.
3. Provide search, rescue, and recovery services in coordination with local, state and federal entities to ensure the safety of residents and visitors.

4. Protect natural and cultural resources through proactive and responsive enforcement efforts.

Goal 3: Ensure the FWC has highly effective and adaptive business practices.

Strategies:

1. Address emerging biological, social and economic trends, anticipate impacts and take advantage of opportunities to accomplish FWC's mission.
2. Expect each employee to be an ambassador for FWC and its mission to Florida's diverse residents and visitors.
3. Provide efficient and effective service to Florida's diverse residents, visitors, and FWC staff.
4. Foster a diverse, accountable, responsive and skilled workforce who effectively serves Florida's residents and visitors.
5. Manage existing and secure additional resources necessary to achieve fish and wildlife conservation and meet residents, visitor and stakeholder needs.

Create and maintain an effective business model that supports the FWC's mission by using continuous improvement approach

12.8 FWC Apiary Policy

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Apiary Policy

Division of Habitat and Species Conservation

Issued by:
Terrestrial Habitat Conservation and Restoration Section
9/1/2010

Enclosed is the HSC/THCR Apiary Policy for all Florida Fish and Wildlife Conservation Commission's Wildlife Management Areas and Wildlife and Environmental Areas.

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan

DIVISION OF HABITAT AND SPECIES CONSERVATION POLICY

Issued September 2010

**SUBJECT: APIARY SITES ON FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
WILDLIFE MANAGEMENT AREAS AND WILDLIFE AND ENVIRONMENTAL AREAS**

STATEMENT OF PURPOSE: It is the intent of this policy to determine which Florida Fish and Wildlife Conservation Commission (FWC) Wildlife Management Areas or Wildlife and Environmental Areas (WMA/WEA) may have apiary sites, and provides direction on site location, management and administration of said apiaries.

Definitions

Apiary – A place where bees and beehives are kept, especially a place where bees are raised for their honey.

Apiary Site – An area set aside on a WMA/WEA for the purpose of allowing a beekeeper to locate beehives in exchange for a fee as established by contract between the beekeeper and FWC.

Apiary Wait List – An apiary wait list will be maintained by the Terrestrial Habitat Conservation and Restoration (THCR) Section Leader's Office based on applications received from interested beekeepers. Only qualified apiarists will be added to the list. To become qualified the new apiarist must submit an application form and meet the criteria below under the section titled "Apiary Wait List and Apiary Application."

Beekeeper/Apiarist – A person who keeps honey bees for the purposes of securing commodities such as honey, beeswax, pollen; pollinating fruits and vegetables; raising queens and bees for sale to other farmers and/or for purposes satisfying natural scientific curiosity.

Best Management Practices – The Florida Department of Agriculture & Consumer Services (FDACS; Division of Plant Industry (DPI), Apiary Inspection Section, P.O. Box 147100, Gainesville, FL 33261-1416) provides Best Management Practices (BMP) for maintaining European Honey Bee colonies and FWC expects apiarists to follow the BMP.

Hive/Colony – Means any Langstroth-type structure with movable frames intended for the housing of a bee colony. A hive typically consists of a high body hive box with cover, honey frames, brood chambers and a bottom board and may have smaller super hive boxes stacked on top for the excess honey storage. A hive/colony includes one queen, bees, combs, honey, pollen and brood and may have additional supers stacked on top of a high body hive box.

Establishment of Apiary Sites on WMA/WEA

During the development of an individual WMA/WEA Management Plan, apiaries will be considered under the multiple-use concept as a possible use to be allowed on the area. “Approved” uses are deemed to be in concert with the purposes for state acquisition, with the Conceptual State Lands Management Plan, and with the FWC agency mission, goals, and objectives as expressed in the agency strategic plan and priorities documents. Items to consider when making this determination can also include:

- Were apiaries present on the area prior to acquisition?
- Are there suitable available sites on the WMA/WEA?
- Will the apiary assist in pollination of an onsite FWC or offsite (adjacent landowner) citrus grove or other agricultural operation?

For those WMA/WEAs that have not considered apiaries in their Management Plan, upon approval of this policy Regional Staff will work with the Conservation Acquisition and Planning (CAP) staff and THCR Section leadership to determine if apiaries are an approved use on the area. If apiaries are considered an approved use then a request will be made to the Division of State Lands to allow this use as part of an amended Management Plan. This request will be made through the THCR’s Section Leader’s office and coordinated by the CAP.

Determination of apiary site locations on WMA/WEAs should be done using the following guidelines:

- Apiary sites should be situated so as to be at least one-half mile from WMA/WEA property boundary lines, and at least one mile from any other known apiary site. Exceptions to this requirement must be reviewed by the Area Biologist and presented to the THCR Section Leader for approval.
- Site should be relatively level, fairly dry, and not be prone to flooding when bees would normally be present.
- Site should be accessible by roads which allow reasonable transfer of hives to the site by vehicle.
- If a site is to be located near human activity, such as, an agricultural field, food plot, wildlife opening, campsites, etc., or if the site may be manipulated by machinery at a time when bees would be present, then the apiary site should be located at a minimum

of 150 to 200 yards from the edge of that activity. This will ensure minimal disturbance to the bees and minimize incidents with anyone working in the area.

- It is preferable to have apiary sites located adjacent to or off roads whenever possible. If traditional apiary sites were located on roads and the Area Biologist determines that the site will not impact use of the road by visitors then it will be allowed.
- FWC Area Biologist shall select apiary site(s) and the site(s) selected should not require excessive vegetation clearing (numerous large trees, dense shrubs) or ground disturbance (including fill).

WMA/WEA Staff Responsibilities

Area Biologist on WMAs/WEAs with approved apiary sites will forward a GIS shapefile depicting all the apiary site polygon(s), including a name or number with coordinates for each apiary site, to the THCR Contract Manager.

Area Biologist will monitor each apiary site no less than once a year to determine if the beekeeper is abiding by the contract requirements. If violations are noted, staff should bring them to the attention of the beekeeper for correction. If violations continue staff should notify the THCR Contract Manager who will determine if or what additional action is warranted.

Area Biologist will establish and maintain firelines around the apiary site to ensure the apiary site is ready when a planned burn is scheduled.

Area Biologist will advise the beekeeper of burn plans, road work, gate closures, or other site conditions and management activities that may affect the beekeeper's ability to manage or access the apiary site.

Area Biologist is not responsible to ensure access roads are in condition suitable for beekeepers to access their hives with anything other than a four wheeled drive vehicle. (The site of the apiary may be high and dry, but the roads accessing them may be difficult to impossible to get a two wheeled drive vehicle into during extreme weather, e.g., heavy rainfall events.)

Apiary Wait List and Apiary Application

An electronic waiting list for apiary sites will be maintained by the THCR's Contract Manager for each WMA/WEA. To be placed on the waiting list an interested beekeeper must submit an apiary application form to the contract manager (See Enclosed Application Form). Each applicant will be considered based on the following criteria:

- Proof of a valid registration with the FDACS/DPI.
- Proof of payment of outstanding special inspection fees for existing sites.
- A validated history of being an apiary manager.
- Three references that can attest to the applicant's beekeeping experience.

If an apiary site becomes available on a WMA/WEA and there are beekeepers on the waiting list interested in that particular area, those individuals meeting the criteria above will be given preference. If there is more than one beekeeper meeting the criteria with their name on the list then a random drawing will be held by the THCR Contract Manager to determine who will receive the site. Beekeepers on the waiting list will be notified in writing of the random drawing's date/location and will be invited to attend. The individual's name selected during this drawing will be awarded the contract.

Apiary agreements are non-transferable. Each agreement serves as a contract between a specific individual or company and FWC, and the rights and responsibilities covered by an individual agreement cannot be transferred.

Contracts

Apiary contracts are for five (5) years and renewals are contingent upon a satisfactory performance evaluation by Area Biologist and concurrence of the THCR Section Leader. Approval is based on apiarist performance, adherence to rules and regulations and general cooperation. If an Area Biologist decides an apiarist whose contract is expiring is unacceptable he may recommend not approving the new contract. If this transpires then the wait list process using random selection will be used. If there is no apiarist on a current wait list then the apiarists who are in good standing with existing contracts will be notified to see if any want to be put on the wait list for the drawing. If none are interested then the site will be put on hold pending a valid request.

Pricing of Apiary Site(s)

Cost of each apiary site will be \$40 annually which will include up to 50 beehives. Additional beehives will be charged at the rate of \$40 per 50 beehives.

Pricing examples:

- A beekeeper is leasing 2 apiary sites with up to 100 beehives - the fee per year is \$80.
- A beekeeper is leasing 3 apiary sites with up to 200 beehives - the fee per year is \$160.

Note: The maximum number of hives/colonies allowed on an apiary site will be at the discretion of the apiarist. However, the apiarist is strongly recommended to follow the BMP as recommended by the FDACS/DPI. In addition to providing the BMP, FDACS/DPI's management

has recommended 50 hives per site in pineland communities and no more than 100 hives per site in areas with bountiful resources. However, FWC will not dictate the number of hives on a site unless they create land management issues.

Bear Depredation Control at Apiary Site(s)

Beekeepers are required to consult with the WMA/WEA Area Biologist to see if electric fencing is required for their apiary sites. If the Area Biologist requires electric fencing then the Beekeeper shall construct and maintain electric fences for each apiary site. Numerous electric fence designs have been used to varying success and FWC as a courtesy provides an electric fence technical information bulletin with each Agreement. This bulletin is attached in order to assist the Beekeeper and/or provide a design that has been proven to be reasonable effective.

SUBJECT MATTER REFERENCES

Apiary Inspection Law - Chapter 586, Florida Statutes (see <http://www.leg.state.fl.us/Statutes/>), Rule Chapter 5B-54, Florida Administrative Code (see www.flrules.org).

The Board of Trustees of the Internal Improvement Trust Fund – Recommended Apiary Agreement Guidelines For Apiaries & Revisions to an Agreement for Apiary Activities on State Lands on September 23, 1986

S:\HSC\THCR\APIARY.BACKUP.POLICY\dlissupport@dos.state.fl.us_20100903_111446.pdf

Senate Resolution 580, September 21, 2006: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:sr580ats.txt.pdf

Attachments

Sample Apiary Agreement W/Attachments (Map Placeholder & Electric Fence Bulletin)

Sample Apiary Site Application Form W/Mission Statement

Best Management Practices for Maintaining European Honey Bee Colonies

Sample of Random Selection Process Procedure

APPROVED:

Division Director or Designee

DATE: _____

APIARY AGREEMENT

AGREEMENT FOR APIARY ACTIVITIES ON STATE LANDS

THIS AGREEMENT is made by and between the Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street, Tallahassee, FL 32399-1600, hereinafter known as “the COMMISSION,” and (Insert Name and Address of Apiarist Here), telephone number (Insert Phone Number of Apiarist Here), hereinafter known as “the USER.”

WITNESSETH

In consideration of the mutual promises to be kept by each and the payments to be made by the USER, the parties agree as follows:

1. TERM: This Agreement will begin (Insert date here) or the date signed by both parties, whichever is later, and will end five (5) years from the date of execution. Issuance of a new five (5) year Agreement is contingent upon satisfactory performance evaluation by the Area Biologist and approval of the THCR Section Leader.
2. The COMMISSION Agrees:
 - a. To provide apiary sites on state lands, which will be identified by the COMMISSION staff and located on the property identified in (4)(f) below.
 - b. To provide technical assistance for bear-proofing, if required by Area Biologist, of sites made available under this Agreement.
 - c. To allow the USER to place a total number of (insert number of hive boxes here) hive boxes on the COMMISSION-managed property at the apiary site(s).
3. The USER Agrees:

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan

- a. To pay (Insert Total Dollars Here) on or before the execution date of this Agreement and each year thereafter on or before anniversary date of the original contract execution date, with check or money order payable to the Florida Fish and Wildlife Conservation Commission. All payments shall be remitted to The Florida Fish and Wildlife Conservation Commission, Finance and Budgeting, Accounting Section, PO Box 6150, Tallahassee, FL 32399-6150, and a copy of the check to The Florida Fish and Wildlife Conservation Commission, Terrestrial Habit Conservation and Restoration Section, Attn: Section Leader, 620 South Meridian Street, Tallahassee, Florida 32399-1600.
- b. To have no more than (Insert Number of Hive boxes here) hive boxes on the property at one time.
- c. To comply with the Florida Honey Certification and Honeybee Law, Chapter 586, Florida Statutes, and Rule 5B-54, Florida Administrative Code, and all other applicable federal, state, or local laws, rules or ordinances.
- d. To not damage, cut or remove any trees in the course of preparing for or conducting operations under this Agreement.
- e. To repair within 30 days of occurrence any damage to roads, trails, fences, bridges, ditches, or other public property caused by USER'S operations under this Agreement based on discretion of the COMMISSION to ensure the WMA/WEA management goals are met. All repairs will be coordinated with the Area Biologist to ensure management goals are met. If USER does not comply within the 30 day requirement, then the COMMISSION may use a third party to perform the repairs and charge the USER accordingly.
- f. To report any forest fires observed and to prevent forest fires during the course of operations under this Agreement.
- g. To abide by all WMA/WEA rules and regulations in addition to items in this Agreement.
- h. To notify the Area Biologist within 24 hours when a bear depredation event occurs.

- i. To post their name in an agreed upon location at each site covered by this Agreement or otherwise use an identifying system that is approved by the Area Biologist.
- j. To furnish proof of general liability insurance prior to starting apiary activities on state property or within 30 days of execution of this Agreement, whichever is earlier, and proof of annual renewal of the general liability insurance policy prior to or upon expiration date of the policy. The USER shall maintain continuous general liability insurance throughout the term of this Agreement for no less than \$300,000 for bodily injury and \$100,000 for property damage for each occurrence. Such a policy shall name the COMMISSION as the Certificate Holder. The USER's current certificate of insurance shall contain a provision that the insurance will not be canceled for any reason during the term of this Agreement except after thirty (30) days written notice to the COMMISSION.
- k. To be liable for all damage to persons or property resulting from operations under this Agreement, and to release, acquit, indemnify, save and hold harmless the COMMISSION, its officers, agents, employees and representatives from any and all claims, losses, damages, injuries and liabilities whatsoever, whether for personal injury or otherwise, resulting from, arising out of or in any way connected with activities under this Agreement or activities occurring from any other source not under this Agreement and the USER further agrees to assume all risks of loss and liabilities incidental to any natural or artificial condition occurring on state lands cover by this Agreement.
- l. To construct and maintain electric fences, if required by the Area Biologist at the Area Biologist's discretion, to provide protection of apiaries from black bear depredation consistent with the technical information bulletin attached to this agreement, and, if so required, to maintain an open buffer around the fencing of five (5) feet or more. (See Attachment 1)
- m. To remove all personal property from the site within thirty (30) days of termination or expiration of this Agreement. The USER understands that after this time, all the USER'S personal property remaining on the WMA/WEA shall be deemed abandoned and become the property of the COMMISSION, which will be utilized or disposed of at the sole discretion of the COMMISSION, and that reasonable storage and/or disposal fees and/or costs may be charged to the USER.

4. The parties mutually agree:
- a. This Agreement is not transferable.
 - b. The USER's failure to submit payment by the due date established herein may result in cancellation of the Agreement by the COMMISSION.
 - c. The USER's failure to submit proof of general liability insurance or proof of annual renewal in compliance with (3) (j) above may result in cancellation of this Agreement by the COMMISSION.
 - d. This Agreement shall be in effect for a period of five (5) years and issuance of a new agreement will be contingent upon a satisfactory performance evaluation and approval of the Area Biologist and THCR Section Leader.
 - e. Each apiary site shall be situated so as to be at least one-half (1/2) mile inward from state property lines and there shall be at least one (1) mile separation between sites. Exceptions to this rule must be reviewed by Area Biologist presented to and approved by the Terrestrial Habitat Conservation and Restoration Section Leader.
 - f. The property covered by this Agreement is described as follows: That the property sites (Insert Area Name) Wildlife Management Area are represented by Attachment 2.
 - g. In accordance with Section 287.134, Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal or reply on a contract to provide goods or services to any public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant with any public entity; and may not transact business with a public entity.
 - h. As part of the consideration of this Agreement, the parties hereby waive trial by jury in action brought by either party pertaining to any matter whatsoever arising out of or in any way connected with this Agreement. Exclusive venue for all judicial actions pertaining to this Agreement is in Leon County, Florida.

- i. This Agreement may be terminated by the COMMISSION upon thirty (30) days written notice to the USER in the event the continuation of the apiary activities are found to be incompatible with the COMMISSION’S management plans or for any other reason at the sole discretion of the COMMISSION.

This Area Intentionally Left Blank

IN WITNESS WHEREOF, the parties have executed this Agreement on the day and year last below written.

USER SIGNATURE

Date: _____

Witness

Witness

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

Mike Brooks, Section Leader
Terrestrial Habitat Conservation and
Restoration

Date: _____

Approved as to form and legality

Commission Attorney

Date: _____

AGREEMENT

ATTACHMENT 1

Use of Electric Fencing to Exclude Bears And Prevent Property Damage

Florida Fish and Wildlife Conservation Commission
Technical Information Bulletin (2001)

Electric fencing has proven effective in deterring bears from entering landfills, apiaries (beehives), livestock pens, gardens, orchards, and other high-value properties. Numerous electrical fence designs have been used with varying degrees of success. Design, quality of construction, and proper maintenance determine the effectiveness of an electric fence. The purpose of this technical bulletin is to assist the property owner in understanding and implementing electrical fencing as a tool to exclude and prevent damage caused by black bears.

Understanding Electric Fencing

Electric fencing provides an electrical shock when an animal comes into contact with the electrically charged wires of the fence. People unfamiliar with electric fencing often are afraid that it will injure, permanently damage, or kill an individual or pet that contacts the fence. **This is not true!** A properly constructed electric fence is safe to people, pets, and bears.

Components of Electric Fencing

An electric fence is composed of four main elements: a charger, fence posts, wire, and the ground rod.

Fence Charger. On a small scale electric fence (like that typically needed for bear exclusion), the largest cost is normally the fence charger. A fence charger's job is to send an electrical pulse into the wire of the fence. Contrary to popular belief, there is not a continuous charge of electricity running through the fence. Instead the charger emits a short pulse or burst of electricity through the fence. The intensity and duration of the electrical pulse varies with the type of charger or controller unit. Chargers with a high-voltage, short duration burst capacity are the best because they are harder to ground out by tall grass and weeds. These types are also the safest, because, even

though the voltage is high (5 kilovolts) the duration of the burst is very short (2/10,000 of a second) (FitzGerald, 1984).

Two basic energy sources for chargers are batteries (12-volt automotive type) and household current (110 volt). Battery-type chargers are typically cheaper to purchase but require more maintenance because of the necessity of charging the battery. The advantage of a battery powered charger is that it can be used in a remote location where 110-volt current is not available. Most units that are powered by a fully charged 12-volt deep-cycle batteries can last three weeks before needing a charge. Addition of a solar trickle charger will help prolong the duration of effective charge in 12-volt batteries.

Fence Posts. On small scale fences, the posts are normally the second largest expense involved in construction. Therefore, when planning an electric fence it is a good idea to utilize existing fencing in order to save money. If no existing fence is available, posts will need to be placed around the area needing protection. Posts may be wood, metal, plastic, or fiberglass. Wood and metal posts will need to have plastic insulators attached to them which prevent the electric wire from touching the post causing it to ground out. Plastic and fiberglass posts do not need insulators, the wire may be affixed directly to these posts. Wood and metal posts are typically more expensive and require the added expense of insulators, however, they are more durable and generally require less maintenance.

Wire. Fourteen to seventeen gauge wire is the most common size range used in electric fencing. Heavier wire (a lower gauge number) is more expensive but carries current with less resistance and is more durable (FitzGerald, 1984).

The two most common types of wire are galvanized and aluminum. Galvanized wire is simply a steel wire with a zinc coating to prevent rust, which makes the wire last longer. Some wire is more galvanized than others. The degree or amount of zinc coating that is around the core steel wire is measured in three classes. A class I galvanization means the wire has a thinner coating of zinc than a class II galvanization. Class III galvanized wire has the heaviest zinc coating and will last longer than the class I and class II wire (FitzGerald, 1984). In general, the cost of galvanized wire increases as the class or amount of galvanization increases.

Aluminum wire is typically more expensive than the galvanized wire. Some advantages of aluminum wire are: it will not rust, it conducts electricity four times better, and it weighs one-third less than steel wire.

The Ground Rod. The ground is an often overlooked, but critical part of an

electric fence. Without a good ground, electricity will not flow through the wire. When an animal touches a charged wire, the body of the animal completes the electrical circuit and the animal feels the “shock”. The current must travel from the charger through the wire to the animal and then back through the ground to the charger if the animal is to feel the shock. The soil acts as the return “wire” (ground) in the circuit. However, if a bird was to land on a charged wire without touching the soil the bird would not complete the circuit and would be unaffected (FitzGerald, 1984). Some fence configurations use actual grounded wires within the fence to enhance the grounding system.

The ground may be a commercial ground rod or a copper tube or pipe driven six to eight feet in moist soil. Copper is expensive, so a copper coated steel pipe or any other good conducting metal pipe will work also. Very dry soil can effect the ability to create a good ground and has sometimes been a problem during drought conditions. Pipe may be a better choice than a solid rod during drought conditions, because water may be poured down the ground pipe to improve the ground. Some fence configurations use wires as the grounding system, rather than relying solely on the soil as a ground.

Recommended Electric Fence to Deter Black Bears

Conditions at fence sites will vary and will determine what the most effective fence configuration will be. Commission biologists welcome the opportunity to visit sites and provide custom tailored advice on constructing an effective electric fence. The following recommendation will cover most situations with low to moderate pressure from black bears. Use a five strand aluminum wire fence that is 40 inches high with wire spacing every eight inches apart using the previously mentioned wired grounding system (see Figure 1). The wire closest to the ground level (the lowest wire) should be a charged or “hot” wire. The second wire should be grounded. The third wire should be hot. The fourth wire should be grounded and the fifth wire should be hot. If using metal or wood posts, insulators must be used to keep the hot wires from grounding out. The cost of this type of electric fence utilizing fiberglass posts and a 110 volt fence charger is approximately \$200 for a 40' x 40' area (160 linear feet of fence).

Materials:

- 1 - 1, 312 foot roll (1/4 mile) 14 gauge aluminum electric fence wire
- 1 - 50 foot roll 12 gauge insulated wire
- 20 - 5 foot 5/8 inch dia fiberglass fence posts
- 5 - plastic gate handles
- 1 - 110 volt fence charger
- 1 - 10 foot ground pipe
- 4 - plastic electric fence signs

Installation. These instructions are for a square shape fence exclusion, but the

process would be very similar for other applications. Drive 4 corner posts 1-foot deep into ground and stake with guy wires. Clip, rake, and keep clear any vegetation in a 15-inch wide strip under the fence and apply herbicide. Attach and stretch the aluminum wire at 8-inch increments starting 8 inches from ground level. A loop of wire should be left on each wire at the first corner post. Once the wire has been stretched around the outside of all the corner posts back to the first post a plastic gate handle should be attached to each wire and the gate handles should be attached to each corresponding loop on the first corner post. Drive in the remaining 16 posts to the same depth at 8-foot intervals between corner posts. Secure each of the five wires to each of the posts with additional wire. Attach four plastic electric fence signs (one on each side) to the top wire of the fence. Attach a 12-gauge strand of insulated wire to the positive terminal of the fence charger and attach it to the first, third, and fifth wires of the fence. Attach another 12 gauge insulated wire to the negative terminal of the charger and attach this wire to the ground pipe which has been driven into the ground 6 to 8-feet deep. Attach another 12 gauge insulated wire from the negative terminal of the charger to the second and fourth wires on the fence. Plug the charger into a 110 volt power supply and the fence is in operation.

Tips to improve the effectiveness of your electric fence to deter black bears:

1. If using a 12-volt fence charger, ensure that the battery is charged; check every two weeks.
2. Make sure terminals on the charger and battery are free of corrosion.
3. Make sure hot wires are not being grounded out by tall weeds, fallen tree branches, broken insulators, etc.
4. If fence wires have been broken and repaired, make sure wires are corrosion free where they have been spliced together. Also, tighten the fence at each corner post as wires that have been spliced and are loose make poor connections.
5. Be sure to rake vegetation from under and around the outside of the fence as this may act as an insulator.
6. To improve the ground around the perimeter of the fence add a piece of 24 inch chicken wire laying on the ground around the outside of the fence. This should be connected to ground.
7. During periods of drought pour water down the ground pipe and around the ground pipe to improve the ground. Digging a 6 inch deep 6 inch diameter hole around the ground pipe and back filling with rock salt will also improve the ground. Additional ground pipes may also be added to portions of the fence farthest from the charger.
8. To ensure that the bear solidly contacts the charged portion of the fence, a bait like bacon strips, a can of sardines, or tin foil with peanut butter may be attached

to one of the top hot wires. Make sure these do not contact the ground, thus shorting out the fence.

9. When protecting a specific structure (like a shed or rabbit hutch), the fence should be placed 3 to 5 feet away from the structure (rather than on it) so that the bear encounters the fence before reaching the attractant.

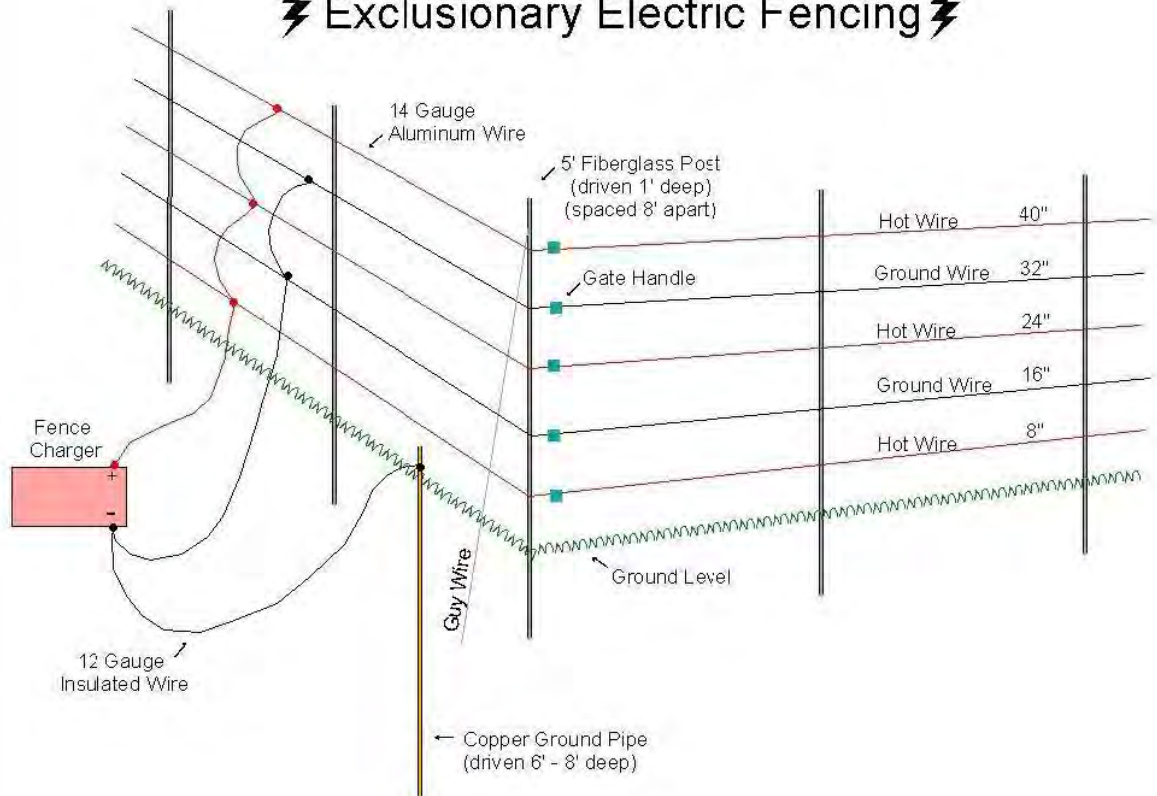
10. Protect the fence charger from the elements by covering it with a plastic bucket or a wooden box.

11. Place plastic electric fence signs around the perimeter of your fence to improve visibility and to warn other people.

LITERATURE CITED

FitzGerald, James (1984), *The Best Fences*. Storey Publishing Bulletin A-92, Pownal, Vermont. p. 14-16.

⚡ Exclusionary Electric Fencing ⚡



AGREEMENT
ATTACHMENT 2

Place Holder for Map

Of

Apiary Locations

At

WMA/WEA

APIARY SITE APPLICATION FORM

Florida Fish and Wildlife Conservation Commission

RETURN TO: The Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street,
Tallahassee, FL 32399-1600. Please print or type all information. Attach additional sheets if necessary.

Name _____ Telephone Number _____

Mailing Address _____

City or Town _____ County _____ Zip Code _____

Physical Address (If Different from Mailing Address)

Company Name:

Email Address

Requested Wildlife Management or Wildlife and Environmental Area(s)(see attached list of WMA/WEAs with apiary sites):

WMA/WEA _____ County _____ # of Sites _____

WMA/WEA _____ County _____ # of Sites _____

WMA /WEA _____ County _____ # of Sites _____

WMA /WEA _____ County _____ # of Sites _____

Planned Number of Hives Per Site: _____ Permanent: ____ Seasonal: ____

Member of Beekeepers Association: Yes ____ No ____

Number of Years a Member _____

Name of Beekeepers Association: _____

Are you registered with Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI): ____ Yes ____ No ____ N/A If yes, please provide proof.

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan

Are you current with any and all special inspection fees: _____ Yes _____ No _____ N/A. If yes, please provide proof.

Do you follow all recommended Best Management Practices from FDACS/DPI?: _____ Yes _____ No

If no, then please explain on a separate piece of paper.

Please provide below a chronological history of your beekeeping experience. If you need more space, please provide additional sheets:

References: If a new apiary contractor, please provide on a separate piece of paper at least 3 references who can verify your apiary experience. Provide each reference's name, address, phone number and email address (if applicable). Please attach reference sheet to this document and submit.

MISSION STATEMENT

Management

Of

Florida Fish and Wildlife Conservation Commission's

Wildlife Management Areas

And

Wildlife and Environmental Areas

The mission of the Florida Fish and Wildlife Conservation Commission (FWC) is to manage fish and wildlife resources for their long-term well-being and the benefit of the people. To aid in accomplishing this mission, one of FWC's management goals is to manage fire-adapted natural communities on our Wildlife Management and Environmental Areas (WMA/WEA) to support healthy populations of the plants and animal's characteristic of each natural community. In order to achieve this goal various habitat management techniques are used. These include prescribed burning, applications of herbicides and mechanical treatment of vegetation. These management efforts will take place at various times and locations on each of the FWC's WMA/WEAs. Staff on each WMA/WEA will work with and make users aware of these activities when necessary. Users must be aware and accept that these activities are necessary for the proper management of the area.

Note: This document is included as an attachment with each Application and executed Contract.

FDACS/DPI's BMP

Florida Department of Agriculture & Consumer Services

BEST MANAGEMENT PRACTICES FOR

MAINTAINING EUROPEAN HONEY BEE COLONIES

1. Beekeepers will maintain a valid registration with the Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI), and be current with any and all special inspection fees.
2. A Florida apiary may be deemed as European Honey Bee with a minimum 10% random survey of colonies using the FABIS (Fast African Bee Identification System) and/or the computer-assisted morphometric procedure (i.e., Universal system for the detection of Africanized Honey Bees (AHB) (USDA-ID) or other approved methods by FDACS on a yearly basis or as requested.
3. Honey bee colony divisions or splits should be queened with production queens or queen cells from EHB breeder queens following Florida's Best Management Practices.
4. Florida beekeepers are discouraged from collecting swarms that cannot be immediately re-queened from EHB queen producers.
5. Florida Beekeepers should practice good swarm-prevention techniques to prevent an abundance of virgin queens and their ready mating with available AHB drones that carry the defensive trait.
6. Maintain all EHB colonies in a strong, healthy, populous condition to discourage usurpation (take over) swarms of AHB.
7. Do not allow any weak or empty colonies to exist in an Apiary, as they may be attractive to AHB swarms.
8. Recommend re-queening with European stock every six months unless using marked or clipped queens and having in possession a bill of sale from an EHB Queen Producer.
9. Immediately re-queen with a European Queen if previously installed clipped or marked queen is found missing.
10. Maintain one European drone source colony (250 square inches of drone comb) for every 10 colonies in order to reduce supercedure queens mating with AHB drones.
11. To protect public safety and reduce beekeeping liability, do not site apiaries in proximity of tethered or confined animals, students, the elderly, general public, drivers on public roadways, or visitors where this may have a higher likelihood of occurring.
12. Treat all honey bees with respect.

RANDOM
SELECTION PROCESS
FOR VACANT APIARY SITE

When an apiary site becomes available the following procedure is used to randomly select the next apiarist (beekeeper) for an available apiary site on a WMA or WEA. Only those who have been evaluated and deemed qualified to be an apiarist on a WMA/WEA through the Apiary Application process will be eligible for this selection process. The steps below will be followed by the THCR Contract Manager when a site becomes available to be filled by a qualified apiarist:

1. The THCR Contract Manager will maintain an “Apiary Wait List Folder” on the THCR SharePoint for each WMA/WEA with apiary sites.
2. A wait list is either created or updated when an Apiary Application(s) is received by the THCR Contract Manager from a qualified apiarist.
3. Upon receipt of an apiary site application, the THCR Contract Manager will review the WMA/WEA folder to see if there is an “Apiary Wait List”.
4. If a list exists then the qualified applicant will be added to the list.
5. When an apiary site becomes available if there are more than one qualified apiarist then these apiarists will be contacted by certified letter to determine their interest.
6. The letter will request a response within 10 working days to make them eligible for the random drawing.
7. If there is no response or is negative then that apiarist will not be included in the random drawing and the name will be removed from the waiting list*.
8. If only one apiarist responds positively to the certified letter then the available site will be awarded to that interested apiarist.
9. If there are no apiarists on a wait list or all responses are negative then apiarists who currently have site(s) under Agreement and where not on the waiting list will be contacted to see if any have interest in the available site. If more than one responds

then the random drawing process will be used to determine who will be awarded the site.

10. Steps to be performed by the THCR Contract Manager to execute the random selection for an available apiary site are listed below:

- a. The names of each interested apiarist will be noted on a 1" X 2" piece of paper and folded in half.
- b. The pieces of paper will be inserted into a "black film canister" which has a snap top and placed into a container and stirred up prior to the selection.
- c. A non-biased person will be selected to reach into the bowl (which will be held above the selection person's eyesight) and randomly select one of the canisters.
- d. The canister will be opened by the person performing the selection and the name is read aloud for those in attendance. Everyone in attendance will sign a witness sheet.
- e. The apiarist whose name is selected will be awarded the available site.
- f. A new Agreement will be developed by the THCR Contract Manager.

*A new apiary application must be submitted once requestor's name is removed from a waiting list.

12.9 Land Management Review

2018 Land Management Review Team Report for Crooked Lake Wildlife and Environmental Area

Table of Contents

1. Introduction.....	2
1.1. Property Reviewed in this Report.....	3
1.2 Property Map	3
1.3. Overview of Land Management Review Results.....	4
1.3.1 Consensus Commendations for the Managing Agency	4
1.3.2. Consensus Recommendations to the Managing Agency	4
2. Field Review Details.....	6
2.1 Field Review Checklist Findings	6
2.2. Items Requiring Improvement Actions in the Field.....	7
2.3. Field Review Checklist and Scores.....	8
3. Land Management Plan Review Details	10
3.1 Items Requiring Improvements in the Management Plan.....	10
3.2 Management Plan Review Checklist and Scores	11
Appendix A: Scoring System Detail.....	14

1. Introduction

Section 259.036, F.S. requires a periodic on-site review of conservation and recreation lands titled in the name of the Board of Trustees to determine (1) whether the lands are being managed for the purposes for which they were acquired and (2) whether they are being managed in accordance with their land management plan adopted pursuant to s. 259.032, F.S. In case where the managed areas exceed 1,000 acres in size, such a review must be scheduled at least every five years. In conducting this review, a statutorily constructed review team "shall evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions or archaeological features. The review shall also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan."

The land management review teams are coordinated by the Division of State Lands and consist of representatives from the Division of Recreation and Parks (DEP), the Florida Forest Service (DACS), the Fish and Wildlife Conservation Commission, the local government in which the property is located, the DEP District in which the parcel is located, the local soil and water conservation district or jurisdictional water management district, a conservation organization member, and a local private land manager.

Each Land Management Review Report is divided into three sections. Section 1 provides the details of the property being reviewed as well as the overall results of the report. Section 2 provides details of the Field Review, in which the Review Team inspects the results of management actions on the site. Section 3 provides details of the Land Management Plan Review, in which the team determines the extent to which the Management Plan provides for and documents adequate natural and recreational resource protection.

Finally, each report may also contain an Appendix that lists individual team member comments. This is a compilation of feedback, concerns or other thoughts raised by individual team members, but not necessarily indicative of the final consensus reached by the Land Management Review Team.

1.1. Property Reviewed in this Report

Name of Site: Crooked Lake Wildlife and Environmental Area

Managed by: Florida Fish and Wildlife Conservation Commission (FWC)

Acres: 1,146.91

County: Polk

Purpose(s) for Acquisition: to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state.

Acquisition Program(s): Fish & Wildlife Habitat Program

Original Acquisition Date: 6/27/08

Area Reviewed: Entire Property

Last Management Plan Approval Date: 6/15/11

Review Date: 3/7/18

Agency Manager and Key Staff Present:

- Josh Birchfield, Area Manager
- Josh Agee, FWC

Review Team Members Present (voting)

- Candice Knothe, Local Gov't.
- Nancy Bissett, Conservation Org.
- Annemarie Hammond, FDEP District
- Chris Matson, DRP District
- Michael Edwards, FFS
- Jennifer Myers, FWC
- WMD, None
- Private Land Manager, None

Other Non-Team Members Present (attending)

- James Parker, DEP/DSL
- Keith Singleton, DEP/DSL
- Juliet Rynear, Observer

1.2 Property Map



1.3. Overview of Land Management Review Results

Is the property managed for purposes that are compatible with conservation, preservation, or recreation?

Yes = 6, No = 0

Are the management practices, including public access, in compliance with the management plan?

Yes =5, No = 1

Table 1 shows the average scores received for each applicable category of review. *Field Review* scores refer to the adequacy of management actions in the field, while *Management Plan Review* scores refer to adequacy of discussion of these topics in the management plan. Scores range from 1 to 5 with 5 signifying excellence. For a more detailed key to the scores, please see *Appendix A*.

Table 1: Results at a glance.

Major Land Management Categories	Field Review	Management Plan Review
Natural Communities / Forest Management	3.91	3.57
Prescribed Fire / Habitat Restoration	4.44	4.11
Hydrology	4.00	3.83
Imperiled Species	3.50	3.36
Exotic / Invasive Species	3.17	3.18
Cultural Resources	3.08	3.17
Public Access / Education / Law Enforcement	3.99	4.10
Infrastructure / Equipment / Staffing	4.06	N/A
Color Code (See Appendix A for detail)		
Excellent	Above Average	Below Average
Poor		

1.3.1 Consensus Commendations for the Managing Agency

The following commendations resulted from discussion and vote of the review team members:

1. The team commends the Florida Fish and Wildlife Conservation Commission (FWC) for bringing the property's fire-managed communities into the maintenance fire return interval. (6+, 0-)
2. The team commends the FWC for road improvements on the managed area. (6+, 0-)
3. The team commends the FWC for managing the property with few numbers of staff and accomplishing a lot of the objectives of the management plan. (6+, 0-)
4. The team commends the FWC for reducing cogon grass across the area and for continued efforts to reduce exotic invasive plants. (6+, 0-)
5. The team commends the FWC for improving connectivity of habitat in open pastures by planting sparse strips of pines to provide cover and forage for wildlife, specifically the Sherman's fox squirrel. (6+, 0-)

1.3.2. Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The next management plan update should include information about how these recommendations have been addressed:

1. The team recommends the FWC conduct a listed species inventory. (6+, 0-)

Managing Agency Response:

FWC documents all listed species occurrences on CLWEA using FWC's Wildlife Conservation Prioritization and Recovery (WCPR) Opportunistic Observations of Focal and Listed Wildlife protocol. Also, FWC conducts gopher tortoise surveys every 5 years and monitors southeastern American kestrels annually. In addition, in fiscal year 2018-19, the Florida Natural Areas Inventory (FNAI) will conduct a rare plant survey, and FWC will conduct sand skink surveys. Furthermore, FWC has developed a WCPR Species Management Strategy for CLWEA, and has set objectives to conduct additional surveys for rare plants, as well as surveys to determine if the sand skink, Florida mouse, and gopher frog occur on the area. During the development of the WCPR Species Management Strategy, which included input from subject matter experts for listed species, these efforts were determined to be appropriate for CLWEA.

2. The team recommends the FWC acquire invasive plant management funding to address *Lygodium* survey and treatment. (6+, 0-)

Managing Agency Response:

*Local staff will coordinate with the FWC Invasive Plant Management section to address future surveying and treatment of *Lygodium*.*

3. The team recommends the FWC consider groundcover restoration to allow for gopher tortoise and commensal use in the old citrus area since well and pump are operational. (5+, 1-)

Managing Agency Response:

Groundcover enhancement is one of several management actions that will be considered for habitat improvements on the former citrus grove. However, groundcover restoration can be time and resource intensive and may not be practical given the limitations of current staff and funding. Furthermore, conducting groundcover restoration on the citrus area may not result in a large net benefit to wildlife, as several imperiled species use the citrus area in its current condition, including gopher tortoises, the southeastern American kestrel, and Sherman's fox squirrel. However, FWC is committed to the habitat enhancement of the former citrus area to improve and maintain suitability for use by wildlife.

4. The team recommends the FWC put a periodic monitoring program/project in place for federally listed *Nolina brittoniana* located in sandhill to see how it responds to management activities overtime. (6+, 0-)

Managing Agency Response:

FWC recognizes the need for monitoring this rare plant and will implement monitoring efforts based on the results of the rare plant survey to be conducted during fiscal year 2018-19. Documentation of rare plant occurrences will also be accomplished through the WCPR Opportunistic Observations for Plants protocol.

5. The team recommends the FWC consider alternative management tools to roller chopping at Stop #3. (4+, 2-)

Managing Agency Response:

When planning gopher tortoise habitat enhancement activities, all viable options are evaluated to ensure the desired outcomes are achieved.

6. The team recommends the FWC identify potential hog control measures. (6+, 0-)

Managing Agency Response:

FWC understands the need to minimize damage caused by feral hogs and will consider all feasible options as necessary including, but not limited to, trapping and exclusionary fencing.

7. The team recommends the FWC ensure growing season burns are a substantial part of flatwood, cutthroat, and sandhill management. (6+, 0-)

Managing Agency Response:

Within these areas, 84% of prescribed fires within the last 5 years have occurred during the growing season. FWC staff will continue to emphasize prescribed fires during the growing season.

8. The team recommends the FWC identify and mark gopher tortoise burrows and protect from mechanical treatments. (6+, 0-)

Managing Agency Response:

FWC staff will continue to mark gopher tortoise burrows, when practical, in advance of mechanical treatments on this area. However, this practice is not a prerequisite for mechanical treatments for any public or private landowner, as research has shown that gopher tortoises can successfully excavate out of a collapsed burrow.

2. Field Review Details

2.1 Field Review Checklist Findings

The following items received high scores on the review team checklist, which indicates that management actions exceeded expectations.

1. Natural communities, specifically baygall, mesic flatwoods, and scrubby flatwoods.
2. Listed Species: Protection and Prevention, specifically gopher tortoise.
3. Natural resources survey/monitoring, specifically listed species or habitat monitoring.
4. Resource management (prescribed fire), specifically area being burned and frequency.
5. Forest Management, specifically timber inventory/assessment.
6. Non-native, invasive, and problem species, specifically prevention and control of plants.
7. Hydrologic/Geologic function Hydro-Alteration, specifically roads/culverts and ditches.
8. Resource protection, specifically boundary survey and law enforcement presence.
9. Adjacent property concerns, specifically inholdings/additions.
10. Public access, specifically roads and parking.
11. Environmental education and outreach, specifically recreational opportunities and management of visitors impacts.
12. Management resources, specifically waste disposal, sanitary facilities, equipment, and funding.

Page 6 of 14

2.2. Items Requiring Improvement Actions in the Field

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review were not considered sufficient (less than 3.0 score on average). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan update should include information on how these items have been addressed:

1. *The maintenance condition of the Natural Communities, specifically sandhill, and scrub, received below average scores. The review team is asked to evaluate, based on their perspective, what percent of the natural community is in maintenance condition. The scores range from 1 to 5, with 1 being 0-20% in maintenance condition, 2 being 21-40%, 3 being 41-60%, 4 being 61-80% and 5 being 81-100%.*

Managing Agency Response:

FWC has taken management actions to restore these areas to maintenance condition, and recognizes that additional actions are necessary. The enhancement and maintenance of these areas is a priority and staff will continue to implement strategies to achieve those conditions. Ninety percent of CLWEA management units have received prescribed burning, mechanical treatments and exotic treatments over the last 5 years.

2. *Listed species, specifically plants, received a below average score. The review team is asked to evaluate, based on their perspective, whether management actions are sufficient for protection and preservation of the species.*

Managing Agency Response:

*FWC will be coordinating with FNAI to conduct a rare plant survey for the area during fiscal year 2018-19. This will establish a baseline to guide future management efforts for the preservation of listed plant species such as *Nolina brittoniana*. Documentation of rare plants will also be accomplished via the WCPR Opportunistic Observations for Plants protocol.*

3. *Natural Resources Survey/Management Resources, specifically fire effects monitoring, other habitat management effects monitoring and invasive species survey/monitoring received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether survey and monitoring of the resources or their habitats are sufficient.*

Managing Agency Response:

FWC utilizes the Objective Based Vegetation Monitoring program (OBVM) to monitor natural community response to various management actions (fire, mechanical, chemical). Monitoring occurs every 5 years and is used to determine if management is moving the natural community attributes towards the Desired Future Conditions (DFCs), which are linked to FNAI reference sites for comparison. FWC will continue to implement the OBVM program on CLWEA.

4. *Cultural Resources, specifically cultural resource survey, received a below average score. The review team is asked to evaluate, based on information provided by the managing agency, whether the cultural resource survey is sufficient.*

Managing Agency Response:

The Florida Department of State's Division of Historical Resources (DHR) reports no occurrence of a cultural site located within CLWEA and has indicated that a comprehensive cultural resource survey is not warranted. FWC recognizes the importance of protecting the area's cultural resources and will continue to be attentive to the possibility of their presence.

5. *Non-Native, Invasive & Problem Species, specifically prevention of plants and animals, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, as well as overall management actions, whether prevention and control are sufficient.*

Managing Agency Response:

FWC staff will continue to monitor for non-native, invasive & problem species, including recognizing new problems and addressing them in the early stages. FWC will continue to implement control strategies for invasive plants and animals as necessary and appropriate.

6. *Public access and education, specifically, environmental education and outreach for habitat management activities, received a below average score. The review team is asked to evaluate, based on information provided by the managing agency, whether environmental education and outreach are sufficient.*

Managing Agency Response:

Local FWC staff will coordinate with the FWC Public Access Services Office to explore options for additional environmental education and outreach such as informational kiosks, brochures, and outreach events. CLWEA is situated in a very rural area and is not proximate to any population centers, so public use is inherently low.

2.3. Field Review Checklist and Scores

Field Review Item	Reference #	Anonymous Team Members								Average
		1	2	3	4	5	6	7	8	
Natural Communities (I.A)										
Basin Swamp	I.A.1	3	4	x	4	x	3			3.50
Baygall	I.A.2	5	4	3	4	5	x			4.20
Depression Marsh	I.A.3	4	4	3	4	4	3			3.67
Dome Swamp	I.A.4	4	4	4	4	4	2			3.67
Mesic Flatwoods	I.A.5	3	3	5	5	5	3			4.00
Sandhill	I.A.6	3	2	3	3	2	2			2.50
Scrub	I.A.7	2	2	2	4	3	2			2.50
Scrubby Flatwoods	I.A.8	5	3	4	5	4	5			4.33
Xeric Hammock	I.A.11		3	3	5	5	3			3.80

Wet Flatwoods	I.A.10	3	4	3	4	3	3			3.33
Natural Communities Average Score										3.57
Listed species:Protection & Preservation (I.B)										
Animals	I.B.1	5	4		4	3	2			3.60
Gopher Tortoise	I.B.1.a	5	4	4	4	4	4			4.17
Southeastern American Kestrel	I.B.1.b	5	4	3	4	3	x			3.80
Plants	I.B.2	5	2		3	1	2			2.60
Cutthroat Grass	I.B.2.a	5	3	3	4	2	3			3.33
Listed Species Average Score										3.50
Natural Resources Survey/Management Resources (I.C)										
Listed species or habitat monitoring	I.C.2	5	4	4	5	3	3			4.00
Other non-game species or habitat monitoring	I.C.3	5	4	3	5	3	3			3.83
Fire effects monitoring	I.C.4	2	3	3	4	1	3			2.67
Other habitat management effects monitoring	I.C.5	1	3	3	4	1	3			2.50
Invasive species survey / monitoring	I.C.6	1	2	4	4	1	4			2.67
Cultural Resources (Archeological & Historic sites) (II.A, II.B)										
Cultural Res. Survey	II.A	1	3	3	4	3	2			2.67
Protection and preservation	II.B	5	3	3	4	3	3			3.50
Cultural Resources Average Score										3.08
Resource Management, Prescribed Fire (III.A)										
Area Being Burned (no. acres)	III.A.1	5	5	5	5	5	5			5.00
Frequency	III.A.2	5	5	4	5	5	4			4.67
Quality	III.A.3	4	4	3	4	3	4			3.67
Resource Management, Prescribed Fire Average Score										4.44
Forest Management (III.C)										
Timber Inventory / Assessment	III.C.1	5	5	5	5	5	5			5.00
Timber Harvesting	III.C.2	5	4	3	5	1	3			3.50
Forest Management Average Score										4.25
Non-Native, Invasive & Problem Species (III.D)										
Prevention										
prevention - plants	III.D.1.a	4	4	4	4		4			4.00
prevention - animals	III.D.1.b	1	3		2	1	2			1.80
prevention - pests/pathogens	III.D.1.c	5	3	3	5	3	x			3.80
Control										
control - plants	III.D.2.a	4	3	5	5	4	4			4.17
control - animals	III.D.2.b	1	3	2	2	1	1			1.67
control - pest/pathogens	III.D.2.c	5	3	3	5	2	x			3.60
Non-Native, Invasive & Problem Species Average Score										3.17
Hydrologic/Geologic function Hydro-Alteration (III.E.1)										
Roads/culverts	III.E.1.a	4	4	4	4	4	4			4.00
Ditches	III.E.1.b	5	4	4	4	4	3			4.00
Hydrologic/Geologic function, Hydro-Alteration Average Score										4.00

Resource Protection (III.F)										
Boundary survey	III.F.1	5	4	4	5	5	5			4.67
Gates & fencing	III.F.2	4	4	4	4	3	4			3.83
Signage	III.F.3	5	4	3	5	3	3			3.83
Law enforcement presence	III.F.4	5	4	3	5	5	3			4.17
Resource Protection Average Score										4.13
Adjacent Property Concerns (III.G)										
Land Use										
Inholdings/additions	III.G.2	5	3	4	4	4	4			4.00
Public Access & Education (IV.1, IV.2, IV.3, IV.4, IV.5)										
Public Access										
Roads	IV.1.a	5	5	5	5	5	4			4.83
Parking	IV.1.b	5	5	5	5	5	4			4.83
Environmental Education & Outreach										
Wildlife	IV.2.a	1		3	5	4	2			3.00
Invasive Species	IV.2.b	1		3	5	4	2			3.00
Habitat Management Activities	IV.2.c	1		3	5	3	2			2.80
Interpretive facilities and signs	IV.3	4	4	3	4	4	3			3.67
Recreational Opportunities	IV.4	5	4	4	5	4	4			4.33
Management of Visitor Impacts	IV.5	5	4	4	5	4	4			4.33
Public Access & Education Average Score										3.85
Management Resources (V.1, V.2, V.3, V.4)										
Maintenance										
Waste disposal	V.1.a	5	4	5	5	5	4			4.67
Sanitary facilities	V.1.b	5	4	5	5	5	4			4.67
Infrastructure										
Buildings	V.2.a	2	4	3	3	5	3			3.33
Equipment	V.2.b	5	4	4	4	5	3			4.17
Staff	V.3	3	3	3	4	3	4			3.33
Funding	V.4	5	3	4	4	5	4			4.17

Color Code:

Excellent	Above Average	Below Average	Poor
	Missing Vote	Insufficient Information	

See Appendix A for detail

3. Land Management Plan Review Details

3.1 Items Requiring Improvements in the Management Plan

The following items received low scores on the review team checklist, which indicates that the text noted in the Management Plan Review does not sufficiently address this issue (less than 3.0 score on average.). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The next management plan update should address the checklist items identified below:

1. *Natural Communities, specifically xeric hammock, received below average scores. This is an indication that the management plan does not sufficiently address current or desired condition and/or future management actions to protect or restore.*

Managing Agency Response:

FWC notes that xeric hammock was not identified by FNAI as occurring on CLWEA. FWC will consult with FNAI during the re-certification of the FNAI natural community mapping products to determine if xeric hammock occurs on CLWEA, and if so will revise the updated management plan accordingly.

2. *Natural Resources Survey and Monitoring Resources, specifically other habitat management effects monitoring and invasive species survey/monitoring received below average scores. This is an indication that the management plan does not sufficiently address survey or monitoring.*

Managing Agency Response:

FWC notes that the OBVM program is thoroughly discussed on pages 62-64 of the current approved management plan. Exotic and invasive species are discussed on page 66, as well as within each natural community description (pages 21-31). FWC will expand the discussion of these topics in the update to the management plan.

3. *Cultural Resources (Archeological and Historic sites), specifically Cultural Resource. Survey, received a below average score. This is an indication that the management plan does not sufficiently address survey.*

Managing Agency Response:

FWC notes that cultural resources are discussed on pages 55-56 of the current approved management plan. DHR reports that no historic or cultural resources exist on CLWEA, and has indicated that a comprehensive cultural resource survey is not warranted.

4. *Non-native, Invasive and Problem Species, specifically prevention and control of animals received below average scores. This is an indication that the management plan does not sufficiently address prevention of invasive species.*

Managing Agency Response:

FWC notes that control of non-native, invasive and problem animal species (feral hogs) is addressed on page 76 of the approved management plan. FWC will expand the discussion of this topic in the update to the management plan.

3.2 Management Plan Review Checklist and Scores

Plan Review Item	Reference #	Anonymous Team Members								Average
		1	2	3	4	5	6	7	8	
Natural Communities (I.A)										
Basin Swamp	I.A.1	4	4	2	3		2			3.00
Baygall	I.A.2	4	4	3	3		2			3.20

Page 11 of 14

Depression Marsh	I.A.3	4	4	3	3		2			3.20
Dome Swamp	I.A.4	4	4	3	3		2			3.20
Mesic Flatwoods	I.A.5	4	4	3	3		2			3.20
Sandhill	I.A.6	4	4	3	3		2			3.20
Scrub	I.A.7	4	4	3	3		2			3.20
Scrubby Flatwoods	I.A.8	4	4	3	3		2			3.20
Xeric Hammock	I.A.10	4	4	2	2		2			2.80
Wet Flatwoods	I.A.11	4	4	3	3		2			3.20
Natural Communities Average Score										3.14
Listed species: Protection & Preservation (I.B)										
Animals	I.B.1	5	3		4	3	2			3.40
Gopher Tortoise	I.B.1.a	5	3		4	4	4			4.00
Southeastern American Kestrel	I.B.1.b	5	3	3	2	3	x			3.20
Plants	I.B.2		3		4	2	3			3.00
Cutthroat Grass	I.B.2.a		3	3	4	3	3			3.20
Listed Species Average Score										3.36
Natural Resources Survey/Management Resources (I.C)										
Listed species or habitat monitoring	I.C.2	5	4	3	4	3	2			3.50
Other non-game species or habitat monitoring	I.C.3	3	4	3	4	3	2			3.17
Fire effects monitoring	I.C.4	5	4	2	4	1	2			3.00
Other habitat management effects monitoring	I.C.5	1	4	2	4	1	2			2.33
Invasive species survey / monitoring	I.C.6	1	4	3	4	1	2			2.50
Cultural Resources (Archeological & Historic sites) (II.A,II.B)										
Cultural Res. Survey	II.A	1	4	3	4	3	2			2.83
Protection and preservation	II.B	5	4	3	4	3	2			3.50
Cultural Resources Average Score										3.17
Resource Management, Prescribed Fire (III.A)										
Area Being Burned (no. acres)	III.A.1	5	4	4	5	5	4			4.50
Frequency	III.A.2	5	4	3	5	5	3			4.17
Quality	III.A.3	5	4	3	5	3	2			3.67
Resource Management, Prescribed Fire Average Score										4.11
Forest Management (III.C)										
Timber Inventory / Assessment	III.C.1	5	4	5	5	3	2			4.00
Timber Harvesting	III.C.2	5	4	5	5	3	2			4.00
Forest Management Average Score										4.00
Non-Native, Invasive & Problem Species (III.D)										
Prevention										
prevention - plants	III.D.1.a	3	4	3	5	4	4			3.83
prevention - animals	III.D.1.b	3	4	2	2	1	2			2.33
prevention - pests/pathogens	III.D.1.c	3	4	3	5	3	3			3.50
Control										
control - plants	III.D.2.a	4	4	5	5	4	3			4.17
control - animals	III.D.2.b	3	3	1	2	1	1			1.83

control - pest/pathogens	III.D.2.c	3	3	3	5	3	x			3.40
Non-Native, Invasive & Problem Species Average Score										3.18
Hydrologic/Geologic function, Hydro-Alteration (III.E.1)										
Roads/culverts	III.E.1.a	5	4	4	4	4	2			3.83
Ditches	III.E.1.b	5	4	4	4	4	2			3.83
Hydrologic/Geologic function, Hydro-Alteration Average Score										3.83
Resource Protection (III.F)										
Boundary survey	III.F.1	5	4	3	5	5	5			4.50
Gates & fencing	III.F.2	5	4	4	5	4	3			4.17
Signage	III.F.3	5	4	3	5	3	3			3.83
Law enforcement presence	III.F.4		4	3	5	5	3			4.00
Resource Protection Average Score										4.13
Adjacent Property Concerns (III.G)										
Land Use										
Inholdings/additions	III.G.2	5	3	4	5	4	2			3.83
Discussion of Potential Surplus Land Determination	III.G.3	1	5	3	5	5	3			3.67
Surplus Lands Identified?	III.G.4	5	3	4	5	5	3			4.17
Public Access & Education (IV.1, IV.2, IV.3, IV.4, IV.5)										
Public Access										
Roads	IV.1.a	5	4	4	5	5	3			4.33
Parking	IV.1.b	5	4	5	5	5	3			4.50
Environmental Education & Outreach										
Wildlife	IV.2.a	5	4	3	5	4	3			4.00
Invasive Species	IV.2.b	5	4	3	5	4	2			3.83
Habitat Management Activities	IV.2.c	5	4	3	5	4	2			3.83
Interpretive facilities and signs	IV.3	5	4	3	5	4	3			4.00
Recreational Opportunities	IV.4	5	4	4	5	4	3			4.17
Management of Visitor Impacts	IV.5	5	4	3	5	4	3			4.00
Public Access & Education Average Score										4.08
Managed Area Uses (VI.A, VI.B)										
Existing Uses										
Gopher Tortoise Mitigation	VI.A.1	5	5	5	5	2	5			4.50
Hiking	VI.A.2	5	5	5	5	5	5			5.00
Bicycling	VI.A.3	4	4	4	5	2	3			3.67
Horseback Riding	VI.A.4	4	5	5	5	4	3			4.33
Picnicking	VI.A.5	5	5	4	5	5	4			4.67
Wildlife Observation	VI.A.6	5	5	5	5	5	5			5.00
Geocaching	VI.A.7	5	4		4	4	4			4.20
Color Code: Excellent Above Average Below Average Poor Missing Vote Insufficient Information See Appendix A for detail										

Appendix A: Scoring System Detail

Explanation of Consensus Commendations:

Often, the exceptional condition of some of the property's attributes impress review team members. In those instances, team members are encouraged to offer positive feedback to the managing agency in the form of a commendation. The teams develop commendations generally by standard consensus processes or by majority vote if they cannot obtain a true consensus.

Explanation of Consensus Recommendations:

Subsection 259.036(2), F.S., specifically states that the managing entity shall consider the findings and recommendations of the land management review. We ask team members to provide general recommendations for improving the management or public access and use of the property. The teams discuss these recommendations and develop consensus recommendations as described above. We provide these recommendations to the managing agency to consider when finalizing the required ten-year management plan update. We encourage the manager to respond directly to these recommendations and include their responses in the final report when received in a timely manner.

Explanation of Field Review Checklist and Scores, and Management Plan Review Checklist and Scores:

We provide team members with a checklist to fill out during the evaluation workshop phase of the Land Management Review. The checklist is the uniform tool used to evaluate both the management actions and condition of the managed area, and the sufficiency of the management plan elements. During the evaluation workshop, team members individually provide scores on each issue on the checklist, from their individual perspective. Team members also base their evaluations on information provided by the managing agency staff as well as other team member discussions. Staff averages these scores to evaluate the overall conditions on the ground, and how the management plan addresses the issues. Team members must score each management issue 1 to 5: 1 being the management practices are clearly insufficient, and 5 being that the management practices are excellent. Members may choose to abstain if they have inadequate expertise or information to make a cardinal numeric choice, as indicated by an "X" on the checklist scores, or they may not provide a vote for other unknown reasons, as indicated by a blank. If a majority of members failed to vote on any issue, that issue is determined to be irrelevant to management of that property or it was inadequately reviewed by the team to make an intelligent choice. In either case staff eliminated the issue from the report to the manager.

Average scores are interpreted as follows:

Scores 4.0 to 5.0 are *Excellent*

Scores 3.0 to 3.99 are *Above Average*

Scores 2.0 to 2.99 are *Below Average*

Scores 1.0 to 1.99 are considered *Poor*

12.10 Prescribed Burn Plan

Crooked Lake Wildlife and Environmental Area Prescribed Burning Plan

INTRODUCTION

Fires, naturally occurring or man-induced, are an integral part of the ecology of the southern pine (*Pinus spp.*) region (Miller 1963) and have maintained a fire-dependent plant community in the southeast for countless years. Exclusion of fire reduces nutrient cycling and changes the vegetative community from an open canopy system to a closed one. The growth of dense brush shades out fire-dependent plants, including listed species, and has an adverse affect on fire-dependent animals such as gopher tortoises (*Gopherus polyphemus*). Exclusion of fires allows seral stages to increase until a climax hardwood community exists. Areas covered by dense brush lose much of their value to wildlife. For example, food and browse plants are less palatable, access is restricted, and predators' ability to capture prey is hampered. Additionally, heavy fuel accumulation results in increased wildfire hazard.

Prescribed burning is used extensively in forestry and wildlife management for fuel reduction, brush control, disease and insect control, site preparation, and wildlife habitat improvement. It is a recommended tool for management of such game animals as white-tailed deer (*Odocoileus virginianus*), bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and wild turkey (*Meleagris gallopavo*) (U. S. Forest Service 1969, Stoddard 1971). The value of prescribed fire to these and other animals, such as raptors and some songbirds, are well-documented (Givens 1962, Miller 1963, Stoddard 1963). Prescribed fire benefits wildlife by reducing underbrush density, thus improving access, promoting the growth of succulent vegetation, and lowering browse to feeding height of deer. Additionally, it benefits aesthetic values and enhances growth and fruiting of important wildlife food plants, such as dewberries (*Rubus spp.*) and blueberries (*Vaccinium spp.*) (Halls 1977).

BURN OBJECTIVES

Prescribed fire will be used on Crooked Lake Wildlife and Environmental Area (CLWEA) as a habitat management tool exclusively or in conjunction with other management techniques to accomplish a variety of objectives. The primary objective for using prescribed fire on the CLWEA is to restore and/or maintain fire-dependent native habitat communities. This will result in preserving native plant communities while

simultaneously improving wildlife habitat. The benefits that will be derived from prescribed burning on CLWEA include the following:

- 1) Long-term preservation of native plant communities,
- 2) Improved wildlife habitat,
- 3) Reduction of fuel loads, which will help to prevent or mitigate effects of wildfires,
- 4) Enhancement of the areas aesthetics by controlling undesirable vegetation,
- 5) Control of exotic plant species,
- 6) Improved public access,
- 7) Increased success of longleaf pine regeneration.

DESCRIPTION OF AREA

CLWEA is located approximately 4 miles west of Frostproof, Polk County, Florida. It is bound to the north by a matrix of mixed public and private lots, to the west and east by private land, and to the south by US 98. CLWEA is 1,147 acres in size and is comprised primarily of mesic flatwoods, wet flatwoods, seepage slopes, sandhill, scrubby flatwoods, bayheads, depression marshes, and improved and semi-improved pastures.

NATURAL COMMUNITY DESCRIPTION

The natural community types on CLWEA have been described in detail by FNAI. A contract with FNAI to prepare natural community descriptions to accompany a vegetation classification map for the area was completed in May 2010. The FNAI natural community descriptions are contained in Section 2.2.1.

PRESCRIBED BURNING PROGRAM

Restoration of a pre-Columbian landscape is not possible on CLWEA because of the area's comparatively small size and its history of human-influenced alterations. Some former plant community attributes, however, can be restored by applying a variety of fire regimes. There is no single fire regime that can be applied across communities to achieve ecological restoration and maintain community heterogeneity. Therefore, fire frequency, intensity, pattern of spread, and regularity must be varied among and within burn units.

A. Firelines

Natural features (e.g. wetlands) and existing roads will be used as firelines whenever possible. Many of the roads that are used as firebreaks will be maintained for public access and management. Additional firebreaks may be needed on the area perimeter and around in-holdings to protect private lands.

New firebreak construction will follow all guidelines required for state-owned lands. Brush and trees will be removed so that the firebreak can be maintained with a tractor and disk.

B. Size and Arrangement of Burn Units

Approximately 808 acres of fire-adapted communities occur on CLWEA. Twelve management units (MU) have been delineated for monitoring under the agency's Land Management Information System (LMIS). Some LMIS MUs are identical to burn units (BU) and share the same numeric identifier (MU #4 = BU #4).

However, several Mus contain two or more BUs. In these cases, if the area under consideration is MU #5 and it contains three BUs, the BUs are identified as #5a, #5b, and #5c. The average MU size is 96 acres (range: 37-213; Figure 1). The configuration and size of burn units are defined largely by the availability of natural forested wetlands, pre-existing firebreaks, and the delineation of historic natural community types. Ideally, burns should be conducted at the following intervals: 1-3 years for pasture and marsh units; 2-4 years for flatwoods units; 5-10 years for scrubby flatwoods; 1-3 years for sandhill units; and 10-20 years for scrub units. The application of this burn regime results in an average annual burn goal of 326 acres.

C. Type of Burn

An initial backfire will be used to secure most burn units, followed by flanking and spot or strip head fires as appropriate. This may increase the amount of smoke produced, however the relatively small size of the burn units will mitigate this problem.

D. Season and Time of Day

Initially, prescribed burning of CLWEA will be conducted during the dormant season (October-March). When the heavy fuel loads have been reduced, burns will be switched to primarily growing season (April-September). Burning will be conducted during daylight hours.

E. Optimal Weather Conditions

Ideal weather conditions for dormant season burning occur within one to several days after the passage of a cold front which has brought 1/4 to 3/4 inches of rainfall. Weather associated with this period generally produces steady winds with cool temperatures, low relative humidity (RH), and clear skies. Preferred

temperatures range from 40 to 70° F. Preferred RH will vary depending on unit objectives, but between 30 and 60% is considered ideal.

Ideal conditions for growing season fires include an RH of 35 to 60%, steady surface winds between 5 and 12 mph, and temperatures less than 95° F. Growing season burns will be highly correlated with adequate rainfall and KBDI to ensure muck and/or duff in and around wetlands do not cause smoke or containment problems.

Because CLWEA is surrounded by smoke sensitive areas, including US 98, wind direction and speed, dispersion index, and LVORI in particular will be closely evaluated on the burn day as well as for the next one to two days following planned burns.

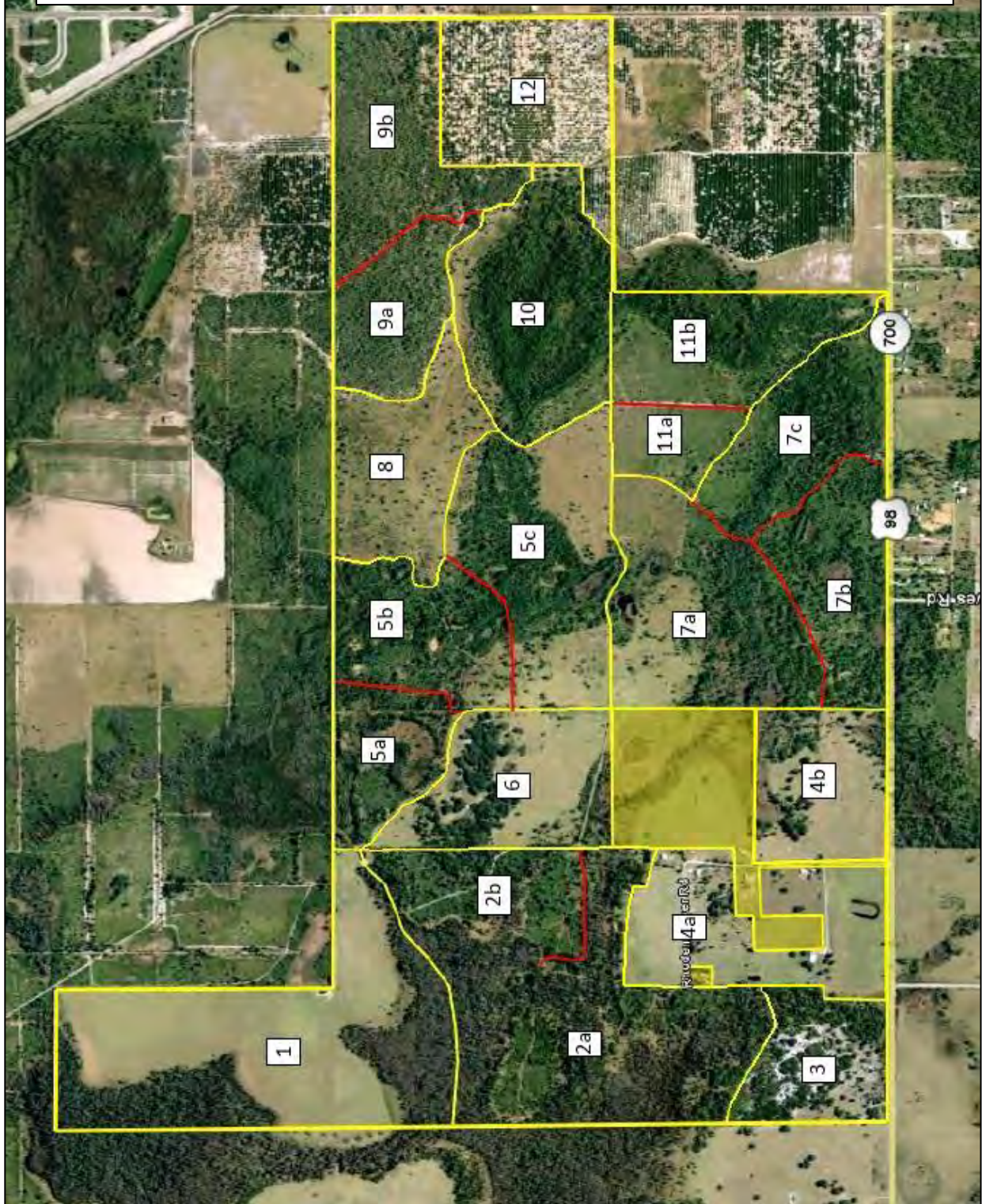
F. Smoke Management

Direction, volume, and dissipation of smoke from prescribed burning on CLWEA are of primary concern due to the proximity of smoke-sensitive areas. Areas that may be affected by smoke (or particulates carried by smoke) under optimum burning conditions are US 98, US 27, and the City of Frostproof.

To minimize smoke problems, burning should be conducted when the atmosphere is slightly unstable, with mixing height a minimum of 1,700 feet and transport wind speed of 9 mph or more (Southern Forest Fire Laboratory 1976, Crow and Shilling 1983). Additionally, backing fires produce less smoke and consume fuel more completely than headfires (Mobley et al. 1973, Southern Forest Fire Laboratory 1976, Crow and Shilling 1983). Residual smoke problems (such as stumps, snags, or logs near state or county roads) will be promptly mopped-up and monitored to minimize smoke hazards.

Additionally, smoke tends to seek lower laying areas (along streams and creeks) and may drift south across US 98 for up to one mile west or east of CLWEA. Smoke caution signs for US 98 shall be deployed as needed. Preferred wind direction for the southern half of CLWEA will have a southerly component to reduce the risk of smoke impacts on US 98.

Figure 1. Management Unit (yellow polygons) and Burn Unit (red sub-units) map of CLWEA



G. Personnel

Personnel assisting on all burns shall meet the minimum criteria as described in the Agency's Internal Operating Policy titled "Prescribed Burning and Wildfire Suppression Standards" dated March, 2008, or the most current agency policy in effect at the time. Personnel from other government agencies (DOF and Polk County) as well as non-profit organizations (TNC) will be used if available. However, at least one Certified Prescribed Burn Manager will be in attendance at all times on each burn to meet the requirements F.S. 590.125.

H. Equipment

Along with Personal Protective Equipment (PPE) and hand-held radios, fire flaps, fire rakes, shovels, drip torches, burn fuel, trucks, water pumper, helicopter and DAID machine (if necessary) shall be standard equipment used on most burns. Smoke caution signs for US 98 shall be available for deployment. A tractor/plow unit from DOF, as well as other fire suppression equipment, will be used as needed.

I. Permits and Notifications

A burn authorization will be obtained from DOF on the morning of the burn. In addition, arrangements will be made to have a FWC or DOF suppression crew on stand-by during the burn when needed. Notification of burning will be given to:

- | | | |
|----|---|--------------|
| 1. | FWC Southwest Region Office | 863/648-3200 |
| 2. | Polk County Fire Rescue | 863/519-7350 |
| 3. | Property Owners: In-holdings and adjacent | |
| 4. | DOF | 863/648-3160 |
| 5. | South County Jail (Polk Co.) | 863/635-6920 |

J. Evaluation of Burn

Initial evaluation of the fire will be conducted within one week and include: percent crown scorch, bark char (height), fuel consumption, flame height, fire behavior, smoke dispersion, any escape, adverse publicity, progress toward objectives and other observations. A follow-up evaluation will be completed within one month and will include crown scorch, understory kill, adverse insect activity and other observations. These observations will be incorporated into future burn prescriptions.

K. Special Considerations

Attention will be given to the safety of neighboring private properties and in-holdings. Firebreaks along these properties will be reinforced and a pumper unit and/or fire-plow will be stationed nearby to expedite response, if required. Telephone pedestals, power poles, and entrance signs will be raked of heavy vegetation and sprayed with water prior to fire reaching them.

Gopher tortoises are dependent on fire-maintained natural communities, and research has shown no adverse effects on this species from prescribed burning (Means and Campbell 1981). Although individual tortoises may be destroyed by fire on rare occasions, prescribed burning provides better habitat for tortoise populations than unburned areas. Growing season burning may affect various other wildlife species that are highly active during this period. Moreover, growing season burns may also adversely impact other nesting reptiles, birds, and mammals, particularly by fast-moving headfires. Consideration for summer burning will be given weighing overall habitat benefits against potential harm to wildlife populations.

L. Growing Season Burning Procedure

Growing season prescribed burning is generally performed to control hardwood brush. High air temperatures reduce the amount of heat needed to raise plant temperatures to lethal levels. Actively growing plants are more easily killed by fire than dormant plants, which results in better hardwood brush control than winter fires (Mobley et al. 1973, G. Evans). In addition, growing season burns promote an increase in herbaceous ground cover vegetation growth, promote species diversity, release longleaf pine seedlings from vegetative competition, help control brown-spot disease, and mimic naturally occurring summer lightning fires.

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**12.11 Wildlife Conservation and Prioritization and Recovery
Program Strategy (WCPR)**

Crooked Lake Wildlife & Environmental Area

Species Management Strategy

August 2015

Florida Fish and Wildlife Conservation Commission

Division of Habitat and Species Conservation

Wildlife and Habitat Management Section

A product of the Wildlife Conservation

Prioritization and Recovery Program



Executive Summary

The Florida Fish and Wildlife Conservation Commission's (FWC) Wildlife and Habitat Management Section (WHM) takes a proactive, science-based approach to species management on lands in the Wildlife Management Area (WMA/WEA) system. This approach uses information from statewide models, in conjunction with input from species experts and people knowledgeable about the area, to create site-specific assessments of a number of focal species. Staff combines these assessments with management considerations to develop a wildlife management strategy for the area. The FWC intends for this Strategy to: 1) Provide land managers with information on actions that should be taken provided the necessary resources are available, 2) Promote the presence and ensure the persistence of focal wildlife species on the area, and 3) Provide measurable species objectives that can be used to evaluate the success of wildlife management on the area.

This document presents the results of a science-based process for evaluating focal species needs using an ecosystem management approach on the Crooked Lake Wildlife & Environmental Area (CLWEA). Natural community management designed for a set of focal species benefits a host of species reliant upon the same natural communities. Monitoring select species verifies whether natural community management is having the desired effect on wildlife. To maximize the potential wildlife conservation benefit, staff considers the role of CLWEA in regional and statewide conservation initiatives throughout the process.

[Section 1](#) informs the reader about the process used to generate this document.

[Section 2](#) describes the historic and ongoing management actions on the properties. This includes land management objectives for Management Units (MU) 3 and 9 ([Figure 1](#)).

[Section 3](#) provides a list of the focal and listed species on the area, and an assessment of each species' level of opportunity and need. This includes species-specific objectives for the gopher frog, gopher tortoise, sand skink, southeastern American kestrel, and Florida mouse.

[Section 4](#) describes specific land management actions recommended for focal species. This includes Objective-Based Vegetation Management (OBVM) considerations. This section also discusses management necessary to ensure continued persistence of focal species.

[Section 5](#) describes species-specific management and monitoring actions prescribed for the area, and identifies any research that would be necessary to guide future management efforts. Species management at CLWEA includes continued maintenance of kestrel nest boxes. Monitoring is recommended for the gopher frog, gopher tortoise, sand skink, southeastern American kestrel, and Florida mouse. Documentation of opportunistic observations of other focal and listed species is also recommended.

[Section 6](#) identifies coordination that will assist in conserving these focal species. We identify coordination with 7 other units in FWC and inter-agency coordination with 5 other entities.

[Section 7](#) describes efforts that should occur "beyond the area's boundaries" to ensure conservation of the species on the area.

Continuation of resources at current levels would be required to provide for most of the land management recommended in this document. Some of the monitoring recommendations may require additional resources, while FWC can accomplish others with continuation of existing resources.

**PLEASE NOTE: TABLE OF CONTENT'S PAGE NUMBERS ARE
FROM SEPARATE WCPR DOCUMENT AND DIFFER FROM THIS
MANAGEMENT PLAN.**

Table of Contents

Executive Summary	i
Acronym List	i
Statewide Species Prioritization Parameters	ii
Locator Map	iv
Section 1: Introduction	1
Section 2: Historic, Current, and Planned Management	2
Section 3: Focal Species	8
3.1: Crooked Lake WEA Focal Species List	9
3.2: Focal Species Opportunity/Needs Assessment	10
3.2.1: Gopher Frog	11
3.2.2: Florida Pine Snake	12
3.2.3: Gopher Tortoise	13
3.2.4: Sand Skink	15
3.2.5: Bachman's Sparrow	16
3.2.6: Brown-Headed Nuthatch	17
3.2.7: Burrowing Owl	18
3.2.8: Cooper's Hawk	20
3.2.9: Crested Caracara	20
3.2.10: Florida Sandhill Crane	21
3.2.11: Florida Scrub-Jay	22
3.2.12: Northern Bobwhite	23
3.2.13: Short-Tailed Hawk	24
3.2.14: Southeastern American Kestrel	25
3.2.15: Southern Bald Eagle	26
3.2.16: Swallow-Tailed Kite	27
3.2.17: Wading Birds	28
3.2.18: Florida Black Bear	29
3.2.19: Florida Mouse	30
3.2.20: Sherman's Fox Squirrel	31
3.2.21: Limited Opportunity Species	33
3.3: Other Listed and Locally Important Species	35
3.3.1: Other Focal or Imperiled Wildlife	35
3.3.2: Rare Plants	36
Section 4: Land Management Actions and Considerations	37
4.1: Strategic Management Areas	38
4.2: Objective-Based Vegetation Management Considerations	38
4.3: Further Land Management Considerations	39
4.3.1: Gopher Frog	40
4.3.2: Florida Pine Snake and Eastern Indigo Snake	40
4.3.3: Gopher Tortoise	40
4.3.4: Sand Skink	41

4.3.5: Bachman's Sparrow.....	41
4.3.6: Brown-Headed Nuthatch.....	41
4.3.7: Burrowing Owl.....	42
4.3.8: Cooper's Hawk.....	42
4.3.9: Crested Caracara.....	42
4.3.10: Florida Sandhill Crane.....	43
4.3.11: Florida Scrub-Jay.....	43
4.3.12: Northern Bobwhite.....	44
4.3.13: Short-Tailed Hawk.....	44
4.3.14: Southeastern American Kestrel.....	44
4.3.15: Southern Bald Eagle.....	45
4.3.16: Swallow-Tailed Kite.....	45
4.3.17: Wading Birds.....	46
4.3.18: Florida Black Bear.....	46
Section 5: Species Management Opportunities.....	46
5.1: Species Management.....	46
5.1.1: Southeastern American Kestrel Nest Boxes.....	47
5.2: Species Monitoring.....	47
5.2.1: Gopher Frog Presence-Absence Monitoring.....	47
5.2.2: Gopher Tortoise Monitoring.....	48
5.2.3: Sand Skink Monitoring.....	48
5.2.4: Southeastern American Kestrel Nest Box Monitoring.....	49
5.2.5: Florida Mouse Presence-Absence Monitoring.....	49
5.2.6: Opportunistic Monitoring Opportunities.....	49
5.3: Species Research Needs.....	50
Section 6: Intra/Inter Agency Coordination.....	50
6.1: Florida Fish and Wildlife Conservation Commission.....	51
6.1.1: Species Conservation Planning Section (SCP).....	51
6.1.2: Fish and Wildlife Research Institute (FWRI).....	51
6.1.3: Office of Conservation Planning Services (CPS).....	52
6.1.4: Florida's Wildlife Legacy Initiative (FWLI).....	52
6.1.5: Invasive Plant Management Section (IPM).....	52
6.1.6: Ridge Rangers Volunteer Program.....	53
6.1.7: Imperiled Species Management Section (ISM).....	53
6.2: Florida Forest Service (FFS).....	53
6.3: Avian Research and Conservation Institute (ARCI).....	54
6.4: Polk County Parks and Natural Resources Division.....	54
6.5: Florida Natural Areas Inventory (FNAI).....	54
6.6: United States Fish and Wildlife Service (USFWS).....	55
Section 7: Beyond the Boundaries Considerations.....	55
Document Map.....	57

ACRONYM LIST

ARCI	Avian Research and Conservation Institute
APAFR	Avon Park Air Force Range
BBS	Breeding Bird Survey
BMU	Bear Management Unit
CCA	Candidate Conservation Agreement
CLWEA	Crooked Lake Wildlife & Environmental Area
CNA	Core Nesting Area
CPS	Conservation Planning Services (office)
DFC(s)	Desired Future Condition(s)
FFS	Florida Forest Service (formerly Division of Forestry)
FNAI	Florida Natural Areas Inventory
FS	Florida Statutes
FWC	Florida Fish and Wildlife Conservation Commission
FWLI	Florida Wildlife Legacy Initiative
FWRI	Fish and Wildlife Research Institute
IPM	Invasive Plant Management
ISM	Imperiled Species Management (section)
ISMP	Imperiled Species Management Plan
KMU	Kestrel Management Unit
LTDS	Line Transect Distance Sampling
LWRSF	Lake Wales Ridge State Forest
LWRWEA	Lake Wales Ridge Wildlife & Environmental Area
MU(s)	Management Unit(s)
OBVM	Objective Based Vegetation Management
PLCP	Public Lands Conservation Planning (project)
PVA	Population Viability Analysis
SaMP	Survey and Monitoring Protocol (database)
SAP	Species Action Plan
SCP	Species Conservation Planning (section)
SGCN	Species of Greatest Conservation Need
SHCA	Strategic Habitat Conservation Area
SMA	Strategic Management Area
SSC	Species of Special Concern
USFWS	United States Fish and Wildlife Service
WCPR	Wildlife Conservation Prioritization and Recovery (program)
WEA	Wildlife & Environmental Area
WHCNinFL	Wildlife Habitat Conservation Needs in Florida (document)
WHM	Wildlife and Habitat Management (section)
WMA	Wildlife Management Area

Statewide Species Prioritization Parameters

This table provides the values for the 6 prioritization parameters for the focal species. Parameters that are “triggered” (exceed the threshold) are in **bold**. Typically, the more parameters a species triggers, the higher the statewide prioritization.

Species Common Name	Millsap et al ¹		State Wildlife Action Plan ²		Population Viability Analysis (PVA) on managed lands	
	Biologic al Score ³	Supplement al Score ⁴	Populatio n Status ⁵	Populatio n Trends ⁶	Probability of a 50% decline ⁷	Populations persisting (to 80 or 100 years) ⁸
<u>Gopher Frog</u>	24.6	12	medium	declining	0	9% (to 80)
<u>Florida Pine Snake</u>	23.7	15	medium	declining	0	31% (to 80)
<u>Gopher Tortoise</u>	27.3	17	medium	declining	0	55% (to 100)
<u>Sand Skink</u>	35.6	20	medium	declining	12%	45% (to 100)
<u>Bachman's Sparrow</u>	16	12	medium	declining	0	49% (to 80)
<u>Brown-Headed Nuthatch</u>	17	13	medium	declining	0	25% (to 80)
<u>Burrowing Owl</u>	15.3	15	medium	unknown	>90%	6% (to 100)
<u>Cooper's Hawk</u>	15	12	not a SGCN ⁹	not a SGCN ⁹	96%	100% (to 100)
<u>Crested Caracara</u>	37.7	17	low	unknown	0	100% (to 100)
<u>Florida Mottled Duck</u>	17.3	18	medium	declining	1%	100% (to 100)
<u>Florida Sandhill Crane</u>	27	16	medium	declining	0	33 % (to 80)
<u>Florida Scrub-Jay</u>	36.6	19	low	declining	30%	2% (to 80)
<u>Northern Bobwhite</u>	11	14	low	declining	0	100% (to 100)
<u>Short-Tailed Hawk</u>	30.6	15	low	unknown	61%	50% (to 100)

Species Common Name	Millsap et al ¹		State Wildlife Action Plan ²		Population Viability Analysis (PVA) on managed lands	
	Biologic al Score ³	Supplement al Score ⁴	Populatio n Status ⁵	Populatio n Trends ⁶	Probability of a 50% decline ⁷	Populations persisting (to 80 or 100 years) ⁸
<u>Snail Kite</u>	50.0	17	low	declining	0	100% (to 100)
<u>Southeaster n American Kestrel</u>	28	14	low	declining	0	67% (to 100)
<u>Southern Bald Eagle</u>	21.3	10	medium	increasing	0	100% (to 100)
<u>Swallow- Tailed Kite</u>	25.7	13	low	unknown	20%	50% (to 100)
<u>Wading Birds</u>	variable	variable	variable	variable	0	100% (to 100)
<u>Florida Black Bear</u>	32.7	13	medium	stable	5%	100% to (100)
<u>Florida Mouse</u>	22	19	medium	declining	75% (in 83 years)	17% (to 65)
<u>Florida Panther</u>	40.3	15	low	unknown	0	100% (to 100)
<u>Sherman's Fox Squirrel</u>	24	17	low	declining	0	28% (to 80)

¹ scores derived from Millsap et al (1990), “Setting priorities for the conservation of fish and wildlife species in Florida”, as updated by staff of the FWC. We used the most recent updates to score.

² [Florida's State Wildlife Action Plan](#)

³ Species trigger this parameter if the score is ≥ 25.9

⁴ Species trigger this parameter if the score is ≥ 15

⁵ Species trigger this parameter if the score is low or unknown

⁶ Species trigger this parameter if the score is declining or unknown

⁷ Species trigger this parameter if the score is >0

⁸ Species trigger this parameter if the score is $\leq 75\%$

⁹ SGCN = Species of Greatest Conservation Need

Crooked Lake Wildlife and Environmental Area

Legend:

- Crooked Lake
- Public Lands
- County Lines
- Interstates
- US Routes
- Major Roads

Scale: 0 3.5 7 14 Miles

Counties: HILLSBOROUGH, POLK, OSCEOLA, HIGHLANDS, OKEECHOBEE

Roads: I-4, US 92, US 98, US 17, US 441, Florida Turnpike

Water Bodies: Lake Kissimmee

Inset Map: 1 in = 160 miles

Section 1: Introduction

The FWC manages the lands in the Wildlife Management Area (WMA) system using a proactive approach, which includes an understanding of natural communities of plants and animals. As applied by FWC, natural community management starts by classifying lands into distinct natural communities that we then manage in a way to maintain or enhance the communities' unique structure and function. Land management that has a positive influence on natural community conditions benefits the wildlife living in these habitats.

Another important aspect of FWC's management approach is ensuring that it is science-informed and meets the needs of Florida's wildlife. The agency's Wildlife Conservation Prioritization and Recovery Program (WCPR) created this Species Management Strategy for Crooked Lake Wildlife & Environmental Area (CLWEA) to inform and guide management on the area, and to verify that area management is meeting the needs of wildlife. The FWC intends for this Strategy to: 1) Provide land managers with information on management actions that should be taken provided the necessary resources are available; 2) Promote the presence and facilitate the persistence of wildlife species on the area; and 3) Provide measurable objectives that can be used to evaluate the success of wildlife management on the area.

When developing a Strategy, WCPR staff uses multiple tools to analyze and evaluate an area's opportunities to manage for wildlife. The focal species concept is an approach to identify the needs of wildlife collectively by strategically focusing on a subset of wildlife species. The subset of species FWC selected as focal species includes umbrella species, keystone species, habitat-specialist species, and indicator species. [Objective Based Vegetation Management](#) (OBVM) is a method used to assess if vegetation management within natural communities is achieving the desired conditions. Also, a [Strategic Management Area](#) (SMA) is a specially designated piece of land where additional management actions are required to address a particular need.

In addition to tools discussed above, WCPR staff uses specific definitions in a Strategy. *Goals* are broad statements of a condition or accomplishment to be achieved. Goals may be unattainable, but provide direction and inspiration. *Objectives* are a measurable, time-specific statement of results responding to pre-established goals. *Imperiled species* refers to any plant or animal federally listed under the Endangered Species Act or state-listed by the FWC or the Department of Agriculture and Consumer Services.

Creating this Strategy involved a number of steps. First, WCPR staff assessed the results of species-specific habitat models and statewide potential habitat maps for focal species to determine which focal species had potential habitat on CLWEA. WCPR staff then used knowledge from FWC staff, species-expert opinions, and area-specific natural community maps to modify the statewide models and create area-specific potential habitat maps for each focal species. Next, WCPR staff conducted a workshop at which area managers, species experts, and section leaders discussed and evaluated CLWEA's potential role in the conservation of focal species. For each species, workshop participants determined the status of the species on the area; evaluated the opportunities for management on the area; specified appropriate monitoring and research actions; and identified beneficial coordination and 'beyond the boundary' considerations. Using the information from the workshop, staff drafted the Strategy document and sent it

to species experts and other professionals for review. Following the review, the Strategy was finalized and staff initiated implementation of actions in the Strategy.

FWC staff considered the goals and objectives in the Management Plans (formerly known as Conceptual Management Plan) for CLWEA when discussing and assessing the species; therefore, this Strategy supports the goals of the Management Plan. Management plans are on a 10-year revision cycle. During the next revision of the Management Plan, staff will incorporate the objectives in this Strategy into the Management Plan, and append this Strategy to the revised Management Plan.

While this Strategy focuses on CLWEA, it considers the role of the area within the larger state or regional context. Similarly, while the Strategy has species-specific objectives and actions, it does not endorse single-species management. Natural community management is the core of FWC's ecological management approach, and by paying special attention to the needs of focal and imperiled species, we verify that management actions are having the desired effect. By implementing the actions in the Strategy, the FWC believes that management will keep common species common, aid in the recovery of imperiled species, and benefit the largest suite of native wildlife.

Section 2: Historic, Current, and Planned Management

Crooked Lake Wildlife & Environmental Area (CLWEA; 1,147 acres) is located in Polk County and is designated as an FWC Gopher Tortoise Mitigation Park. The FWC implemented the Mitigation Park Program in 1988 to provide regulatory programs as an alternative to on-site wildlife mitigation under Chapter 372.074, Florida Statutes (FS), which establishes the Fish and Wildlife Habitat Program. The purpose of this program is to acquire and manage lands important to the conservation of fish and wildlife, or to assist other agencies or local governments in acquiring or managing important conservation lands. Under this authority, the FWC or its designee is responsible for managing these lands for the primary purpose of maintaining and enhancing their habitat value for fish and wildlife, as well as for compatible public recreation. The Polk County Board of County Commissioners, Division of State Lands, and FWC entered into a multi-party acquisition agreement, and the Board of Trustees approved the purchase of CLWEA in 2008.

CLWEA is bordered on the north by privately owned forested uplands and wetlands, herbaceous wetland, citrus grove, and other agriculture. The northern half of the eastern boundary borders private agricultural land and rural residential development, and the southern half of the eastern boundary is forested wetland that borders a private citrus grove. U.S. Highway 98 borders most of the southern boundary of CLWEA, across which are mostly-private forested uplands and wetlands, improved pasture, and rural residential areas. The western boundary borders privately-owned forested wetlands and pastures. Lands adjoining the northern, western, and southeastern boundaries lay within the Lake Wales Ridge Ecosystem Florida Forever Project. This Florida Forever Project was designed to protect the best remaining tracts of unique ridge scrub and the ecosystems associated with it. This project provides the opportunity for management to preserve examples of the unique Lake Wales Ridge landscape and numerous associate imperiled species.

CLWEA is located 4 miles west of Frostproof and 10 miles east of Ft. Meade. Lake Wales is 11 miles to the north, and Avon Park is 11 miles to the south. Polk County owns and manages the nearest conservation lands to CLWEA. The Britt and Stuart tracts of Polk County's Crooked Lake West are approximately 2.5 miles north of CLWEA, with an undeveloped and unplatted planned residential area in between. The landscape surrounding CLWEA is a mosaic of private and Polk County ownership. Crooked Lake West is a Polk County project to acquire and protect lands within the Crooked Lake watershed, and includes scrub, scrubby flatwoods, and wetland natural communities, and provides habitat for species such as the Florida scrub-jay (*Aphelocoma coerulescens*) and gopher tortoise (*Gopherus polyphemus*).

Other conservation lands within 10 miles of CLWEA include the Crooked Lake Prairie, Crooked Lake Sandhill, and Hickory Lake Scrub (all Polk County), the Lake Wales Ridge State Forest [LWRSF; Florida Forest Service (FFS)], the Sunray Tract of the Lake Wales Ridge WEA (LWRWEA; FWC), and the Sun Ray Scrub and Saddle Blanket Scrub Preserve (The Nature Conservancy). These conservation areas vary in size, but contain upland natural communities and support species such as the gopher tortoise, Florida scrub-jay, gopher frog (*Lithobates capito*), and Florida mouse (*Peromyscus floridanus*). However, these conservation areas are not immediately adjacent or close enough to CLWEA to allow for interaction of most focal species, or for these areas to contribute any potential habitat on CLWEA. The landscape between CLWEA and these conservation areas is highly fragmented by a mixture of human-altered features (private lands, ranches, agriculture, and development), further impeding potential interaction of most focal species.

CLWEA is managed by an FWC biologist stationed at the Royce Ranch field office in Lake Placid, whose duties also include supervising other WEAs in the region. A technician is assigned to CLWEA and facilities include a field office, a shop and 2 covered equipment areas, 1 occupied employee residence, 1 uninhabitable residence, and a parking area and trailhead for public access. CLWEA is currently open to public access for wildlife viewing, hiking, and horseback riding.

Prior to its acquisition, CLWEA was a private cattle ranch owned by the Dunham family, and the former landowner occasionally burned on CLWEA to maintain pastures for grazing. CLWEA has approximately 378 acres of pastures, and the remainder is a mix of uplands and wetland communities, with a 55-acre former orange grove on the northeast corner. The citrus grove has been managed under a contract since acquisition, but due to lack of interest by vendors in renewing this contract, the grove was cut and cleared in 2015.

Since acquisition by the State, management actions to restore and maintain natural communities on CLWEA include prescribed fire, mechanical vegetation treatments, and chemical treatment of exotic plants. CLWEA has approximately 873 acres of habitat that should be maintained with prescribed fire.

Following State acquisition, a prescribed fire program reintroduced regular burning on CLWEA in 2010. Since that time, at least 780 acres have been burned at least once, with 400 additional acres that have been burned more than one time. The proximity of CLWEA to U.S. Highway 98 and a Polk County correctional facility constrains the application of prescribed fire on the area, creates smoke management

concerns during fire operations, and limits the wind directions for safely burning on the southern part of the area. Additionally, prescribed fire plans have to take into account the long-unburned upland habitat on private property north of CLWEA.

Past mechanical treatments on CLWEA include mowing and tree-cutting in pastures to reduce shrubby vegetation, cutting sand pines (*Pinus clausa*) in Management Unit (MU) 9, shredding saw palmetto (*Serenoa repens*) in MU 3 and 7, and shredding wax myrtle (*Myrica cerifera*) in MU 7 ([Figure 1](#)). Area staff will continue mowing pastures annually across CLWEA. In 2015, the former orange grove in MU 12 ([Figure 1](#)) was cleared. A few orange trees were left to provide cover, and long-term maintenance will include periodic mowing to maintain low groundcover. There are no plans to actively restore this acreage to native conditions during this Strategy; however, the cleared grove will function to provide habitat for gopher tortoises and other focal species on the area.

Future management actions in native communities should focus on restoring and maintaining habitat conditions that are optimal for gopher tortoises and other upland species. Pending the availability of resources, future actions should include increasing the application of prescribed fire and treating sand pines, palmetto, and hardwoods where appropriate. MUs 3 and 9 contain scrub and sandhill habitat that currently is not optimal for the gopher tortoise. MU 3 ([Figure 1](#)) has a high percentage of bare, sandy openings surrounded by clumps of thick palmettos and oaks. These sandy openings impede the movement of fire across the unit, and local managers do not know whether grassy species will naturally colonize in the openings, if they should plant the openings, or if the openings are permanently barren. In order to increase the herbaceous cover in MU 3, staff plans to apply prescribed fire, and then evaluate if further mechanical treatment is needed to reduce palmetto and hardwood size and density. Staff will also evaluate whether planting grassy species is appropriate in the sandy openings of MU 3.

MU 9 has a high density of sand pines, and the midstory is very thick. The western part of this unit was burned in 2014 and the eastern part in 2015. Staff will evaluate the impacts of these burns on the restoration of this MU and will determine what future actions will be needed to further restore native habitat. This may include additional sand pine harvest, hardwood treatment, prescribed fire, or chemical treatments. To ensure ongoing management continues to meet the needs of focal wildlife species on CLWEA, we recommend the following measurable objectives:

1. Apply prescribed fire in MU 3 once by 2017, and repeat as warranted by post-burn vegetative conditions in the unit.
2. By 2018, evaluate what additional mechanical, chemical, fire, or planting treatments are needed in MUs 3 and 9, and apply as appropriate.

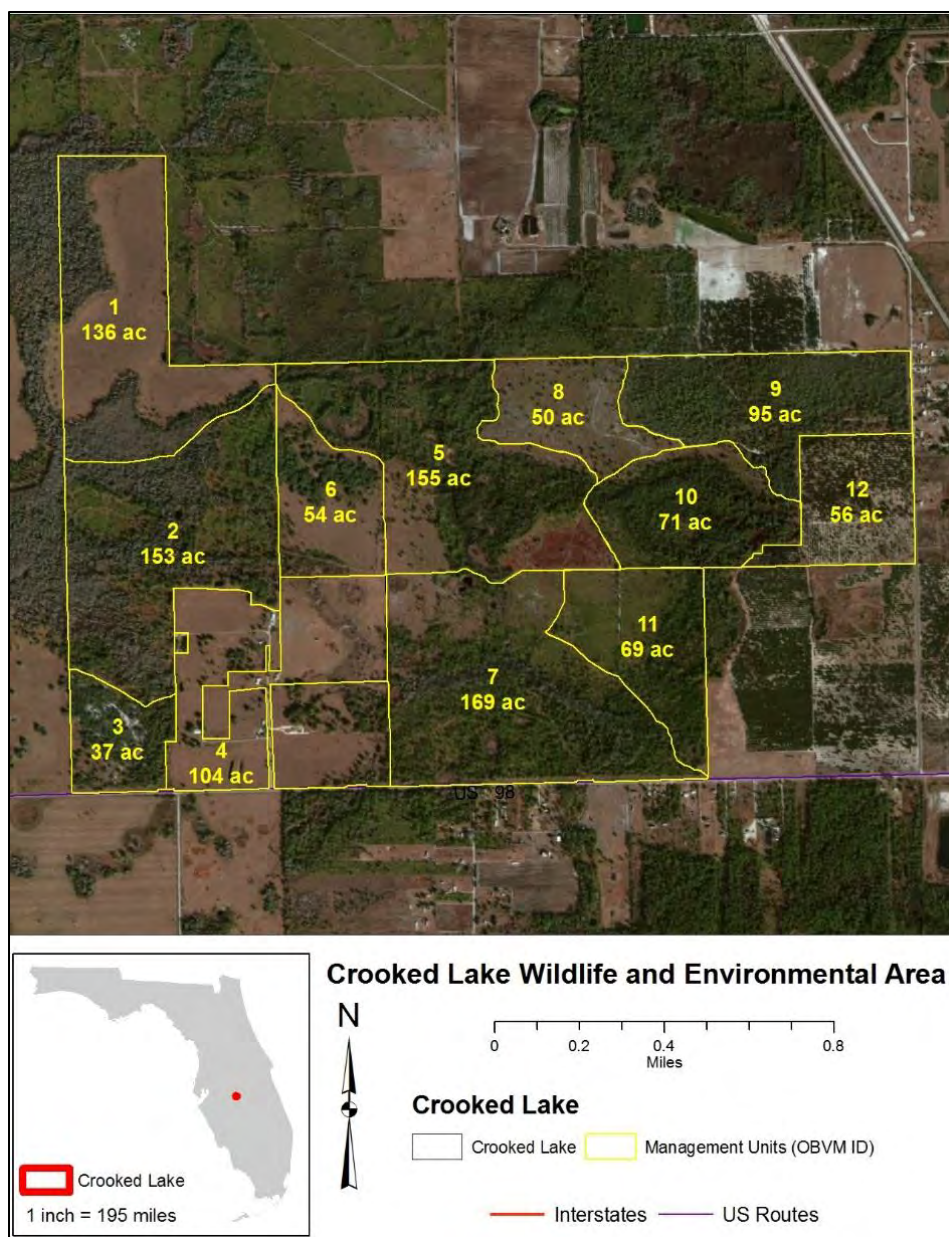


Figure 1. Management Units and acres on Crooked Lake Wildlife & Environmental Area

CLWEA has approximately 378 acres of pastures that were historically wet and mesic flatwoods. Area staff currently manage pastures with annual mowing to reduce the density of herbaceous species such as dog fennel (*Eupatorium capillifolium*) and to treat dense areas of shrubby species such as wax myrtle. Pasture management also includes the treatment of cogongrass (*Imperata cylindrica*) and burning on a 1-3 year rotation. MUs 1, 4, and 5 (Figure 1) contain extensive pasture that have very few hardwood or pine trees. To provide travel corridors and cover for wildlife, FWC plans to strategically plant trees in these

pastures, including containerized longleaf pine (*Pinus palustris*) seedlings. Area staff also plan to plant seedlings in the former orange grove in MU 12 once orange trees are removed.

Full restoration of these communities would take drastic alteration to current conditions and groundcover, which would have an immediate, negative impact on species such as gopher tortoises. Rather than conduct this restoration, planned future management will include planting and burning to create a flatwoods-like structure in these pasture communities. These management actions will keep the pastures in a condition that is suitable for use by gopher tortoises, Sherman's fox squirrels (*Sciurus niger shermani*), Florida sandhill cranes (*Grus canadensis pratensis*), and the southeastern American kestrel (*Falco sparverius paulus*). Further, native plant species such as cutthroat grass (*Panicum abscissum*) are already moving into some of the pastures from adjacent native habitat, and we will encourage this establishment through future management actions. Planned management will allow for the open conditions that these species require, and allow for a slow conversion of the habitat to a native structure that should benefit a suite of focal and imperiled species.

The Florida Natural Areas Inventory (FNAI) completed plant community mapping at CLWEA in 2011 ([Table 1](#)). During natural communities mapping, 14 species of invasive exotic plants were documented including cogongrass, camphor tree (*Cinnamomum camphora*), lantana (*Lantana camera*), old world climbing fern (*Lygodium microphyllum*), Japanese climbing fern (*Lygodium japonicum*), Chinaberry (*Melia azedarach*), Peruvian primrosewillow (*Ludwigia peruviana*), sword fern (*Nephrolepis cordifolia*), Guinea grass (*Panicum maximum*), tropical soda apple (*Solanum viarum*), water spangles (*Salvia minima*), rosary pea (*Abrus precatorius*), and Caesar's weed (*Urena lobata*). FWC has conducted in-house and contracted exotic plant treatments since acquisition, but cogongrass continues to be a problem. FWC treated 289 acres of cogongrass and 115 acres of lygodium in 2014 using a grant from FWC's West Central Invasive Species Working Group Funding.

At least 3 imperiled plant species occur on CLWEA: cutthroat grass, garberia (*Garberia herophylla*), and Britton's beargrass (*Nolina brittoniana*). Cutthroat grass is a state-Endangered species, and garberia is listed as state-Threatened. Britton's beargrass is a federally-Endangered species. [Section 3.3.2](#) includes more information and management recommendations for imperiled plants on CLWEA.

In 2010-2011, FWC contracted with WRS Infrastructure and Environment, Inc. to conduct a comprehensive hydrologic assessment for CLWEA. As a result of the contract, WRS produced a report that identifies anthropogenic impacts to site hydrology and describes actions to restore natural water regimes to the extent practical. This assessment recommends replacing culverts along the Bowlegs Creek drainage to improve flow, upgrading several low water crossings on the area, and installing a new culvert on a pond to reduce flooding, if needed to maintain access. No other significant hydrologic issues were found on the area. FWC has replaced several culverts on CLWEA as directed in the hydrologic restoration plan.

Table 1. Mapped acreage of current and historic plant communities on CLWEA, including management status and the number of focal species that use the community.

Natural Community	Estimated Current Acreage	Estimated Historic Acreage	# of Focal Species That Use the NC
Basin Swamp	118	117	8
Baygall	89	90	3
Depression Marsh	30	39	7
Dome Swamp	4	5	4
Mesic Flatwoods ¹	125	361	13
Pasture-improved	295	-	14
Pasture-semi-improved	78	-	14
Ruderal	63	-	12
Sandhill ¹	59	137	14
Scrub	20	20	8
Scrubby Flatwoods	15	35	12
Successional Hardwood Forest	21	-	6
Wet Flatwoods ¹	230	343	6
TOTAL ACRES	1,147	1,147	

¹ Communities that are actively managed and will be monitored via the OBVM process. Other communities are managed, but will not be monitored via OBVM.

Past wildlife monitoring activities on CLWEA include a gopher tortoise burrow survey prior to acquisition using the FWC Gopher Tortoise Mitigation Park Protocol. This survey evaluated approximately 13% of 732 acres of uplands and estimated 1.0-1.7 tortoises/acre on CLWEA. In 2013, FWC erected a bat house near a pond in MU 7 to provide roosting habitat for bats, including Brazilian free-tailed bats (*Tadarida brasiliensis*). Staff periodically monitors this bat house using FWC's Bat House Occupancy Assessment Protocol. To date the house has not been occupied. Three southeastern American kestrel nest boxes were installed on CLWEA in 2009, and kestrels have used one box since 2013. Additional wildlife monitoring includes documenting incidental observations of imperiled wildlife, such as Florida sandhill crane and Sherman's fox squirrel.

Section 3: Focal Species

The FWC's management approach focuses on maintaining and restoring the ecological form and function of natural communities. However, in some instances, it is important to consider the needs of specific wildlife species and to monitor the influences of natural community management on these species. To achieve a science-informed approach to species management, the FWC uses the focal species concept embraced by the [Wildlife Habitat Conservation Needs in Florida](#) (WHCNinFL) project. This concept

allows area staff to identify the needs of wildlife collectively by strategically focusing on a subset of wildlife species. The subset of species selected includes umbrella species, keystone species, habitat specialist species, and indicator species.

The Public Lands Conservation Planning (PLCP) project, an expansion of the WHCNinFL project, added a few species and provided potential habitat modeling on public lands. For the PLCP, the FWC selected 60 focal species (including 1 group of species, the wading birds) for which statewide potential habitat maps were generated using each species' potential habitat model.

The FWC's 2003 landcover data served as the base layer for all potential habitat models, and staff selected additional layers considering the particular natural history of each species (e.g., species' range, known occurrence records); as such, each model is species-specific. Once statewide potential habitat maps were completed, a Population Viability Analysis (PVA) was conducted for each focal species.

The statewide landcover-based habitat models identified 21 of the 60 focal species to have potential habitat on CLWEA ([Section 3.1](#)). Three species in this strategy, the burrowing owl, short-tailed hawk, and sand skink, were not identified by the PLCP to have potential habitat on CLWEA. However, the short-tailed hawk has been documented on CLWEA, and local biologists have documented the sand skink and burrowing owl near CLWEA, so these species were added to the area's focal species list. For all focal species modeled to have potential habitat on CLWEA, staff created area-specific potential habitat maps by using the same statewide models but replacing the landcover data with area-specific natural community data. The resulting area-specific potential habitat maps were then refined based on the input of local managers and species experts.

The Southwest Region Mitigation Parks WCPR Workshop held June 4-5, 2014, brought decision makers together to assess species' opportunities and needs, identify measurable objectives, outline necessary coordination efforts, and determine required actions such as monitoring and species management. To facilitate informed discussion of the species, WCPR staff compiled a workbook that contained information on the focal species. Participants at the workshop discussed the "level of opportunity and need" for each species. This included considering the number of statewide prioritizations the species triggered ([Statewide Species Prioritization Table](#)), the species' listing status, and the long-term security of the species (i.e., examining PVA results). Other factors considered were the species' use of actively managed communities ([Table 1](#)), species' response to management, and any local overriding factors (e.g., status of species in the region, local declines or extirpations). A brief summary of the opportunity and need assessments for each focal species is available in [Section 3.2](#).

3.1: Crooked Lake WEA Focal Species List

Workshop participants assessed 23 species for their level of opportunity or need on CLWEA. In the following species list, we use a ¹ to denote species for which a measurable objective is identified, a ² for species for which some level of monitoring is recommended, a ³ for species for which a SMA is recommended, and a ⁴ for species for which species management is recommended. Occasionally, statewide models indicate a species has potential habitat on the area, but the local assessment indicates there is little opportunity to manage for these species. These [limited opportunity species](#) are denoted with

an *. Except for those species identified with a superscript number, workshop participants and expert reviewers determined that ongoing management would meet the needs of the focal species. For species with no numerical superscripts, participants and reviewers agreed there is no need for measureable objectives, monitoring, SMAs, or species-specific management.

Gopher frog (*Lithobates capito*)^{1,2}

Florida pine snake (*Pituophis melanoleucus mugitus*)

Gopher tortoise (*Gopherus polyphemus*)^{1,2}

Sand skink (*Neoseps reynoldsi*)^{1,2}

Bachman's sparrow (*Peucaea aestivalis*)

Brown-headed nuthatch (*Sitta pusilla*)

Burrowing owl (*Athene cunicularia*)

Cooper's hawk (*Accipiter cooperii*)

Crested caracara (*Caracara cheriway*)

Florida mottled duck (*Anas fulvigula*)*

Florida sandhill crane (*Grus canadenses pratensis*)

Florida scrub-jay (*Aphelocoma coerulescens*)

Northern bobwhite (*Colinus virginianus*)

Short-tailed hawk (*Buteo brachyurus*)

Snail kite (*Rostrhamus sociabilis*)*

Southeastern American kestrel (*Falco sparverius paulus*)^{1,2,4}

Southern bald eagle (*Haliaeetus leucocephalus*)

Swallow-tailed kite (*Elanoides forficatus*)

Wading birds (Multiple species)

Florida black bear (*Ursus americanus floridanus*)

Florida mouse (*Peromyscus floridanus*)^{1,2}

Florida panther (*Puma concolor coryi*)*

Sherman's fox squirrel (*Sciurus niger shermani*)

3.2: Focal Species Opportunity/Needs Assessment

This section provides an assessment of the opportunities for management as well as the needs of each of the focal species. The assessment considers a number of attributes, including the status of a species, the number of prioritization parameters it triggers, the species' response to management, and the amount and spatial arrangement of species' potential habitat available on the area. Because all federally-listed wildlife are FWC-listed, we will provide only the federal listing status for federally-listed species. When a species is not federally-listed but is FWC-listed, we will provide the FWC listing status. The FWC is currently in the process of developing an Imperiled Species Management Plan (ISMP) for FWC-listed species. The FWC has management plans for FWC-listed species in the form of [Species Action Plans](#)

(SAPs). Staff have reviewed these plans and incorporated the recommended conservation actions into the Strategy.

Unless otherwise noted, all reported acres of potential habitat are the result of using the area-specific natural community data in the species' potential habitat model. These estimates include all the area mapped in a natural community identified as potential habitat, including patches that may not be contiguous with other suitable habitat. During the workshop, participants considered the spatial arrangement and habitat patch size when assessing the potential role CLWEA plays in the conservation of each species. For species that require larger habitat patches, we considered the continuity and condition of habitat on lands adjacent to the WEA.

For many focal species on CLWEA, the acreage of potential habitat available should restoration occur in all natural communities is significantly different than the current amount of potential habitat available on the area. This is related to the amount of ruderal and pasture communities on the area, and how the model considers either the current or historic natural community type for a particular species. For some species, restoring an area from pasture to wet flatwoods, a community that is not typically used by that species, results in a decrease in the amount of potential habitat. The model indicates an increase in habitat with community restoration for other species, as some of the ruderal communities were historically sandhill or scrub. Currently, there are no plans to restore pastures on CLWEA as these areas support many focal species in their current state. See [Section 2](#) for more discussion of pasture habitat on CLWEA.

3.2.1: Gopher Frog

Gopher frogs have not been documented on CLWEA, but species-specific surveys have not been conducted on the area. Regionally, gopher frogs occur on the LWRSF, approximately 10 miles to the east of CLWEA. In Florida, gopher frog habitat is a subset of gopher tortoise habitat that contains fishless ephemeral wetlands in which gopher frog breed. After breeding, gopher frogs move back into surrounding upland habitat within a mile of the breeding pond. This species prefers native, fire-maintained xeric habitats with intact groundcover, but can persist in areas with some habitat alteration. Gopher frogs typically occupy gopher tortoise burrows, but they will occasionally use rodent and crayfish burrows, stump holes, and hollow logs.

Gopher frogs in Florida are an FWC-listed Species of Special Concern (SSC), although the current [SAP](#) recommends removing gopher frogs from this list. Pending the approval of the ISMP, the gopher frog will no longer be listed as a SSC. Conservation actions identified in the SAP include increasing the amount of gopher frog habitat maintained with fire and increasing the restoration of gopher frog habitat. By retaining fishless ephemeral wetlands and maintaining xeric uplands in a condition that supports gopher tortoises, management actions on CLWEA are supportive of the SAP.

This species triggers 2 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a moderate statewide priority. Models indicate 505 acres of potential habitat within current natural communities on CLWEA and 961 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. There are several potential breeding ponds on CLWEA, generally in a suitable condition, and uplands are also suitable or

becoming more suitable for use by gopher frogs. Although the gopher frog will be removed from the SSC list with the approval of the ISMP, little is known about gopher frog home range size or how much habitat is required to sustain a population. The SAP for this species includes high-priority monitoring actions to fill in gaps of the gopher frog's life history and determine the taxonomic status of the gopher frog in Florida. It is possible CLWEA could support an independent, viable gopher frog population; however, regional water levels and the rarity of the species may limit the likelihood of maintaining gopher frog populations on CLWEA.

Ongoing land management actions on CLWEA are compatible with the needs of gopher frogs, with an emphasis on increased frequency of prescribed fire. Management actions that maintain or enhance habitat for this species include the continued use of prescribed fire in scrub, sandhill, mesic flatwoods, and isolated wetlands. [Section 4.3.1](#) provides additional land management recommendations to benefit gopher frogs.

Because the area was acquired for supporting gopher tortoises and their commensals, FWC would prefer to know whether species such as the gopher frog occur on CLWEA. Staff could document gopher frogs during survey efforts to detect other species – such as gopher tortoise burrow scoping – or by conducting species-specific surveys for the gopher frog. Staff from FWC's Fish and Wildlife Research Institute (FWRI) periodically dip-net for pond-breeding amphibians across Florida, and there is potential for local staff to assist with future FWRI dip-net efforts on CLWEA ([Section 6.1.2](#)). Should CLWEA not be identified for dip-net surveys, nor receive any other monitoring, we recommend conducting species-specific surveys to document gopher frogs on CLWEA ([Section 5.2.1](#)). If these methods are applied and gopher frogs are not detected on CLWEA, we will presume that the species is absent on the area. All gopher frog observations should be shared with species experts at Species Conservation Planning (SCP) and FWRI to help them define the distribution of populations in the state ([Section 6.1.1](#) and [6.1.2](#)).

The area goal is to sustain a viable population of gopher frogs on CLWEA, should they be present. The role of CLWEA as a gopher tortoise mitigation park will increase the opportunity to support gopher frogs on the area, particularly by retaining ephemeral breeding wetlands adjacent to upland tortoise habitat in a suitable condition. By continuing to apply prescribed fire and maintaining suitable habitat conditions, CLWEA will fulfill its role for this species. The measurable objective for this species is:

1. Determine if gopher frogs are present on CLWEA by 2025.

3.2.2: Florida Pine Snake

The Florida pine snake has not been documented on CLWEA but does occur on the LWRSF and on private lands in the vicinity of CLWEA. Florida pine snakes use a number of plant communities, but they typically occupy pine-dominated areas with sandy soils and a well-developed grassy understory, such as upland pine and sandhill communities. Pine snakes actively seek out pocket gopher (*Geomys pinetis*) burrows, which are a major source of food for this species. However, the presence or absence of pocket gophers on an area does not directly correlate with the occurrence of pine snakes.

The Florida pine snake triggers 3 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)) and is an FWC-listed SSC. Pending the approval of the ISMP, the Florida pine snake will be listed as state-Threatened. One objective in the Florida pine snake [SAP](#) identifies the need to maintain and increase the amount of habitat for Florida pine snakes. The increased application of fire in upland communities will maintain Florida pine snake habitat on CLWEA and is supportive of the SAP.

Models indicate 289 acres of potential habitat within current natural communities on CLWEA and 554 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant potential habitat acreage value changes. According to the literature, pine snakes require about 2,500 acres of suitable habitat to support a viable population. Pine snakes have large home ranges and are vulnerable to habitat fragmentation and increased road mortality. There is not enough habitat on CLWEA to support an independent population, but the presence of other conservation lands in the vicinity may provide a moderate opportunity to contribute to the regional pine snake population.

Ongoing land management actions on CLWEA are compatible with the needs of Florida pine snakes. Management actions that maintain or enhance habitat for this species include prescribed fire and mechanical treatments that aid in restoring natural community structure and function. Stumps and other coarse woody debris should be retained during land management activities to provide pine snake refuge ([Section 4.3.2](#)).

The [SAP](#) for this species includes priority actions to fill data gaps in the Florida pine snake's life history and initiate studies to determine the state status. Due to the cryptic nature of this species, designing studies to evaluate the status of pine snake populations can be a challenge. While there are no current plans to conduct snake surveys on CLWEA, any future drift-fence surveys conducted on the area should include the use of large upland snake traps to ensure adequate detection of large snakes. Unless species experts identify CLWEA as a priority area for statewide monitoring, only opportunistic monitoring is recommended on the area ([Section 5.2.6](#)).

The area goal is to support the regional population of Florida pine snakes on CLWEA. By continuing to apply prescribed fire and maintaining suitable habitat conditions, the area will fulfill its role for this species. However, the status of the pine snake on CLWEA will be influenced by landscape conditions and the availability of suitable habitat in the surrounding region.

3.2.3: Gopher Tortoise

The FWC purchased CLWEA to secure habitat for the gopher tortoise and other upland species as mitigation for habitat loss to land development activities. Gopher tortoises are relatively common in suitable habitat on CLWEA. FWC conducted a gopher tortoise survey on CLWEA in 2006, prior to acquisition, and concluded CLWEA had a gopher tortoise density between 1.0 and 1.7 tortoises/acre over a survey area of 732 acres. High seasonal water levels may play a role in burrow distribution across the area. Gopher tortoises on CLWEA are not evenly distributed across the area, as staff observed burrows clustered in MUs 3, 6, 9, and 11 ([Figure 1](#)). Additional gopher tortoise burrows are found scattered across the rest of the area. Regionally, gopher tortoises are fairly common on Polk County lands to the north, and also on private lands in the vicinity.

The gopher tortoise is a management-responsive species that can serve as an indicator of properly managed uplands and pine communities. Gopher tortoises prefer xeric upland communities maintained with fire that helps perpetuate the groundcover on which the species feeds. Ecologists often consider the gopher tortoise a keystone species because many other species use their burrows, including focal species such as the Florida mouse and gopher frog. The gopher tortoise is a state-Threatened species that triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a high priority species statewide. The gopher tortoise is also a Candidate species for listing by the U.S. Fish and Wildlife Service (USFWS). In 2007, the FWC approved the initial Gopher Tortoise Management Plan, which focuses on enhancing gopher tortoise habitat on conservation lands. The FWC updated the [Gopher Tortoise Management Plan](#) in September 2012, which continued to emphasize habitat restoration on public lands.

Models indicate 648 acres of potential habitat within natural communities on CLWEA, and 553 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. According to current literature, 250 acres of contiguous suitable habitat is the minimum acreage requirement to sustain a viable population of gopher tortoises. Using this estimate, CLWEA likely supports a viable population of gopher tortoises, as ongoing management should maintain suitable habitat tortoise densities at or above 1.0 tortoises/acre.

Habitat on CLWEA is in fair condition for gopher tortoises. Habitat in MU 3 is very open with wide expanses of open sand, interspersed with islands of mature oaks and palmetto clumps ([Figure 1](#)). Applying prescribed fire in this MU is difficult because of the wide-open sandy areas and relatively little groundcover. Habitat in MU 9 is a mix of sandhill and scrub, and gopher tortoise burrows are common around the perimeter of the MU and in a few open areas within the unit ([Figure 1](#)). MU 11 has been burned at least once since acquisition and is in good condition, including the area where gopher tortoise burrows appear to be concentrated ([Figure 1](#)). Pastures and other secondary tortoise habitat on the rest of the area is in moderate condition for gopher tortoises, and tortoises are found in the cleared citrus grove habitat of MU 12. Planned and ongoing land management actions on CLWEA are compatible with the needs of gopher tortoises. Continued prescribed fire and mechanical treatment to reduce palmetto and sand pine densities on CLWEA will increase suitability for gopher tortoises. See [Section 2](#) for a complete description of restoration needs and measurable objectives to improve habitat on CLWEA.

As a gopher tortoise mitigation park, CLWEA was acquired with the purpose of protecting and enhancing habitat for upland wildlife species, with an emphasis on gopher tortoise populations. Due to this acquisition, FWC is responsible for promoting habitat suitability for gopher tortoises and supporting gopher tortoise densities on CLWEA. Improving and maintaining habitat for gopher tortoises will benefit a number of other wildlife species, including the Florida mouse and gopher frog. Management actions that maintain or enhance habitat for this species include the frequent use of prescribed fire, which is used to manage the potential gopher tortoise habitat on CLWEA. Mechanical and chemical treatments have been used to facilitate the application of prescribed fire. Additional land management considerations for the gopher tortoise can be found in [Section 4.3.3](#).

Recently, the USFWS was petitioned to federally list the gopher tortoise as a Threatened species in the eastern-most portion of its range (comprising Alabama, Georgia, South Carolina, and Florida). As the state wildlife agency of Florida, FWC is a signee of the federal gopher tortoise Candidate Conservation Agreement (CCA) that identifies actions included in the federal listing process. As part of this agreement, FWC has adopted a Line Transect Distance Sampling (LTDS) monitoring protocol for the gopher tortoise throughout its range. The LTDS survey methodology requires use of a camera to scope each burrow encountered in order to detect gopher tortoises in the burrow. The LTDS method estimates gopher tortoise population size and density, which allows managers to track changes in the population through multiple repetitions. Future surveys on CLWEA should use LTDS survey protocol to track gopher tortoise population estimates over time ([Section 5.2.2](#)).

The goal is to maintain a viable gopher tortoise population on CLWEA. The frequent application of prescribed fire will help maintain suitable upland habitat, and this will allow CLWEA to fulfill its role in the conservation of this species. Acquired as a gopher tortoise mitigation park, management actions planned on CLWEA will be conducted in a manner that is most likely to benefit the gopher tortoise population. The measurable objectives are to:

- 1) Complete a survey by the end of 2017 to estimate gopher tortoise populations on CLWEA.
- 2) Repeat gopher tortoise surveys every 5 years to track changes in the population.

3.2.4: Sand Skink

The sand skink has not been documented on CLWEA. It was added as a focal species because there is potential habitat on-site and there is a reasonable likelihood that the species could be present on the area. Staff with Polk County have found sand skinks on Polk County property within 1 mile of CLWEA, in an area that is a mix of private and County-owned lots. Regionally, sand skinks are found at several locations along the Lake Wales Ridge.

Sand skinks are fossorial lizards found in rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens. As fossorial lizards, sand skinks move just below the surface of the sand in a way described as ‘swimming’. Sand skinks also occur in disturbed areas, such as citrus groves that occur on or near soils that formerly supported typical sand skink habitat. Sand skink occurrence is not necessarily dependent on habitat quality; populations can persist in disturbed areas as long as soil conditions are adequate. Low understory vegetation and a higher percent of bare, loose sand are important components of sand skink habitat. However, soil conditions are more important to sand skinks than vegetative components in a habitat.

The sand skink triggers 5 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), and is listed as Threatened by the USFWS, making it a high statewide priority. The species is endemic to the Lake Wales Ridge, and due to their imperiled status, the sand skink was identified as a focal species in the [State of the Scrub Report](#). This Report is a 2006 publication by Archbold Biological Station that assesses conservation progress, management responsibilities, and land acquisition priorities for imperiled species on the Lake Wales Ridge.

Models indicate 93 acres of potential sand skink habitat within current natural communities on CLWEA and 192 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Management actions that maintain or enhance habitat for sand skinks include the continued use of prescribed fire. Some studies have found that skink numbers decrease immediately following prescribed fire and that skinks are found in greater numbers in long-unburned habitat. Prescribed fire techniques that promote patchy burns and retain open, sandy areas are ideal for this species.

Sand skinks occur more frequently in areas with bare patches of sand, which can impede the direct movement of fire across the landscape. During prescribed fires, these bare patches create a mosaic of burned and unburned habitat within a given management unit. The retention of unburned areas due to natural fire exclusion will ensure that skink habitat is always available. When areas of skink habitat remain unburned due to natural fire exclusion, managers should not mechanically treat them post-fire.

Given the sand skink's fossorial nature and dependence on soil conditions, soil compaction and damage from mechanical equipment could have a negative effect on the species. If sand skinks are known to occur in an area proposed for mechanical treatment, area staff should make an effort to limit soil disturbance and compaction. Whenever possible, widespread mechanical treatment should be avoided in areas with a high density of sand skink tracks. Additional land management considerations for the sand skink are found in [Section 4.3.4](#).

We recommended conducting a survey to determine if sand skinks are present on CLWEA. Volunteers could be used to search for sand skink tracks, coverboards or pitfall traps could be monitored to determine if sand skinks are present, or a formal survey could be implemented using a protocol available from the USFWS. Area staff will determine the most appropriate method to meet the objective of determining the status of sand skinks on CLWEA, based on the availability of monitoring resources ([Section 5.2.3](#)). Opportunistic observations of sand skink tracks should also be documented ([Section 5.2.6](#)).

The goal is to provide suitable habitat for sand skinks on CLWEA. Due to the occurrence of the species on nearby conservation lands, CLWEA may have a small role in contributing to the regional persistence of this species. CLWEA will fulfill its role for sand skinks through managing sand skink habitat in a way that retains suitable soil conditions and creates a mosaic of burned and unburned areas in suitable habitat. The measurable objective for this species is:

1. Determine if sand skinks are present on CLWEA by 2025.

3.2.5 : Bachman's Sparrow

In 2013, Bachman's sparrows were heard calling in MU 8 ([Figure 1](#)) during kestrel nest box monitoring. Bachman's sparrows occur at the Arbuckle WMA tract of the LWRSF, approximately 10 miles to the east of CLWEA. A Breeding Bird Survey (BBS) route within 5 miles of CLWEA detected Bachman's sparrows in 2014, and there is a 2014 ebird.org record on Crooked Lake West, approximately 3 miles from CLWEA.

Bachman's sparrows prefer early-successional old-field habitat or mature pine forests with a low basal area and healthy herbaceous vegetation. The Bachman's sparrow is responsive to management and the occurrence of fire is critical to sustaining this species. Use of an area by Bachman's sparrows declines rapidly around 18 months post-fire and sites are typically abandoned if fire is excluded for >3 years. In many areas, the optimal fire return interval necessary to achieve desired vegetative characteristics for Bachman's sparrow habitat is 2-3 years.

The Bachman's sparrow triggers 2 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)) and is currently experiencing range-wide population declines. Models indicate 474 acres of potential habitat within current natural communities on CLWEA, and 499 acres if management can restore all natural communities. Much of the potential habitat on CLWEA is pasture or ruderal, and is currently in a condition that could support Bachman's sparrows. Much of the native habitat could also support the species, and will continue to improve in suitability with management.

Literature suggests a minimum of 520 acres of contiguous habitat is required to maintain a viable population of Bachman's sparrows. CLWEA does not meet the minimum acreage requirement for viability, and the surrounding landscape is not suitable for Bachman's sparrows. However, with continued and frequent application of prescribed fire, CLWEA will continue to have a role in supporting the regional Bachman's sparrow population.

Ongoing and planned efforts to maintain natural community structure and function on CLWEA will maintain or increase suitability for Bachman's sparrows within potential habitat. Management actions that benefit this species include frequent application of prescribed fire, with an emphasis on a shorter fire return interval (2-4 years). Managers should practice the sloppy chop method during mechanical treatment to reduce palmetto densities, leaving patches of untreated vegetation to provide perches for sparrows. Additional land management considerations are found in [Section 4.3.5](#), and monitoring for this species should be opportunistic ([Section 5.2.6](#)).

The goal is to provide suitable habitat for the Bachman's sparrow that will allow individuals using CLWEA to function as part of a regional population. Due to the amount of potential habitat on the area, suitable habitat on adjacent conservation lands is necessary to continue supporting a regional population of Bachman's sparrows that encompasses CLWEA. By continuing to apply prescribed fire and maintaining suitable habitat conditions, CLWEA will fulfill its role for this species.

3.2.6: Brown-Headed Nuthatch

Brown-headed nuthatches have not been documented on CLWEA. Brown-headed nuthatches occur at the Arbuckle WMA tract of the LWRSF. A BBS route within 5 miles of CLWEA has not detected this species, and they have not been documented on Polk County lands to the north of CLWEA. However, the Breeding Bird Atlas has confirmed brown-headed nuthatch breeding in Polk County. The brown-headed nuthatch is dependent on open stands of mature pine interspersed with snags in which the species excavates nesting cavities. Older pine forests (>35 years for longleaf and slash pine) and stands with basal area between 35–50 ft²/ac (8-11 m²/ha) are preferred. This species triggers 2 of 6 prioritization

parameters ([Statewide Species Prioritization Parameters](#)) and is currently experiencing range-wide declines due to habitat loss and degradation.

Models indicate 429 acres of potential habitat within current natural communities on CLWEA and 877 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant potential habitat acreage value changes. Literature suggests 1,000 acres of habitat is necessary to support a viable brown-headed nuthatch population, and CLWEA does not meet this requirement. In addition, the current condition of the habitat on CLWEA may not be ideal for the species. However, with continued and frequent application of prescribed fire, conditions on CLWEA will become more suitable for brown-headed nuthatches.

Ongoing efforts to restore and maintain natural community structure and function will improve habitat suitability for the brown-headed nuthatch within all potential habitat. However, the species may not occupy the area even if all suitable habitat conditions are met. This species has a limited dispersal capability and may not immigrate to suitable habitat or areas becoming increasingly suitable with management. Management actions that maintain or enhance habitat for this species include prescribed fire, pine thinning, management favoring mature timber, snag creation and retention, and mechanical actions that aid in restoring natural community structure. A shorter fire return interval and the protection of snags during land management activities will further improve habitat suitability ([Section 4.3.6](#)). Because CLWEA has a low opportunity for supporting a viable population, monitoring for this species should be opportunistic ([Section 5.2.6](#)).

The area goal is to provide suitable habitat for brown-headed nuthatches that will allow individuals using CLWEA to function as part of a regional population. Due to the amount of potential habitat on the area, suitable habitat on adjacent conservation lands is necessary to continue supporting a persistence, regional population of brown-headed nuthatches that encompasses CLWEA. By continuing to apply prescribed fire and maintaining suitable habitat conditions, CLWEA will fulfill its role for this species.

3.2.7: Burrowing Owl

Burrowing owls have not been documented on CLWEA, and a BBS route within 5 miles of CLWEA has also not detected this species. Originally, this species was not modeled to have potential habitat on the area. However, burrowing owls were added as a focal species because they occur in the vicinity of CLWEA. [Ebird.org](#) contains occurrences from 2013 on private lands 5 miles to the northeast and northwest of the CLWEA boundary. Burrowing owls require open, treeless areas with low groundcover and sandy soils for excavating burrows. This species historically preferred dry prairie habitat, however, most modern populations are found in altered habitats, including improved pasture, berms or canal banks. This species uses underground burrows extensively, particularly during the spring for nesting and in the winter for protection from predators. Optimal habitat for this species includes soils that remain dry during times of peak burrow use. Much of current burrowing owl habitat occurs in private and urban areas that are prone to future development. Therefore, any populations on public land are important to the persistence of this species.

The burrowing owl triggers 4 of the 6 statewide prioritization parameters ([Statewide Species Prioritization Parameters](#)). The burrowing owl is listed as a SSC in Florida, although the current [SAP](#) recommends listing this species as Threatened. One objective in the SAP is to protect and manage burrowing owl habitat to ensure long-term population viability. By maintaining the protections afforded to CLWEA as state-managed conservation land, the area can play a role in supporting occasional use by burrowing owls that occur in the regional landscape.

Due to the limited distances females travel to establish new nest sites, potential habitat models do not include habitat that is >1,100 meters from a known occurrence. Therefore, CLWEA was not modeled to have potential habitat. However, if this limitation is removed, models indicate 488 acres of potential burrowing owl habitat within current natural communities on CLWEA, and 137 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Ranchlands surrounding CLWEA provide habitat for burrowing owls, and there is a reasonable chance the species could occur on CLWEA in the future. Continued management in the pastures will maintain conditions that are suitable for burrowing owls in much of the potential habitat, and perimeter fence lines will provide posts for burrowing owl perching areas. Disturbed habitat in the converted citrus grove may also provide some suitable habitat.

Burrowing owls prefer to forage in areas with low groundcover heights. Planned management actions, including prescribed fire, should benefit the burrowing owl by providing open foraging habitat. [Section 4.3.7](#) contains land management recommendations for this species. Opportunistic monitoring is recommended for this species ([Section 5.2.6](#)). If owls are observed during the nesting season (February-June), managers should attempt to locate any existing burrows in order to protect them from disturbance ([Section 4.3.7](#)).

The goal is to provide habitat for burrowing owls that will allow individuals using CLWEA to function as part of a regional population. Despite the species absence on the area, CLWEA can provide suitable habitat for the burrowing owl by maintaining open groundcover through prescribed burning and mechanical actions. Protection measures afforded to conservation areas like CLWEA will increase the likelihood that this species will continue to persist on public lands.

3.2.8: Cooper's Hawk

Cooper's hawks are occasionally observed on CLWEA, and are fairly common along the Lake Wales Ridge. Cooper's hawks are commonly associated with woodlands and nest in a variety of habitats, including swamps, floodplain and bottomland forests, sand pine scrub, and baygalls. Nests are usually placed near the crown of a tree close to an edge in dense stands of oaks. Cooper's hawks primarily feed on other birds, so nests are located in proximity to suitable hunting areas.

Models indicate 731 acres of potential Cooper's hawk habitat within current natural communities on CLWEA, and 616 acres of potential habitat if historic conditions are restored in all natural communities. See [Section 3.2](#) for more information about significant potential habitat acreage value changes. The Cooper's hawk triggers 1 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)). From a regional perspective, CLWEA is within a mosaic of conservation areas, private lands, and

residential development that could support a regional population of Cooper's hawks. Cooper's hawks are not considered management dependent and the management opportunity and priority of Cooper's hawk on CLWEA is low. Management actions that maintain or enhance habitat for this species include prescribed fire and mechanical actions that aid in restoring natural community structure.

During the nesting season (April-July), the Cooper's hawk is secretive and sensitive to disturbance near the nest site. No attempt will be made to actively search for nests, but incidental observations of nesting or breeding behavior will be noted ([Section 5.2.6](#)). If nests are documented on CLWEA, managers will protect the nesting area from disturbance ([Section 4.3.8](#)).

The goal is to provide habitat for the Cooper's hawk that will allow individuals using CLWEA to function as part of the regional population. Due to the amount of suitable habitat available on the area, CLWEA will likely continue to support occasional use by this species. Maintaining suitable upland habitat on CLWEA will allow the area to fulfill its role in the conservation of this species.

3.2.9: Crested Caracara

The crested caracara has not been documented on CLWEA. A crested caracara was documented via ebird.org in 2010 on Highway 98 along the southern boundary of CLWEA. Caracaras have also been observed east of Highway 27, just north of the city of Avon Park. The landscape around CLWEA contains ranchlands, agriculture, and citrus, and is highly suitable for use by caracaras.

The crested caracara is both federally and state listed as Threatened and triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a high statewide priority. Historically associated with dry prairie systems in central Florida, the majority of the crested caracara population in Florida is now found on private ranchlands, further contributing to threats of habitat loss and degradation. The proximity of the area to private ranchlands increases the likelihood of supporting caracara on CLWEA.

Models indicate 499 acres of potential habitat for caracaras within current natural communities on CLWEA, and 361 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Caracaras have relatively large home range sizes (average of 3,000 acres). CLWEA does not have enough potential habitat to support a single nesting pair, but has a moderate opportunity to provide suitable habitat to support the regional population.

Management actions that maintain or enhance habitat for crested caracaras include prescribed fire and mechanical actions that aid in restoring natural community structure. Caracaras are likely to forage in newly mowed or burned areas and prefer low groundcover in foraging areas. Caracaras predominantly nest in cabbage palms, which are not prevalent on CLWEA. Monitoring should be opportunistic ([Section 5.2.6](#)); if nesting is observed, managers should take action to protect the nest during land management activities ([Section 4.3.9](#)).

The goal is to provide suitable habitat for crested caracaras that will allow individuals using CLWEA to function as part of a regional population. However, the protection of caracara habitat on private lands is

likely the key to the persistence of this species in Florida. While the potential presence of this species on CLWEA is dependent on conditions outside the control of local staff, interaction with private landowners on adjacent lands should include encouragement to manage appropriately for species such as the caracara.

3.2.10: Florida Sandhill Crane

Florida sandhill cranes regularly use CLWEA and the surrounding region, with reproduction documented on the area. A pair of sandhill cranes has nested in a marsh on a private inholding, but nests have not been located on the WEA itself. Area staff commonly document a pair of adults with flightless young in MU 4 during the breeding season ([Figure 1](#)). Regionally, sandhill cranes are relatively common. Sandhill cranes use a mosaic of habitat types including emergent wetlands and open uplands such as pasture, prairie, and open pinelands. Sandhill cranes use a combination of shallow wetlands and open upland habitats for nesting, with a majority of the vegetative cover ≤ 20 inches in height. Standing water is an important component of nesting habitat for Florida sandhill cranes. Nests consist of herbaceous plant material mounded in shallow water or marshy areas.

The Florida sandhill crane is listed as Threatened by the FWC and the current [SAP](#) recommends retaining the crane as state-Threatened. The main objectives of the SAP are to maintain or increase the amount of suitable habitat and the Florida sandhill crane population within 10 years of implementing the plan. The Florida sandhill crane triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a moderate to high statewide priority.

Models indicate 460 acres of potential habitat within current natural communities on CLWEA and 39 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant potential habitat acreage value changes. Sandhill crane home ranges vary in size both seasonally and regionally; but comprise approximately 300-600 acres per pair for adult pairs. CLWEA could support at least 1 Florida sandhill crane home range, and given the amount of suitable habitat in the surrounding area, CLWEA has a role in supporting the regional population.

Ongoing efforts to maintain current natural community structure and function will improve the suitability of foraging habitat on CLWEA. Management actions that will benefit sandhill cranes include prescribed fire, mechanical treatments to maintain upland habitat in the open condition cranes prefer, and mowing grassy areas. Protection of nesting habitat during land management activities is also essential. If a nest is located in a MU, we recommend that management actions in that unit occur outside of the nesting season (December - June) when feasible, and after the young are able to fly. We also recommend establishing a 400-foot buffer around nest sites to minimize the likelihood of disturbance. Some parameters of nesting habitat, such as hydroperiod, are outside the control of land managers. Due to the large home range and wide distribution of this species, individual monitoring efforts for sandhill cranes are not recommended at this time. However, area staff should document nesting birds and the presence of flightless young ([Section 5.2.6](#)) in order to protect nests during land management activities ([Section 4.3.10](#)).

The goal is to maintain the presence of breeding sandhill cranes on CLWEA. Due to the amount of available habitat in the surrounding landscape, CLWEA will likely continue to support use by Florida

sandhill cranes. By continuing to apply prescribed fire and maintaining suitable habitat conditions, CLWEA will fulfill its role for this species.

3.2.11: Florida Scrub-Jay

Florida scrub-jays have not been documented on CLWEA, or within the mosaic of private and Polk County-owned lots immediately north of CLWEA. The private lands surrounding CLWEA are primarily composed of forested uplands, wetlands, rural residential areas, and pastures, which do not contain potential habitat for Florida scrub-jays. Scrub habitat is present to the north of CLWEA. Regionally, scrub-jays have been documented in the greater vicinity, including Crooked Lake West to the north, the LWRSF to the east, the Sunray tract of the LWRWEA to the southeast, and The Nature Conservancy's Saddle Blanket Scrub Preserve to the south. These areas are within a reasonable dispersal distance for scrub-jays, and transient jays could occur on CLWEA.

The Florida scrub-jay is found in both coastal and ancient scrub-type habitats in peninsular Florida. Scrub-jays rely heavily on fire to maintain optimal foraging and breeding conditions in scrub natural communities. Optimal habitat for Florida scrub-jays is oak-dominated scrub and scrubby flatwoods with the shrub layer averaging between 4 and 5.5 feet tall. In optimal habitat, an average of 25 acres is needed to support 1 family group. Literature indicates isolated populations of <10 family groups are highly vulnerable to local extinction; areas that support 10-20 families are marginally secure; areas that support 20-40 families may be adequately protected; and areas supporting >40 families have lower vulnerability to extinction. In all cases, movement between populations increases the chance of regional persistence.

The Florida scrub-jay is listed as Threatened at the federal level. It triggers 6 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a high statewide priority. CLWEA is located within the Lake Wales Ridge genetic unit, according to the draft [USFWS Florida Scrub-Jay Recovery Plan](#). The plan does not include any goals that specifically reference CLWEA. Models indicate only 35 acres of potential habitat within current natural communities on CLWEA, and 55 acres if management can restore all natural communities. This habitat is divided between MUs 3 and 9 ([Figure 1](#)), which are on opposite corners of the area. Conditions are not currently suitable for scrub-jays, and will require restoration with prescribed fire and possibly mechanical treatment to improve suitability. However, given the relatively small amount of potential habitat and its fragmented distribution on CLWEA, there is a low opportunity to contribute to the regional scrub-jay population on this area, even with restoration of all potential habitat. However, habitat on CLWEA could represent stepping-stone habitat for scrub-jay dispersal through the landscape.

Ongoing efforts to restore and maintain natural communities on CLWEA, including prescribed fire and mechanical treatments, will continue to improve suitability for scrub-jays. We recommend that area staff put an increased emphasis on prescribed fire and continued reduction of sand pines in scrub community, where appropriate. Additional scrub-jay land management considerations can be found in [Section 4.3.11](#). Scrub-jay monitoring on CLWEA should be opportunistic ([Section 5.2.6](#)).

The goal for CLWEA is to provide suitable scrub-jay habitat that allows individuals using the area to contribute to the regional scrub-jay population. Despite the low opportunity for this species on CLWEA,

suitable habitat will continue to be maintained in a good condition to meet the needs of this and other scrub-dependent species. CLWEA could potentially help support the regional metapopulation by supporting scrub-jays moving between nearby habitat patches. Ongoing management on CLWEA will meet its role for supporting Florida scrub-jays, should the species become established on the area.

3.2.12: Northern Bobwhite

Northern bobwhite are occasionally observed on CLWEA, with reproduction documented on the area. Bobwhite are also occasionally observed on nearby Polk County lands. Northern bobwhite are associated with open canopy forests and grassland communities dominated by warm-season grasses, legumes, and patchy bare ground. Northern bobwhites require an interspersed of multiple habitat conditions to meet their dietary and cover needs. Areas with abundant native grasses and herbaceous vegetation are used for raising broods and foraging. Shrubs or other thickets are useful as roosting habitat or escape cover. A 2-3 year fire return interval is typically necessary to maintain the low herbaceous groundcover this species prefers.

Northern bobwhite triggers 2 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)). However, ongoing declines in this species' population are cause for concern and this species is a focus of a number of ongoing conservation initiatives, making it a high statewide priority. Models indicate 879 acres of potential habitat within current natural communities on CLWEA, and 896 acres if management can restore all natural communities. Literature suggests this species needs 2,000–4,000 acres to support a viable population. Though portions of the potential habitat on CLWEA are currently suitable to support this species, there is not enough habitat to independently support a population. Additionally, the habitat surrounding CLWEA is not high quality habitat for northern bobwhite. Northern bobwhite may be present in the landscape, but the status of a regional population may be poor, given the lack of suitable habitat.

Management actions that maintain or enhance habitat for northern bobwhite include prescribed fire and mechanical actions that aid in restoring natural community structure ([Section 4.3.12](#)). Ongoing management on CLWEA is compatible with the needs of northern bobwhite. Northern bobwhites depend on high quality, early successional habitat; however, CLWEA is relatively small and separated from large areas of contiguous habitat. The area likely has a limited role in reversing the statewide decline of this species.

The area goal is to provide suitable habitat for northern bobwhite on CLWEA to continue to support the regional population. Ongoing natural community management with an emphasis on creating a mosaic of burned and unburned habitat will meet the needs of this species. However, factors affecting the regional population will influence the long-term persistence of northern bobwhite on CLWEA.

3.2.13: Short-Tailed Hawk

In 2015, staff documented a pair of short-tailed hawks in MU 4 ([Figure 1](#)), and there are documented occurrences nearby from ebird.org. The Avian Research and Conservation Institute (ARCI), a research organization that conducts statewide research on swallow-tailed kite and short-tailed hawk populations,

has documented nesting hawks as recently as 2008 at several locations along the Lake Wales Ridge. There are 3 historic short-tailed hawk nest areas within 8-11 miles east of CLWEA.

The short-tailed hawk is an elusive species that breeds in dense or open woodland stands in wetlands, cypress swamps, and bayheads. Vegetation surrounding nest trees is often very dense, making it difficult to locate and assess nests from the ground. This species exhibits high nest-site fidelity, emphasizing the need to locate and preserve nest sites. Foraging habitat includes prairies and open areas adjacent to nesting areas. Transitional zones and ecotones may be important components of foraging habitat for this species.

The short-tailed hawk triggers 6 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a high statewide priority. Models indicate 646 acres of potential habitat within current natural communities on CLWEA, and 150 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Short-tailed hawks are not typically considered management-dependent and the opportunity to affect this species at the management-unit level is low. However, ongoing efforts to restore and maintain natural community structure and function will benefit this species by improving the suitability of foraging habitat.

Management actions that maintain or enhance foraging habitat for this species include prescribed fire and mechanical actions that aid in restoring natural community structure. Protection of potential nest trees or nesting areas would provide future nesting habitat for this species, and any future timber management activities should take this species under consideration. See [Section 4.3.13](#) for additional land management considerations. Monitoring for this species should be opportunistic and include documenting color phase ([Section 5.2.6](#)). This information should be shared with ARCI ([Section 6.4](#)).

The goal is to provide suitable habitat for the short-tailed hawk that will allow individuals using CLWEA to function as part of a regional population. By maintaining natural communities in open condition for foraging and protecting mature nest-trees during management activities, area staff will meet the needs for this species on this area.

3.2.14: Southeastern American Kestrel

Southeastern American kestrels are occasionally observed on CLWEA. Three nest boxes were installed in 2009, and nesting was documented in one of the boxes in 2013 and 2014. From a regional perspective, kestrels nest in the town of Frostproof, approximately 8 miles to the east. CLWEA is surrounded by private ranchlands, citrus groves, and undeveloped land, much of which is in a condition that could support kestrels.

Southeastern American kestrels utilize upland habitats including sandhills, longleaf savannas, pastures, sand pine scrub, and prairies. As a secondary-cavity nester, southeastern American kestrels depend on the availability of previously-excavated cavities in large snags. This species will use artificial cavities in areas of suitable habitat. Kestrels require adequate perch sites within foraging areas; as low ground cover (<1 ft) and an open canopy (<20% cover) are ideal for this species.

Southeastern American kestrels are listed by the FWC as Threatened and the species triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)). The current [SAP](#) for the Southeastern American kestrel identifies 10 Kestrel Management Units (KMU) in the state with the purpose of facilitating, setting, and accomplishing species conservation actions. CLWEA is located on the boundary of KMUs 5 (Hillsborough) and 6 (Lake Wales Ridge), but is technically within KMU 5. The SAP further describes primary KMUs as those with the greatest habitat potential. Both Hillsborough and Lake Wales Ridge are primary KMUs, as described in the SAP.

Models indicate 657 acres of potential habitat within natural communities on CLWEA, and 572 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant potential habitat acreage value changes. Average kestrel breeding territory size is 125 acres, though more area may be necessary if the habitat quality is marginal. Native habitat on CLWEA is marginal for use by kestrels, and the midstory and groundcover are too thick to allow for adequate hunting conditions, except for immediately after prescribed fire. Pastures on CLWEA appear to be the primary areas where kestrels hunt, and there is enough pasture habitat to support a few pairs of breeding kestrels.

Management that aids in restoring natural community structure, including control of invasive exotic plants and managing for mature, open stands of longleaf pine maintained with prescribed fire, will maintain or enhance habitat for this species. Efforts to improve the quality of native habitat for gopher tortoises on CLWEA will also benefit southeastern American kestrels. For additional land management considerations, including the protection and creation of snags, see [Section 4.3.14](#).

Species management actions on CLWEA should continue to include the maintenance and installation of nest boxes, as necessary ([Section 5.1.1](#)). Nest boxes will continue to be monitored according to a protocol developed by FWRI as part of a statewide kestrel nest box monitoring program ([Section 5.2.4](#)). Staff shares the results of this monitoring with FWRI ([Section 6.1.2](#)) and uses the results to assess the need for additional boxes ([Section 5.1.1](#)).

The goal is to provide suitable habitat for southeastern American kestrels that will allow individuals using CLWEA to continue to function as part of a regional population. Staff will achieve the goal by installing and maintaining nest boxes and applying appropriate habitat management. The measurable objectives are to:

- 1) Maintain at least 3 functional nest boxes on CLWEA for southeastern American kestrels.
- 2) Annually assess habitat conditions around nest boxes and adjust land management actions accordingly to ensure continued suitability for southeastern American kestrels.

3.2.15: Southern Bald Eagle

Southern bald eagles are occasionally observed on CLWEA. There are 233 known bald eagle nests in Polk County, though none occur on CLWEA. According to the FWC's bald eagle nest locator, [there are 2 known nests that occur within 3 miles northeast of CLWEA, one of which documented as active during the most recent FWC aerial survey in 2013](#). The FWC approved a [Bald Eagle Management Plan](#) in 2008 to ensure the continued recovery of this species. This plan designated 16 Core Nesting Areas (CNAs),

which are defined as areas containing high densities of bald eagle nesting territories. Regionally, CLWEA is located between 2 CNAs (central Polk County and The Kissimmee Chain of Lakes).

The bald eagle does not trigger any of the [Statewide Species Prioritization Parameters](#), but is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Models indicate 743 acres of potential habitat within current natural communities on CLWEA. If management can restore all natural communities, 460 acres would be available on CLWEA. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Nesting habitat is present on CLWEA, and the proximity to Crooked Lake may increase the opportunities for foraging on the area.

Bald eagles are not considered management-dependent and the opportunity to influence them on CLWEA is low. However, ongoing efforts to maintain natural community structure and function will benefit this species. Management actions that maintain or enhance habitat for this species include managing for mature stands of trees, applying prescribed fire, and applying mechanical actions that aid in restoring natural community structure, provided that nest protection guidelines are followed.

Because eagles naturally occur in relatively low densities, the species is more appropriately monitored at a statewide or regional basis. Any activities around nest sites will be conducted according to guidance in the management plan ([Section 4.3.15](#)). New nesting sites will be documented and reported to bald eagle experts ([Section 5.2.6](#) and [Section 6.1.1](#)). Area staff will communicate any documented nest locations on CLWEA to the FWC bald eagle coordinator and consult with them on additional land management considerations.

The area goal is to continue to provide suitable habitat for the southern bald eagle that will allow individuals using CLWEA to function as part of the regional population. Although CLWEA is not within a CNA, the protections afforded to conservation lands and eagle nests will continue to benefit bald eagles within the greater vicinity of Polk County. By maintaining natural communities in open condition for foraging and protecting mature nest-trees during management activities, the area will meet the needs of this species.

3.2.16: Swallow-Tailed Kite

Swallow-tailed kites occasionally use CLWEA and in the surrounding area. ARCI has documented nests in Polk County, but none are near CLWEA. Swallow-tailed kites are habitat generalists and utilize a variety of natural communities. Open areas are used for foraging, and trees that are dominant or taller than surrounding trees are preferred as nest trees. Shrub height and density tends to be higher around nest sites. This species exhibits high nest site fidelity, therefore maintaining the suitability of areas surrounding active nest trees is important. Given the generalist nature of this species and its high mobility, the swallow-tailed kite is not considered management dependent. However, swallow-tailed kites will benefit from active management to restore natural communities, provided nest sites are not disturbed.

Swallow-tailed kites trigger 4 of 6 statewide prioritization parameters ([Statewide Species Prioritization Parameters](#)), making them a moderate statewide priority. Models indicate 711 acres of potential kite

habitat within current natural communities on CLWEA, and 651 acres of potential kite habitat if historic conditions are restored in all natural communities. Models for current natural communities likely underestimate the amount of kite habitat available, considering their generalist foraging behavior. Kites prefer nesting in areas with densely vegetated understory beneath tall pines. CLWEA contains some areas that could be used for nesting, and provides suitable foraging habitat. However, given the wide-ranging nature of this species and the relatively small amount of habitat available, there is a low opportunity to impact the regional population on this area.

Planned efforts to maintain natural community structure through prescribed fire and mechanical vegetation treatments will benefit kites by providing open areas for foraging. In addition, protection of wetlands and managing for open stands of mature native pines may provide nesting sites for swallow-tailed kites. If nests are located, management considerations around these sites should be used ([Section 4.3.16](#)) and the nest will be reported to ARCI ([Section 6.3](#)). If kite nesting activity is observed, this information should be documented and reported as well ([Section 5.2.6](#)).

The goal is to provide suitable habitat for the swallow-tailed kite that will allow kites using CLWEA to function as part of the regional population. By maintaining natural communities in open condition for foraging and protecting mature nest-trees during management activities, the area will continue to meet the needs of this species. Ongoing management that maintains habitat conditions for occasional kite foraging and nesting will allow CLWEA to meet its role for this species.

3.2.17: Wading Birds

Four of the 8 focal species of wading birds [great egret (*Ardea alba*), little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*), and wood stork (*Mycteria americana*)] have been documented on CLWEA. The roseate spoonbill (*Platalea ajaja*) was documented in a wetland on a private ranch approximately 2 miles west of CLWEA in 2014. The remaining species [snowy egret (*Egretta thula*), tricolored heron (*E. tricolor*), and the reddish egret (*E. rufescens*)] have not been documented. Regionally, CLWEA falls within the core foraging area for several wood stork colonies (based on 2010 data). Wood storks and other wading birds travel long distances in search of food and are highly influenced by regional water levels.

Statewide, this group of species is a moderate priority ([Statewide Species Prioritization Parameters](#)). Several species are listed as SSC and the USFWS lists the wood stork as Threatened. The Millsap biological scores for the reddish egret, little blue heron, and wood stork are high. The snowy egret, little blue heron, and roseate spoonbill have SGCN declining population trends while the tricolored heron and white ibis have unknown trends. The [SAP](#) for the wading birds has several objectives relating to improving population status for several species, and an objective to improve the quality and amount of wading bird habitat. Despite the limited amount of potential wading bird habitat, CLWEA can still support the conservation objectives of the SAP by maintaining wetlands in a quality condition with fire to reduce degradation.

Models indicate 471 acres of potential habitat within current natural communities on CLWEA and 593 acres if management can restore all natural communities. CLWEA provides foraging habitat, and a small

amount of roosting habitat, and can support the regional wading bird population. Wading birds can travel long distances between foraging and roosting habitat, and the opportunity to affect the regional populations of these species on CLWEA is low. While not dependent on actively-managed natural communities, wading birds benefit from the application of prescribed fire in wetland habitats. Where possible, fire should be allowed to burn across marshes and wetlands to decrease shrub encroachment. It is unlikely that wading birds would establish a breeding colony on CLWEA, however, if breeding colonies are found, managers will provide appropriate protection during land management activities ([Section 4.3.17](#)) and document and report those colonies ([Section 5.2.6](#)).

The goal is to provide suitable habitat for wading birds that will allow individuals using CLWEA to function as part of the regional population. The frequent application of prescribed fire that burns into wetlands can maintain suitable habitat conditions for wading birds on CLWEA. Although the area will not play a large role in supporting wading bird colonies, management actions and protections will ensure that these species will continue to use CLWEA.

3.2.18: Florida Black Bear

Florida black bears have not been documented on CLWEA, but do occur on the LWRSF approximately 10 miles east of CLWEA. In 2012, a bear was observed approximately 5 miles to the east of CLWEA, near Highway 27. Since 2012, there have been increased bear sightings in native and rural areas around the town of Frostproof. FWC's 2012 [Black Bear Management Plan](#) divides the state into geographic areas referred to as Bear Management Units (BMUs), and CLWEA is just outside the secondary range of the Glades/Highlands bear subpopulation, within the South Central BMU.

The Florida black bear is a wide-ranging species capable of significant dispersal, which is typically undertaken by males. Because females tend to establish a home range near where they were born, this species is slow to colonize new breeding territory and tends to grow out from existing populations. Home range sizes vary according to resource availability and the level of habitat fragmentation on the landscape. A mosaic of flatwoods, swamps, scrub oak ridges, bayheads, and hammocks provides adequate den sites, diverse food sources, and cover for traveling bears.

This species triggers 2 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)). In June 2012, the FWC approved a [Black Bear Management Plan](#) and removed the Florida black bear from the Threatened species list. The management plan is intended to guide continued recovery of this species through delineation of BMUs and identification of population goals and objectives therein. The Glades/Highlands subpopulation is one of the smallest bear areas in the state, therefore, the Management Plan did not include any goals or objectives for the habitat on or surrounding CLWEA.

Models indicate 915 acres of potential habitat within current natural communities on CLWEA and 834 acres if management can restore all natural communities. CLWEA contains wetland and forested habitat that could provide cover to bears moving across the landscape, and has a low opportunity to support the regional bear population.

Land management activities that promote a mosaic of vegetation structure across the landscape will provide forage and cover for bears. However, land management activities such as frequent prescribed fire can decrease denning habitat or cause direct mortality to denning bears. Denning is unlikely to occur on this area and prescribed fire has a greater overall benefit for bears and other focal species that persist on the area. Ongoing land management activities will continue to provide forage and cover for bears moving through the landscape. See [Section 4.3.18](#) for more information on land management considerations for black bears. Any observations of bears or bear sign on CLWEA should be recorded, as monitoring for bears on CLWEA will be opportunistic ([Section 5.2.6](#)).

The goal is to provide suitable habitat on CLWEA to ensure bears using CLWEA contribute to the persistence of the regional population. Although any single conservation area of CLWEA's size is unlikely to support a bear population, the protection measures afforded to conservation lands can help contribute to their regional range. By documenting any bear activity and conducting management to provide a diversity of forage types, area staff will fulfill the conservation needs for black bears on CLWEA.

3.2.19: Florida Mouse

The Florida mouse has not been documented on CLWEA. Florida mice have been documented on Polk County's Crooked Lake West tract and on the Sunray tract of the LWRWEA; approximately 5 miles southeast of CLWEA. The Florida mouse lives in sandhill and scrub habitats, and relies almost exclusively on gopher tortoise burrows for refuge. Gopher tortoises are common on CLWEA, and refuge does not appear to be a limiting factor for this species. Acorns are an important food source for this species, and mice will benefit from natural communities that retain oaks and other mast species. Florida mice benefit from having a diverse ground cover that provides a diversity of food throughout the year, and ongoing natural community management will help establish this diversity.

The Florida mouse triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)) and is listed by FWC as a SSC, although the current [SAP](#) recommends removing the Florida mouse from this list. Models indicate 93 acres of potential habitat within current natural communities on CLWEA and 192 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Literature suggests this species needs 75–200 acres to support a viable population. Potential habitat on CLWEA is in poor to fair condition for Florida mice, and may not be in a suitable condition that could support a viable population. Potential habitat is also not contiguous, and is split between the northeastern and southwestern corners of the property. However, management actions that improve suitability for gopher tortoises will also benefit this species.

Ongoing efforts to restore and maintain natural community structure and function will improve and maintain the suitability of habitat for this species. Management actions that maintain or enhance habitat for this species include prescribed fire and non-ground disturbing mechanical actions that aid in restoring natural community structure. The Florida mouse will benefit from a mosaic of vegetation conditions in MUs that contain suitable habitat characteristics. This is achieved by applying a variety of land

management techniques, such as promoting patchy burns during prescribed fire activities and by practicing the ‘sloppy chop’ method during mechanical treatments to retain an oak component.

There are no ongoing small mammal monitoring efforts on CLWEA. Because the area was acquired for supporting gopher tortoise and their commensals, FWC would prefer to know whether the Florida mouse occurs on CLWEA. For this reason, we recommend monitoring to determine the status of Florida mouse within the life of the Strategy ([Section 5.2.5](#)). If the SAP team or FWRI identify CLWEA as a priority area to receive monitoring, area staff should coordinate any surveys through species experts and researchers ([Section 6.1.1](#) and [Section 6.1.2](#)).

The goal for CLWEA is to provide suitable habitat to support the Florida mouse. Though the condition and juxtaposition of suitable habitat will likely not support a viable population, the Florida mouse will continue to benefit from management actions that promote a healthy gopher tortoise population on CLWEA. By continuing to apply prescribed fire and maintaining suitable habitat conditions, CLWEA will fulfill its role for this species. The measurable objective for this species is:

1. Determine if the Florida mouse is present on CLWEA by 2025.

3.2.20: Sherman’s Fox Squirrel

Sherman’s fox squirrels are commonly seen on CLWEA and the surrounding landscape, and reproduction has been documented on the area. Suitable habitat for Sherman’s fox squirrel includes longleaf pine sandhills or flatwoods with a mixture of mature pines and oaks, as well as a sparse-to-moderate shrub layer. Sherman’s fox squirrels appear to do best in mature longleaf pine stands that contain an open understory with an oak component. Fox squirrels often use large oaks for nest sites and for daytime refugia. In addition, acorns provide a major part of their diet. Mature longleaf pines that produce seed-bearing cones are an important energy-rich food source, particularly during summer. Frequent fire maintains a mosaic of habitat conditions across the landscape to ensure a year-round supply of food that varies seasonally.

The Sherman’s fox squirrel is an FWC-listed SSC and triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)). Pending the approval of the ISMP, Sherman’s fox squirrel will remain an SSC, with an objective to review its status before 2017. The current [SAP](#) for the Sherman’s fox squirrel focuses on determining the conservation status of the sub-species and has an objective to increase survival and productivity on private and public conservation lands. Objectives in the SAP include determining the extent of the species range and genetic units, which CLWEA will likely not play a major role in completing.

Models indicate 650 acres of potential habitat within current natural communities on CLWEA and 534 acres if management can restore all natural communities. See [Section 3.2](#) for more information about significant changes in potential habitat acreage. Potential habitat on CLWEA is currently in a condition suitable for use by fox squirrels, and will improve with continued management. The fox squirrel is a wide-ranging species and the literature suggests 2,000-9,000 acres of suitable habitat are required to

support a population. CLWEA does not contain enough habitat to independently support a population, but functions in support of the regional population. Because the species is relatively common on CLWEA, and breeding has been documented, there is a moderate opportunity to support the regional population.

Management actions that maintain or enhance habitat for fox squirrels include prescribed fire and mechanical actions that aid in restoring natural community structure, and timber management that results in open, mature pine forests with an oak component. Because this species naturally occurs at low densities and can be difficult to detect, no specific monitoring aside from opportunistic observation is recommended ([Section 5.2.6](#)). However, should the Sherman's fox squirrel SAP team standardize statewide monitoring, and CLWEA is identified as a priority area to receive monitoring, area staff should coordinate any surveys through species experts and researchers ([Section 6.1.1](#); [6.1.2](#))

The area goal is to provide suitable habitat for Sherman's fox squirrels that allows individuals on CLWEA to function as part of a regional population. Although no area the size of CLWEA will be able to independently support a population of fox squirrels, the protections afforded to conservation lands will continue to support the regional range of the species. By continuing to apply prescribed fire and maintaining suitable habitat conditions, CLWEA will continue to fulfill its role for this species.

3.2.21: Limited Opportunity Species

Three focal species, the Florida mottled duck, snail kite, and Florida panther, were modeled to have potential habitat on CLWEA using statewide habitat data, but lack reasonable opportunity for management. Opportunistic observations of these species should be documented ([Section 5.2.6](#)). If these species are documented with increasing regularity, the area's role in their conservation and recovery should be re-visited. As limited opportunity species, there is no need for SMAs, specific monitoring, goals, or measurable objectives.

Florida Mottled Duck - The status of Florida mottled ducks is unknown on CLWEA. Upland areas near wetlands are preferred by nesting females. Mottled ducks have been documented nesting in dry marshes, pine flatwoods, citrus groves and urban areas. Mottled ducks avoid habitats that include wet prairies, shrub and forested wetlands, open water and flooded areas. This species prefers shallow water <10 inches deep and wetlands with emergent vegetation. Potential foraging habitat can be enhanced through management activities that promote a mosaic of open water and cover within shallow emergent wetlands.

The mottled duck is not listed at either the state or federal level. This species triggers 2 of the 6 statewide prioritization parameters ([Statewide Species Prioritization Parameters](#)), making it a medium priority statewide. Natural community models indicate only 30 acres of potential habitat on CLWEA, with no significant increase if management can restore all natural communities to a historic condition. Given the small amount of potential habitat on CLWEA, the mottled duck is not a priority species for management at this time. However, ongoing efforts to maintain natural community structure and function will provide some benefit to this species in the form of a minimal amount of foraging habitat.

Snail Kite – Snail kites have not been documented on CLWEA and are unlikely to occur. The current range of the snail kite is restricted to watersheds of the Everglades, Lake Okeechobee, Kissimmee River, Loxahatchee Slough, and Upper St. Johns River. CLWEA is far removed from these areas, and generally outside of their foraging range. The snail kite is highly dependent upon availability of its primary food source, the apple snail (*Pomacea paludosa*), which requires high-quality wetland habitats with emergent vegetation. Water levels have a significant influence on snail kite nest success. The snail kite is a federally-Endangered species, triggers 4 of the 6 statewide prioritization parameters ([Statewide Species Prioritization Parameters](#)), and is a high statewide priority.

Potential habitat models indicate 131 acres of potential habitat on CLWEA (both within current natural communities and if management were to restore all natural communities). This amount of potential habitat is not enough for significant use by snail kites, and there are no large areas of open marsh or wetlands that would support snail kite foraging. Given the small amount of potential habitat on CLWEA, and because the purpose of acquisition was to support upland species, the area lacks a reasonable opportunity to manage for snail kites. Therefore, snail kites are a limited opportunity species.

Florida Panther - The Florida panther has been documented on the LWRSF, approximately 10 miles east of CLWEA, and on private and conservation lands along the Lake Wales Ridge. A male panther was hit by a car in Ft. Meade in 2014, approximately 10 miles west of CLWEA. All of the documented sightings are of dispersing males. The CLWEA is approximately 80 miles north of primary, secondary and dispersal zones for panthers. The [USFWS Florida Panther Recovery Plan](#) does not include CLWEA in its species-specific goals or objectives, and the panther breeding population is unlikely to expand into Polk County.

The Florida panther triggers 4 of 6 prioritization parameters ([Statewide Species Prioritization Parameters](#)). These scores, combined with small population size, high likelihood of extinction, and federal listing as Endangered make this species a high statewide priority. The Florida panther uses a variety of habitats including forested uplands, freshwater wetlands, dry prairie, old fields, pastures, and agricultural areas. Forested areas are preferred, but panthers use non-forested habitat for hunting and as travel corridors across landscapes. Considering the distance from the known range of the Florida panther, models indicate no potential habitat available for this species on CLWEA. However, since panthers have been documented near CLWEA, that limitation was lifted and models indicate 376 acres of potential panther habitat within current natural communities on CLWEA and 631 acres of potential panther habitat if historic conditions are restored in all natural communities.

The potential for denning to occur on CLWEA is low considering females have not been documented north of the Caloosahatchee River. If the Florida panther population continues to expand northward, CLWEA may have a role in connecting the panther population in south Florida with areas suitable for territory establishment north of the Lake Wales Ridge, which falls within habitat linkages identified by Florida Greenways. These greenways connect large tracts of preserved lands throughout Florida, and will be instrumental to any further panther population expansion. Furthermore, the Lake Wales Ridge could play a significant role for this species if predicted sea-level changes occur and the south Florida panther population responds by moving north. The relatively small size of CLWEA does not provide a

substantial opportunity to improve conditions for the Florida panther population. Management on CLWEA including ongoing efforts to restore and maintain natural community structure and function are compatible with the needs of this species.

3.3: Other Listed and Locally Important Species

While natural community management focused on a set of focal species provides benefits to a host of species reliant upon these natural communities, species that are imperiled sometimes require specific attention. Further, subsection 253.034(5) of the Florida Statutes (F.S.) requires all land management plans to include an analysis of the property to determine if significant natural resources, including listed species, occur on the property. If significant natural resources occur, the plan shall contain management strategies to protect the resources. The Florida Forever Act (s. 259.105, F.S.) adds that all State lands that have imperiled species habitat shall include restoration, enhancement, management, and repopulation of such habitats as a consideration in the management plan. In this subsection, we discuss listed or locally important species that are not PLCP focal species.

It is possible other imperiled species occur on CLWEA, and if encountered, staff will document these encounters. Florida's imperiled species are adapted to natural communities and should continue to benefit from FWC's ongoing or planned ecological management that aims to restore natural community structure and function. Under FWC's ecological management, these species have a higher probability of persistence than in the absence of this management.

3.3.1: Other Focal or Imperiled Wildlife

In addition to the listed species discussed in [Section 3.2](#), the American alligator (*Alligator mississippiensis*), eastern indigo snake (*Drymarchon couperi*), and Florida bonneted bat (*Eumops floridanus*) are the only other listed wildlife species that potentially occur on or near CLWEA.

American Alligator - The alligator is federally listed due to similarity of appearance with the American crocodile (*Crocodylus acutus*), which is federally listed as Threatened. Ongoing management to maintain healthy wetland habitats should ensure the continued existence of the alligator on CLWEA.

Eastern Indigo Snake – The eastern indigo snake is federally-Threatened and has been documented on CLWEA. Eastern indigo snakes have large home ranges and are vulnerable to habitat fragmentation. Habitat fragmentation can cause the loss of travel corridors between areas of suitable habitat within a home range, and can increase mortality of indigo snakes in areas with more roads.

Management actions that maintain or enhance habitat for this species include prescribed fire and mechanical treatments that aid in restoring natural community structure and function. Stumps and other coarse woody debris should be retained during land management activities ([Section 4.3.2](#)). If contractors are used to accomplish land management objectives, they should be educated in what to do if they encounter an eastern indigo snake. Opportunistic monitoring is recommended ([Section 5.2.6](#)). While there are no current plans to conduct large snake surveys on CLWEA, any future drift-fence surveys conducted on the area should include the use of large upland snake traps to ensure adequate detection of

large snakes. Planned and ongoing management appear compatible with the needs of the indigo snake. The regular application of prescribed fire and management favoring mature native pine stands should help ensure the long-term persistence of this species.

Florida Bonneted Bat - The Florida bonneted bat (*Eumops floridanus*) is not a focal species but is included in this section because it has been documented on the Avon Park Air Force Range (APAFR), and along the Kissimmee River. Originally a state-Threatened species, the USFWS listed the Florida bonneted bat as Endangered in 2013. The goal of the Florida Bonneted Bat [SAP](#) is to improve the conservation status of the Florida bonneted bat so the species is secure within its historical range. The SAP includes an objective to initiate research to fill data gaps and use existing information and results of research to promote Florida bonneted bat conservation.

Little is known about habitat preferences or habitat management recommendations for Florida bonneted bats. Prior to 2013, experts only confirmed bonneted bats roosting in bat houses on Babcock-Webb WMA in Charlotte County, and at a private residence in Ft. Myers. Biologists discovered a natural roost at the APAFR in 2013, located in an old red-cockaded woodpecker (*Picoides borealis*) cavity. In 2012, a triple-chambered bat house was installed on CLWEA to provide roosting habitat for bats on the area. While not specifically installed to attract Florida bonneted bats, if the box becomes occupied, FWC should coordinate with the FWC Mammal Conservation Coordinator to confirm the species using the box ([Section 6.1.1](#)).

Acoustic surveys to document bat species using CLWEA have not been conducted, but FWC should coordinate with any efforts to initiate research or monitoring for Florida bonneted bats near CLWEA. This will contribute to further knowledge about bat species that occur on CLWEA, and is supportive of [SAP](#) objectives. Further action may be necessary if bonneted bats are documented on the Lake Wales Ridge.

3.3.2: Rare Plants

While there has been no formal rare plant inventory on CLWEA, there are at least 3 imperiled plant species known to occur on the area. The State of Florida lists cutthroat grass as Endangered and garberia (*Garberia heterophylla*) as Threatened. Britton's beargrass (*Nolina brittoniana*) is a federally-Endangered species. The protections afforded plants by existing on conservation lands, in conjunction with exotic plant removal and prescribed fire, will continue to maintain habitat for these and other rare plants. As such, these species should persist on CLWEA.

While planned management is compatible with the needs of most imperiled plant species, area staff would benefit from a list of rare plant species on CLWEA. Therefore, we have made a measurable objective:

- 1) Request additional funding to contract for a rare plant inventory on CLWEA by 2025.

Cutthroat Grass – Cutthroat grass is found in several natural communities including flatwoods, prairie, and depression marsh edges. Cutthroat grass communities are usually associated with areas that have

groundwater seepage. On CLWEA, cutthroat grass is patchily distributed in native communities, and also around the edges of some of the pastures. This species benefits from frequent growing season fire, with a 2-4 year fire return interval, to maintain an open, grass-dominated character and to encourage flowering.

Garberia – Garberia is a low shrub whose flowers cover the entirety of the plant. It generally grows in acidic, sandy, loamy soil native to the sandhill regions of Florida. Garberia is found in sand pine and oak scrub in Central Florida, and benefits from the frequent application of prescribed fire.

Britton's Beargrass – Britton's beargrass is found in scrub, sandhill, scrubby flatwoods, and xeric hammock in Central Florida. Much of the habitat for this species has been lost to agriculture and development. On CLWEA, this species known to occur around the perimeter of MU 9 ([Figure 1](#)), and may occur elsewhere on the area. Management recommendations include the application of prescribed fire to stimulate flowering and eliminate competition from shrubs and trees. More information about this species is available via the [USFWS's species profile page](#), which includes links to the Federal Recovery plan, and the recent 5-year review.

Section 4: Land Management Actions and Considerations

Models identified potential habitat for 23 focal species on the area ([Section 3.1](#)); however, not all of these species have the same level of management opportunity or need ([Section 3.2](#)). The FWC's natural community-based management, which emphasizes frequent growing season prescribed fire, will promote the habitat conditions necessary for most of these species, without the need for further strategic management actions. Staff may designate SMAs when actions over and above ongoing natural community management are required in a specific location ([Section 4.1](#)). In addition, to ensure natural community management addresses the needs of these focal species, we evaluate the OBVM Desired Future Conditions (DFCs) for natural communities ([Section 4.2](#)). [Section 4.3](#) provides recommendations for species that need specific protective measures or land management considerations to ensure their continued use of the property.

4.1: Strategic Management Areas

The intent on CLWEA is to apply management actions that maintain intact natural communities in good condition and restore degraded or altered natural communities to a condition that will better suit focal and listed species. However, SMAs focus management actions on MUs with the highest possibility of success, or on MUs most critical for the conservation of a species on the WEA. Staff designates SMAs to achieve at least one of the following:

- Identify the area in which to apply specific land or species management that creates the highest probability for persistence and conservation of a species or suite of species. These specific actions should aid in restoring, enhancing, or maintaining the habitat or population.
- Identify an area in which to focus specific land or species management actions for the best chance of success, when there is more restoration and enhancement than can be accomplished in short

order on the WEA. This might be the first or next step in a sequential series of management actions that will increase the likelihood of occupation and or persistence of a specific species.

- Identify an area that is so critical to the persistence of a species on the WEA that it warrants special designation to ensure protection against negative alteration.
- Identify areas that are critical for research or monitoring.
- Recommend MU-specific natural community DFCs that differ from the DFCs in the natural community area-wide, when this is necessary to benefit a specific species.

The WCPR workshop gave participants the opportunity to evaluate if there was the need for SMAs to meet the needs of focal species. Workshop participants agreed that planned and ongoing management actions on CLWEA will meet the needs of the majority of focal species; therefore, they did not designate any SMAs through the workshop process.

4.2: Objective-Based Vegetation Management Considerations

OBVM is an approach to land management that emphasizes maintaining and restoring natural plant communities towards pre-determined desired conditions. The OBVM DFCs ([Table 2](#)) target a range in values for various habitat attributes within actively managed communities. However, if a focal species requires a more restricted range in habitat attributes than is reflected in the area-wide DFCs, or depends on an attribute that is not currently monitored on CLWEA, we may recommend adjusting the DFC range or adding the attribute. The workshop gave participants the opportunity to evaluate if the current DFCs meet the needs of focal species and if not, to suggest modifications. The following are common reasons to modify DFCs:

- To obtain maximum habitat suitability for a species that requires a more restricted range of DFC values than the current DFC values.
- To benefit a particular species in specific MUs; typically when we have designated a SMA that requires a change in natural community DFCs only within the SMA and not in the natural community area-wide.
- To add an attribute that was not previously monitored.

At the WCPR workshop, CLWEA and regional staff reviewed the reference site values and determined that they are appropriate for CLWEA. Reference site values are derived from reference sites, which are areas identified by FNAI as representing the highest quality examples of natural communities in the State.

Table 2. FNAI Reference Site Desired Future Conditions (DFCs) for specific vegetative attributes on CLWEA.

Crooked Lake WEA OBVM Attributes	Mesic Flatwoods (peninsular Florida)	Wet Flatwoods (herbaceous)	Sandhill
Basal Area of Pine (sq ft per acre)	10-50	10-50	20-60
Non-Pine Stem Density (7 m radius)	0	0	< 3
Subcanopy (2 - 4" DBH)	0	0	0

Maximum Shrub DBH (in)	< 0.5	<0.5	< 1
Shrub Stem Density > 3 ft	< 1	< 1	0
Average Maximum Shrub Height (ft)	< 2	< 3	< 2
Shrub Cover (%)	< 30	< 10	< 16
Serenoa Petiole Density > 3 ft	0	0	0
Average Maximum Serenoa Height (ft)	< 3	< 3	< 3
Serenoa Cover (%)	10-30	< 10	< 10
Herb Cover (%)	> 15	> 40	> 15

4.3: Further Land Management Considerations

Most generalist or wide-ranging species will benefit from management that restores the structure and function of natural communities they use. However, specific management recommendations and precautions are necessary to ensure continued suitability of the area for some species. The following recommendations should help ensure CLWEA continues to fulfill its role in the conservation of these species.

4.3.1: Gopher Frog

Gopher frogs frequently move between wetland breeding ponds and adjacent uplands. Area staff should not place new firebreaks or roads along wetland ecotones because they can alter or destroy the herbaceous component of pond margins preferred by this species and other amphibians. Wet-lining can be an alternative to mineral firebreaks around wetlands if necessary; however, managers should allow fire to burn through the wetland. Area staff should use prescribed fire as the primary tool to remove shrubs and other thick vegetation from pond margins. Mechanical and chemical treatments should be used sparingly to reduce effects on pond-breeding amphibians. Area staff should minimize soil disturbance within 500 yards of potential breeding ponds during land management actions.

Growing season (April–September) burns are more beneficial to gopher frogs than dormant season (October–March) burns. Growing season burns are more effective at reducing shrub cover and litter in the wetland basin, stimulating the growth of herbaceous emergent vegetation, enhancing the wetland/upland ecotone, and stimulating the reproduction of wiregrass in the surrounding uplands. Burns should occur during the early growing season when the wetland is likely dry, although fire frequency is more important and a dormant season burn is better than not burning.

4.3.2: Florida Pine Snake and Eastern Indigo Snake

Large upland snakes are relatively wide-ranging and elusive. Ongoing land management actions such as prescribed fire and mechanical treatments will enhance the suitability of pine and indigo snake habitat. However, these actions have the potential to cause direct mortality to upland snake species. When using heavy equipment during land management activities, staff should avoid direct mortality if possible. In general, staff should leave coarse woody debris and residual stumps intact whenever possible to provide cover for these species. While it is acceptable to pile and burn excess logging slash if necessary, staff should ensure some debris remains in the stand to provide cover for this species and check piles for the presence of pine snakes prior to burning. Creating brush piles can provide cover for these species if escape cover is lacking. When burning brush piles, managers should avoid encircling the entire pile with fire, which would prevent the escape of wildlife that may be inside.

4.3.3: Gopher Tortoise

Gopher tortoises are generally less active and remain in burrows for longer periods of time during the winter months; therefore, area staff should conduct mechanical treatments during the season when this species is dormant. To minimize negative impacts to gopher tortoises, mechanical equipment operators should use caution when working in areas where tortoises or burrows occur. As it is difficult for equipment operators to see hatchling tortoises, staff should avoid mechanical treatments during months when hatchlings are most abundant (September-October) when practical. However, also consider how timing of the treatment will affect management results, as growing season treatments are frequently more successful in creating the diverse groundcover required by the gopher tortoise. Regardless of timing, area staff should make an effort to minimize impacts to known burrows, whether active, inactive, or abandoned.

4.3.4: Sand Skink

Prescribed fire techniques that promote patchy burns and retain open, sandy areas are ideal for sand skinks. As fossorial lizards, soil compaction and damage from mechanical treatment could have a negative effect on sand skinks. Mechanical treatment may be necessary to achieve desired vegetation characteristics during restoration activities. To retain the patchy mosaic desired by this species and to reduce soil compaction, the use of heavy equipment should be limited in areas that are a priority for this species, and when mechanical treatments are applied, a “sloppy chop” technique using low ground-pressure equipment (e.g., a Gyrotrac) is preferred. To the extent practical, avoid widespread mechanical treatment in areas with a high density of sand skink tracks.

4.3.5: Bachman’s Sparrow

Prescribed fire improves habitat quality for Bachman’s sparrows, and is the primary land management tool recommended to promote habitat for this species on CLWEA. Suitable habitat can be created and maintained through frequent (≤ 3 year rotation) use of prescribed fire in sandhills and flatwoods. The occurrence of fire is critical to sustaining this species as use of an area by Bachman’s sparrows declines rapidly around 18 months post-fire, and the species may abandon habitat if fire is excluded for >3 years. Males use small shrubs as singing perches, therefore area staff should apply the ‘sloppy chop’ technique

when using mechanical treatments to reduce understory. Staff should also always follow mechanical treatment with a prescribed burn to promote regrowth of herbaceous plants.

4.3.6: Brown-Headed Nuthatch

Brown-headed nuthatches are dependent on the presence of snags for suitable nesting habitat. As such, retain snags during land management activities and ensure that new snags replace consumed snags by evaluating management practices. Old short snags with flaking bark and soft wood, and old decaying oaks with a diameter at breast height of <10 inches are important nesting sites for this species. During land management actions, area staff should take care to retain these particular types of snags.

For brown-headed nuthatches, the loss of nests early in the season frequently results in re-nesting attempts. Since most re-nesting occurs during periods of increased snake activity, this can result in greater predation on nesting females, their eggs, and young. If brown-headed nuthatches are documented in a specific area, staff should therefore make the effort to avoid burning the area between February and March. However, if this is the only time in which suitable conditions occur for a burn, it is better to burn than to avoid burning.

4.3.7: Burrowing Owl

If burrowing owls are located on the area, burrows should be protected from disturbance. When active burrows are identified, activity within 33 feet should be avoided from February through early July. Heavy equipment should not be used around burrows to avoid collapsing them. The SCP Regional Biologist can be used a resource to identify which actions may be detrimental to burrowing owls ([Section 6.1.1](#)).

4.3.8: Cooper's Hawk

During the nesting season (April-July), Cooper's hawks are secretive and intolerant of human disturbance near the nest site. Males show a strong fidelity to traditional territories. For this reason, protect known nests from disturbance during land management activities by maintaining a 50-foot buffer around the nest during the nesting season. When practical, area staff should avoid heavy alteration of the habitat surrounding the nest. Whenever signs of Cooper's hawk nesting (e.g., carrying nesting material, aggressive dive bombing) are encountered, document the location and make an effort to protect the nest site.

4.3.9: Crested Caracara

Caracaras have high fidelity to their home ranges and nesting sites; efforts should be made to protect nesting sites and maintain foraging habitat within occupied territories. Management actions like mowing and prescribed fire will improve habitat conditions by creating areas with low ground and shrub cover. However, increased human activity should be avoided within 1,000 feet of the nest during the first 2-3 weeks of nesting, as this is when adults are most likely to abandon a nest due to disturbance. If nests are

documented on CLWEA, ensure management is conducive with the needs of this species by following the management guidelines found at:

Morrison, J.L. 2001. [Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara \(*Caracara cheriway audubonii*\) in Florida](#). Florida Fish and Wildlife Conservation Commission, Technical Report No. 18. Tallahassee, Florida, USA.

4.3.10: Florida Sandhill Crane

Prescribed fire improves the quality of upland habitat for this species, and maintains wetlands in suitable condition by reducing invasion by shrubby and woody species. Cattle grazing can also maintain open conditions preferred by this species. Increased shrub cover around wetlands impedes crane movement while increasing the potential of predation by bobcats (*Lynx rufus*). Mechanical treatments can be useful in reducing brush on wetland edges when the effect of fire is limited. In known nesting areas, management actions should occur outside of the nesting season (December - June) and after the young are able to fly. A 400-foot buffer around nest sites will minimize the likelihood of disturbance. Managers should consider the seasonality of wetland management activities to avoid flooding of nests or reducing foraging habitat. For management recommendations see:

Stys, B. 1997. [Ecology of the Florida sandhill crane](#). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 15. Tallahassee, Florida, USA.

4.3.11: Florida Scrub-Jay

Area staff should manage scrub and scrubby flatwoods using methods described in the FWC's draft Scrub Management Guidelines to maintain a mosaic of habitat conditions in smaller areas. Vegetation within these habitats mature and become thick and unsuitable for scrub-jays if left un-managed. Prescribed fire that is patchy (leaving some unburned patches) benefits scrub-jays. Where open sand is limited, chemical or mechanical treatments, or pile burns can help create open patches of sand. Make use of the 'sloppy chop' technique when applying mechanical treatments.

Habitat becomes less suitable when the average shrub height exceeds 6 feet or when all vegetation in a territory is <4 feet tall. Optimal habitat has <1 pine per acre, though scrub-jays can tolerate 1 to 2 pine trees per acre. Maintaining the latter density may help in some scrubby flatwoods that lack sandy openings, as limb-cast can create local hotspots during prescribed fire. High pine densities and encroaching forest edges will decrease habitat suitability for scrub-jays by providing cover and perches for predators. Small patches of taller scrub (6-9 feet) cumulatively comprising no more than 1 acre per territory provide habitat heterogeneity. Open ground in the form of open sand or sparse herbaceous vegetation should cover 10–50 % of the territory.

4.3.12: Northern Bobwhite

The primary land management tool used to benefit northern bobwhite is the frequent use of prescribed fire. Area staff should ignite fires using a variety of firing techniques and environmental conditions with

the goal of promoting mosaic burns. Mosaic burns result in a patchwork of burned and unburned areas that meet different life history requirements for northern bobwhite. Growing season fires are generally preferred as they trigger flowering and viable seed production in many native species. Recent evidence suggests that the frequency of fire in flatwoods communities may be just as important as the seasonality of burn. Therefore, in the absence of growing season burns, it is better to burn the unit during the following dormant season rather than waiting until the following summer.

4.3.13: Short-Tailed Hawk

Short-tailed hawks exhibit high nest site fidelity, and nest areas are used for multiple years, even if not active every year. Nests of this species are difficult to locate and monitor. If nest sites are located, area staff should protect active nests from disturbance by maintaining a 330-foot buffer around the nest during the nesting season. Area staff can protect the integrity of the entire nest site by avoiding heavy alteration of the nesting location. Retaining the largest, oldest trees on the landscape during land management activities can also protect potential future nest trees. Report new nests to ARCI ([Section 6.4](#)).

4.3.14: Southeastern American Kestrel

Southeastern American kestrels are dependent on the occurrence of open upland habitats that contain a number of snags for nest sites and perches. While ongoing management will encourage the open foraging condition this species requires, make an effort to retain large snags during land management activities. Protecting snags when safe and practical, and promoting the creation of new snags in areas currently lacking will benefit southeastern American kestrels. If nesting is documented, staff should minimize the amount of mechanical activity within 500-feet of the nest during the nesting season and protect the snag during prescribed fires. For more information on management for kestrels, see:

Stys, B. 1993. [Ecology and habitat protection needs of the southeastern American kestrel \(*Falco sparverius paulus*\) on large-scale development sites in Florida](#). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 13. Tallahassee, Florida, USA.

4.3.15: Southern Bald Eagle

State and federal law requires protection of bald eagles, including avoiding disturbance of active nesting. There are no bald eagle nests currently documented on CLWEA. However, should nesting occur, managers will follow the management guidelines in the [Bald Eagle State Management Plan](#) when planning activities within 660-feet of known eagle nests. Area staff should document the location of any newly-identified nests. If the location is in an actively-managed community, staff should contact the FWC bald eagle coordinator to match up the timing of land management activities with the nesting season (October 1 – May 15).

As this species is surveyed on a statewide basis, the [FWC Bald Eagle Nest Locator](#) will be checked annually to determine if any new nests are documented. Since CLWEA is only included in the aerial survey on a 3-year rotation, observations of new nests by staff are an important tool for documenting and

tracking nest tree locations. Bald eagles find unnaturally dense stands around nest trees undesirable. If nests are found on CLWEA, area staff should continue to manage stands in which eagle nests occur, but avoid negative impacts to the eagles per the guidance of the management plan. During management activities, retain large, mature pines as potential future nesting sites.

4.3.16: Swallow-Tailed Kite

Swallow-tailed kites exhibit high nest site fidelity, therefore, area staff should protect known nest sites from disturbance and alteration, and retain all of the tallest pines in the area of nest sites. Maintaining a 330-foot protective buffer around active nests during nesting season should minimize the chance of disturbance. When possible, kite nesting areas should be managed to have a higher shrub height and density than surrounding areas as this may reduce the likelihood of nest predation. If kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or congregating in groups of 3 or more, document this information and try to locate the nest. While kites have not been documented nesting on CLWEA, it is important to preserve future potential nest trees. This can be done by retaining the largest, oldest trees on the landscape during land management activities. For information on how to locate nests, see:

Meyer, K. D., and M. W. Collopy. 1995. [Status, distribution, and habitat requirements of the American swallow-tailed kite \(*Elanoides forficatus*\) in Florida](#). Project Report, Florida Game and Fresh Water Fish Commission, Tallahassee, Florida, USA.

4.3.17: Wading Birds

It is possible that ongoing actions (e.g., prescribed fire, timber harvest) could have negative impacts on wading birds if the needs of the species are not considered during the planning of these actions. During the nesting season, providing a 330-foot buffer around nesting colonies will ensure adequate protection. Additionally, plan any mechanical or chemical control of vegetation at a time that avoids disturbance to the colony, and use methods that do not damage the plants where nests are constructed.

4.3.18: Florida Black Bear

Bears require large areas of dense vegetation for escape and denning cover. They also require a mosaic of dense cover and edge habitat, in both uplands and wetlands, which provides seasonally abundant forage. Efforts to restore flatwoods to a more open landscape with reduced tree density, lower shrub height, and reduced shrub cover may reduce denning and escape cover for bears. However, these same efforts may increase forage availability of some mast-producing plant species.

Land management activities that provide a mosaic habitat structure, particularly with multi-aged palmetto patches, will provide escape cover and foraging habitat for bears. During mechanical treatment along the transitional zone between hardwood swamps and uplands, retain patches of dense vegetation to provide foraging cover. Area staff should attempt to preserve connectivity between dome swamps and depressional wetlands to allow appropriate cover for bears to move across the area.

Section 5: Species Management Opportunities

Land management that considers the needs of a suite of focal species provides direct benefits to many associated species. However, land management actions alone are insufficient to maintain or recover some species. These species need species-specific management ([Section 5.1](#)). Additionally, monitoring ([Section 5.2](#)) is required to verify management is having the desired influence on wildlife. [Section 5.3](#) identifies research necessary to guide future management.

5.1: Species Management

Species management as used here refers to actions other than land management, monitoring, or research, taken for a specific species. Species-specific management actions can include actions such as translocation, restocking, or installing artificial cavities. These actions may be needed for species that are currently present but occur at low densities, have low reproduction potential, or have other limitations that inhibit recovery. Additionally, species that are not present on a site, have limited dispersal capabilities, or are unlikely to occupy a site without reintroduction may require species-specific management. [Section 2](#) and [Section 4](#) provide information on land management actions, such as prescribed fire or mechanical treatments.

5.1.1: Southeastern American Kestrel Nest Boxes

Three southeastern American kestrel nest boxes were installed on CLWEA in 2009 and have been monitored annually since installation. The purpose of this species management action is to promote nesting opportunities for this species on CLWEA. Area staff will continue to maintain and monitor nest boxes by cleaning out the boxes in January or early February, repairing or replacing boxes that are damaged, and adding coarse wood shavings or chips as nesting material. The FWRI project is part of a statewide effort to erect and monitor southeastern American kestrel nest boxes. As monitoring identifies the need, staff will erect, maintain, and monitor new nest boxes in appropriate kestrel habitat.

5.2: Species Monitoring

Monitoring is critical to evaluating the effect of the management on wildlife. While we are unable to monitor all of the focal species on CLWEA, the recommended monitoring will assess species in all actively managed communities. The FWC will make monitoring data available to cooperating agencies and organizations ([Section 6](#)).

This section lists the monitoring recommended for CLWEA as well as the purpose for each monitoring effort. The FWC is in the process of standardizing monitoring protocols for a number of these species and developing the Survey and Monitoring Protocol Database (SaMP), a central database for storage of monitoring data. Area staff will work with the WHM regional Conservation Biologist to implement standardized protocols, standardize ongoing monitoring that does not have a standardized protocol, and ensure data is included in the central database.

5.2.1: Gopher Frog Presence-Absence Monitoring

Within the lifetime of the WCPR Strategy, staff should attempt to determine the status of gopher frogs on CLWEA. Gopher frogs require xeric uplands that have associated ephemeral wetlands, and CLWEA likely contains enough of both features to support a viable population of this species. Area staff could accomplish species monitoring by recording opportunistic observations of gopher frog calls when conducting other activities near potential breeding ponds during the appropriate season. Also, gopher tortoise burrow-scoping surveys have detected gopher frogs on other areas and could potentially detect their presence on CLWEA ([Section 5.2.2](#)). FWRI periodically dip-net for pond-breeding amphibians across Florida, and local staff can assist with future dip-net efforts, if FWRI identifies CLWEA as a priority area for monitoring ([Section 6.1.2](#)). Any of these methods are an acceptable way of attempting to determine the status of gopher frogs on CLWEA.

If any of the above survey methods are not conducted on CLWEA, area staff should attempt to conduct species-specific surveys for gopher frogs. Frog call surveys are a common way of detecting potential breeding ponds, and area staff can apply the methodology described in FWC's standardized monitoring protocol for [Gopher Frog Call Surveys](#). If any two of the above methods are applied within the life of the Strategy and gopher frogs are not detected on CLWEA, we will presume that the species is absent on the area. All gopher frog observations should be shared with SCP and FWRI to help species experts and researchers define the distribution of populations in the state ([Section 6.1.1](#) and [Section 6.1.2](#)).

5.2.2: Gopher Tortoise Monitoring

The purpose of gopher tortoise monitoring will be to track the distribution and relative abundance of the species to determine the effect of management on the population trend. Previous surveys followed the established gopher tortoise mitigation park protocol. However, the FWC is part of a gopher tortoise CCA and the members of this Agreement have adopted the LTDS monitoring protocol for the gopher tortoise throughout its range. LTDS will allow for estimating the gopher tortoise population size with confidence intervals, which will allow managers to track changes in the population rather than just changes in the number of burrows.

The benefits of the LTDS protocol are that it counts occupied tortoise burrows and there is the potential to detect commensals, including gopher frogs, Florida mice, eastern indigo snakes, and pine snakes. This protocol requires each burrow to be scoped along a given length of transects. The length of transects needed to estimate the gopher tortoise population within a certain level of confidence ($\leq 20\%$ Coefficient of Variation) is estimated by conducting a pilot study to calculate the encounter rate of occupied burrows. Area staff or consultants should complete pilot survey every 5 years to estimate an area-specific encounter rate and conduct a full survey when appropriate. Data will be reported to the gopher tortoise management plan coordinator ([Section 6.1.1](#)) and entered into the SaMP database.

5.2.3: Sand Skink Monitoring

The purpose of sand skink monitoring is to determine if the species is present on CLWEA. As fossorial lizards, sand skinks leave a distinctive track in the soil. Surveys can include walking transects to search for tracks, or leaving out coverboards and then checking for tracks underneath them periodically. A formal survey [protocol](#) is available from the USFWS. Since the purpose of sand skink surveys on

CLWEA is to determine if they are present in a relatively small amount of potential habitat, staff will determine and implement the appropriate level and type of monitoring, given the current amount of available resources.

5.2.4: Southeastern American Kestrel Nest Box Monitoring

The purpose of monitoring kestrel nest boxes is to determine the extent of nesting by southeastern American kestrels on CLWEA, and to track nesting in boxes over time. Monitoring will be conducted using a protocol developed by FWRI and standardized within the WHM Section ([Southeastern American Kestrel Nest Box Monitoring](#)). Area staff and FWC's Southwest Region volunteers, with assistance from the regional Conservation Biologist, will conduct monitoring activities. Data will be entered into SaMP and shared with FWRI ([Section 6.1.2](#)).

5.2.5: Florida Mouse Presence-Absence Monitoring

The purpose of Florida mouse monitoring is to determine the status and distribution of the species on CLWEA. Area staff will survey scrub, scrubby flatwoods, and sandhill using FWC's standardized monitoring protocol for Florida Mouse Occupancy Surveys. The recommended monitoring effort is intended to provide information on the presence and general distribution of the species on the area. In addition to detections, capture rate (capture per trap effort) can also be used as an index of relative population abundance on the area.

5.2.6: Opportunistic Monitoring Opportunities

The purpose of opportunistic monitoring is to document the presence of specific species. Opportunistic monitoring is the process of recording important information as it is encountered using the [Opportunistic Observations for Wildlife protocol](#). Documentation of opportunistic sightings including information on species, date of the observation, observer, approximate latitude/longitude or appropriate MU, number of individuals, behavior, and habitat type should be entered into the SaMP database. Monitoring data will be made available to cooperating agencies and organizations such as FNAI ([Section 6.5](#)). Record observations or sign of the following focal species:

- Gopher frog
- Eastern indigo snake
- Florida pine snake
- Sand skink
- Bachman's sparrow
- Brown-headed nuthatch
- Cooper's hawk
- Florida mottled duck (nests or flightless young)
- Florida sandhill crane (nests and adults with flightless young)
- Florida scrub-jay
- Short-tailed hawk

- Southeastern American kestrel (May – July)
- Southern bald eagle (record and report new nests to baldeagle@myfwc.com)
- Swallow-tailed kite (aggregations of 3 or more birds on regular basis in one area during spring and any nesting activity)
- Wading birds
- Florida black bear
- Sherman’s fox squirrel
- Any listed species that does not have a monitoring protocol in this section.

5.3: Species Research Needs

Species management recommendations in other sections of this document are based on the most current information available. Cases may arise where little or no information is available to guide management, and research is needed. Further, many of these focal species do not have standard monitoring protocols and research is needed to determine the most efficient means of monitoring them. For many of the focal species, research is needed to provide managers with information about aspects of natural history, such as minimum habitat patch size, preferred habitat parameters, and response to habitat management activities. Through the WCPR process, neither workshop participants nor species experts identified any species research needs specific to CLWEA.

Section 6: Intra/Inter Agency Coordination

The WCPR process identified many recommendations regarding possible management actions for focal species. WHM staff can handle most proposed management actions; however, coordination with other sections in FWC or with other agencies sometimes is necessary or more efficient. This section describes coordination that is necessary outside of the WHM section, identifies the entity to coordinate with, and provides position contacts for these entities. We attempt to provide the name, position, and contact information for the people holding the position when the Strategy was drafted. As positions experience turnover, when in doubt, contact the current Section Leader or supervisor to determine the appropriate person now holding the position.

6.1: Florida Fish and Wildlife Conservation Commission

6.1.1: Species Conservation Planning Section (SCP)

Monitoring animal populations on a WMA/WEA gives managers a way to gauge animal response to management. If this information is not shared with others, valuable data that can be used to assess statewide conservation efforts is often lost. Managers will share monitoring data with the appropriate taxa coordinator and with program coordinators for species that are part of conservation initiatives or other management programs. The regional SCP biologist is a good source of information on the regional status of non-game species. Additionally, FWC staff is authorized to handle federally-listed species as long as actions are consistent with the requirements of the agency’s [Endangered Species Act Section 6 Cooperative Agreement](#). To meet these requirements, staff will provide reporting as outlined in the

Agreement to the agency's Endangered Species Coordinator. Please note some contacts will also be covered under [Section 6.1.2](#); FWRI, and [Section 6.1.4](#); Florida's Wildlife Legacy Initiative (FWLI).

Contacts:

Brad Gruver, Species Conservation Planning Section Leader: (850) 617-9502

Craig Faulhaber, Avian Conservation Coordinator: (352) 732-1225

Terry Doonan, Mammalian Conservation Coordinator: (386) 754-1662

Brooke Talley, Reptile and Amphibian Conservation Coordinator: (850) 921-1143

Deborah Burr, Gopher Tortoise Management Plan Coordinator: (850) 921-1019

Michelle van Deventer, Bald Eagle Management Plan Coordinator: (941) 894-6675

Angela Tringali, Florida Scrub-Jay Coordinator: (352) 732-1225

Nancy Douglass, Regional Biologist: (863) 648-3827 ext 3827

Amy Clifton, Assistant Regional Biologist: (863) 648-3817

6.1.2: Fish and Wildlife Research Institute (FWRI)

Area staff will cooperate with FWRI staff conducting monitoring and research for bald eagles by reporting new eagle nests through the FWC bald eagle database. Area staff will cooperate with Kevin Enge on issues regarding herpetofauna and report documentation of these species to FWRI. The research administrator oversees the FWC's [migratory bird scientific collection permit](#). [Report](#) handling of migratory birds, as covered by the permit, to the research administrator Janell Brush in January of each year.

Contacts:

Robin Boughton, Section Leader: (352) 334-4218

Jeff Gore, Biological Administrator (mammals): (850) 767-3624

Andrew Cox, Research Administrator (avian): (352) 334-4241

Anna Farmer, Reptile and Amphibian Subsection Leader: (352) 334-4216

Ron Bielefeld, Wildlife Biologist (Florida mottled duck): (561) 722-1574

Janell Brush, Avian Research Biologist (bald eagle nest monitoring): (352) 334-4202

Karl Miller, Associate Research Scientist (avian): (352) 334-4215

Kevin Enge, Associate Research Scientist (herps): (352) 334-4209

6.1.3: Office of Conservation Planning Services (CPS)

Conservation Planning Services (CPS) works with private landowners and may be able to assist in making contacts or providing incentives for management activities on neighboring private lands. CPS also provides environmental commenting to ensure regional projects do not negatively influence the area. Maintaining communication regarding current and future projects will be critical.

Contacts:

Scott Sanders, CPS Office Director: (850) 617-9548 ext 9548

Luis Gonzalez, Regional Coordinator: (863) 648-3826 ext 3826

6.1.4: Florida's Wildlife Legacy Initiative (FWLI)

FWLI is an FWC led program developed to generate and coordinate cooperative conservation projects that address high priority issues identified in [Florida's State Wildlife Action Plan](#). FWLI can assist in identifying potential partners and assisting with collaborative efforts for monitoring and management of focal species. FWLI is a potential source of project funding via [Florida's State Wildlife Grants program](#). Regular communication with this section will be valuable.

Contacts:

Brian Branciforte, Program Administrator: (850) 617-9476

Kevin Kemp, Wildlife Legacy Biologist: (863) 648-3200

6.1.5: Invasive Plant Management Section (IPM)

The Invasive Plant Management Section (IPM) provides technical and financial assistance to assist in the control of upland and aquatic invasive exotic plants. IPM can serve as a resource in identifying appropriate solutions to, and funding for, exotic plant issues.

Contacts:

Bill Caton, Section Leader: (850) 617-9428

Linda King, Subsection Leader: (850) 617-9428

Donald Eggeman, Biological Administrator: (850) 617-9500

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan

Danielle Kirkland, Biological Administrator: (863) 534-7074

Michael Sowinski, Biological Scientist: (863) 534-7074

6.1.6: Ridge Rangers Volunteer Program

The Ridge Rangers volunteer program is actively involved in conservation programs on the Lake Wales Ridge. FWC manages this program, based at the LWRWEA. The program operates regularly scheduled workdays, as well as a variety of independent activities. The Ridge Rangers can assist with many different types of projects, and could also be a resource for assistance with wildlife monitoring.

Contact:

Bill Parken, Volunteer Coordinator: (863) 699-3937

6.1.7: Imperiled Species Management Section (ISM)

The Imperiled Species Management Section (ISM) is responsible for the implementation and evaluation of imperiled species management and recovery plans, and have staff dedicated to management of the Florida panther and the Florida black bear. Staff can coordinate with these individuals on issues related to these species.

Contacts:

Carol Knox, Section Leader: (850) 922-4330

Darrell Land, Panther Team Leader: (239) 417-6352

Dave Telesco, Biological Administrator (bears): (850) 922-4330

Mike Orlando, Biological Scientist (bears): (386) 965-2464

6.2: Florida Forest Service (FFS)

The FFS provides authorizations for prescribed burning and assists in controlling escaped fires. FFS can provide assistance with timber management including administration of contracts for thinning operations. Staff should continue to coordinate prescribed fire and timber management activities with FFS.

Contacts:

Rick Britt, Forest Area Supervisor – East, Polk County: (863) 635-8592

Butch Mallett, Senior Forester – Timber Management: (850) 228-7809

6.3: Avian Research and Conservation Institute (ARCI)

ARCI surveys and keeps information on swallow-tailed kite and short-tailed hawk populations. Location information on the swallow-tailed kite and short-tailed hawk, particularly nests or nesting behavior, should be shared with ARCI.

Contacts:

Dr. Ken Meyer, Avian Researcher: (352) 335-4151; meyer@arcinst.org

Gina Kent, Research Ecologist and Coordinator: (352) 514-5607; ginakent@arciinst.org

6.4: Polk County Parks and Natural Resources Division

FWC cooperated with Polk County to purchase CLWEA, and several Polk County conservation areas are located immediately adjacent to and in the vicinity of CLWEA. FWC will continue to cooperate with Polk County where possible to coordinate land management activities, and share species occurrence information.

Contacts:

Gaye Sharpe, Natural Areas Manager: (863) 534-7377

Tabitha Biehl, Environmental Lands Stewardship Coordinator: (863) 534-7377

6.5: Florida Natural Areas Inventory (FNAI)

FNAI collects, interprets, and disseminates ecological information critical to the conservation of Florida's biological diversity. The FNAI's database and expertise facilitate environmentally sound planning and natural resource management to protect the plants, animals, and communities that represent Florida's natural heritage. The FNAI maintains a database of rare and listed species that is often used for planning purposes. As such, staff should share information about tracked species occurrences on CLWEA with FNAI to ensure this information is included in their database. FWC also has a contract with FNAI for plant and animal surveys if the need exists and resources are available.

Contacts:

Dan Hipes, Chief Scientist: (850) 224-8207

Kim Gulledge, Senior Ecologist: (850) 224-8207

6.6: United States Fish and Wildlife Service (USFWS)

The USFWS has listed the Florida scrub-jay as Threatened and the sand skink as Endangered. Britton's beargrass is also a federally-Endangered plant species that occurs on CLWEA. FWC should continue to partner with the USFWS on projects relating to any federally-listed species.

Contacts:

Todd Mecklenborg, Fish and Wildlife Biologist: (727) 820-3705

Section 7: Beyond the Boundaries Considerations

With appropriate management, there is enough potential habitat on CLWEA to support the gopher tortoise, the species for which the area was purchased. CLWEA also has enough potential habitat to support independent, viable populations of other focal species. With appropriate management, CLWEA will continue to fulfill a conservation role in the surrounding landscape.

Through proper management of mesic flatwoods, wet flatwoods, sandhill, scrub, and scrubby flatwoods, CLWEA can help support a number of fire-dependent species, such as the gopher tortoise, Bachman's sparrow, northern bobwhite, Sherman's fox squirrel, and southeastern American kestrel. Many of the wide-ranging focal species (e.g. wading birds, Cooper's hawk, southern bald eagle, swallow-tailed kite, short-tailed hawk, and Florida black bear) are not common on CLWEA, but the area will contribute to the long-term persistence of these species in the surrounding landscape because of the proximity of the WEA to nearby conservation lands, including Polk County lands and the LWRSF.

The current management boundaries identified for CLWEA do not include all important habitat for focal species, including lands identified as Strategic Habitat Conservation Areas (SHCAs) for the swallow-tailed kite and Cooper's hawk. The FWC originally identified SHCAs in the Closing the Gaps in Florida's Wildlife Habitat Conservation System report. The goal of SHCAs is to identify the minimum amount of land needed in Florida to ensure long-term survival of key components to Florida's biological diversity. The SHCAs identify important habitat conservation needs remaining on private lands. A recent FWC update to the Closing the Gaps entitled "[Wildlife Habitat Conservation Needs in Florida](#)" identified new SHCAs. The swallow-tailed kite, short-tailed hawk, Cooper's hawk, Florida scrub-jay, Florida mouse, burrowing owl, Florida black bear, snail kite, and Florida panther are species for which an SHCA was identified within 3 miles of CLWEA. Although it is unlikely Florida will acquire all property identified in SHCAs, property acquisition and encouraging land use and management that is compatible with the needs of focal species should be a priority in these areas.

Models have projected that, by the year 2060, significant human population growth will occur in the area surrounding CLWEA. While the current conditions on CLWEA and neighboring conservation lands provides an opportunity to further the conservation of many focal and imperiled species, changes in management or land use beyond the boundaries could have a significant effect. Any changes that further impede the ability to use prescribed fire would be detrimental to fire-dependent species such as gopher tortoise and Bachman's sparrow. This includes smoke management concerns associated with increased development of residential and commercial areas, as well as roads and infrastructure. Any changes that alter hydrologic resources would be detrimental to gopher frogs and wading birds. Species that require large home ranges, or are dependent on dispersal for maintaining a population, are affected by adjacent land management or development. Any one of these factors could limit the ability of CLWEA to fulfill its conservation role for focal wildlife species.

All focal species on CLWEA are dependent on the availability of suitable habitat on adjacent private and public lands. The largest public lands in the vicinity of CLWEA are owned by Polk County, as well as the LWRSF. Due to the smaller size of CLWEA compared with other conservation lands (<1,200 acres), the persistence of focal species on CLWEA is largely determined by the actions of adjacent landowners. Staff should coordinate with CPS to ensure private landowners are informed about incentive programs that encourage conservation-based management, and that they receive the proper technical assistance to implement conservation plans. CPS should ensure environmental commenting includes recommendations for compatible uses of lands adjacent to CLWEA.

Document Map

Species	Species Assessment	Land Management Actions	Species Management Actions	Species Monitoring	Research	Coordination
Gopher Frog	Section 3.2.1	Section 4.3.1		Section 5.2.1		Section 6.1.2
Florida Pine Snake	Section 3.2.2	Section 4.3.2		Section 5.2.6		Section 6.1.2
Gopher Tortoise	Section 3.2.3	Section 4.3.3		Section 5.2.2		Section 6.1.1, 6.1.2
Sand Skink	Section 3.2.4	Section 4.3.4		Section 5.2.3, 5.2.6		Section 6.6
Bachman's Sparrow	Section 3.2.5	Section 4.3.5		Section 5.2.6		
Brown-Headed Nuthatch	Section 3.2.6	Section 4.3.6		Section 5.2.6		
Burrowing Owl	Section 3.2.7	Section 4.3.7		Section 5.2.6		Section 6.1.1
Cooper's Hawk	Section 3.2.8	Section 4.3.8		Section 5.2.6		
Crested Caracara	Section 3.2.9	Section 4.3.9		Section 5.2.6		
Florida Sandhill Crane	Section 3.2.10	Section 4.3.10		Section 5.2.6		
Florida Scrub-Jay	Section 3.2.11	Section 4.3.11		Section 5.2.6		Section 6.1.1, 6.6
Northern Bobwhite	Section 3.2.12	Section 4.3.12				
Short-Tailed Hawk	Section 3.2.13	Section 4.3.13		Section 5.2.6		Section 6.3

Southeastern American Kestrel	Section 3.2.14	Section 4.3.14	Section 5.1.1	Section 5.2.4		Section 6.1.2
Southern Bald Eagle	Section 3.2.15	Section 4.3.15		Section 5.2.6		Section 6.1.1
Swallow-Tailed Kite	Section 3.2.16	Section 4.3.16		Section 5.2.6		Section 6.3
Wading Birds	Section 3.2.17	Section 4.3.17		Section 5.2.6		
Florida Black Bear	Section 3.2.18	Section 4.3.18		Section 5.2.6		
Florida Mouse	Section 3.2.19			Section 5.2.5		
Sherman's Fox Squirrel	Section 3.2.20			Section 5.2.6		Section 6.1.1
Limited Opportunity Spp.	Section 3.3.21			Section 5.2.6		

12.12 Recreation Master Plan

Recreation Plan for Crooked Lake Wildlife and Environmental Area



Florida Fish and Wildlife Conservation Commission



Office of Public Access and Wildlife Viewing Services

November 2013

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan

**PLEASE NOTE: TABLE OF CONTENT'S PAGE NUMBERS ARE FROM
SEPARATE RMP DOCUMENT AND DIFFER FROM THIS
MANAGEMENT PLAN.**

**Crooked Lake Wildlife and Environmental Area
Recreation Plan**

Table of Contents

I. Introduction	1
Purpose of Plan/Planning Process.....	1
Location	1
Acquisition Purpose.....	1
II. Resource Inventory	1
Topography and Hydrology.....	1
Natural Communities.....	2
Sensitive Areas	2
Wildlife.....	2
Cultural Resources.....	5
Scenic Resources	5
Resource Management.....	5
III. Visitor Experience Goals	5
IV. Recreation Planning Context	7
V. Recreation Assessment.....	8
Recreation Inventory and Enhancements.....	8
Summary of Proposed Improvements.....	10
Carrying Capacity.....	10
Work Plan.....	12
Monitoring and Management of Recreation Facilities.....	12
References	13
Appendices.....	14
Appendix 1: Recreation and Wildlife Viewing Facilities Design Guidelines.....	15
Appendix 2: Carrying Capacity Methodology.....	17
Appendix 3: Management and Monitoring	20

Table of Figures

Figure 1: Crooked Lake WEA Location Map.....	3
Figure 2: Crooked Lake WEA Natural Communities.....	4
Figure 3: Crooked Lake WEA Existing and Proposed Facilities.....	11

I. Introduction

Purpose of Plan/Planning Process

This plan serves as a guide for providing recreational experiences with an emphasis on those focused on wildlife viewing and nature study on Crooked Lake Wildlife and Environmental Area (Crooked Lake WEA). The plan contains specific recommendations for recreational trail development and related enhancements such as trailheads and viewing structures. It also provides guidelines for monitoring recreation-related use to ensure resource protection and meaningful visitor experiences. The plan was developed by the Florida Fish and Wildlife Conservation Commission (FWC) Office of Public Access and Wildlife Viewing Services (PAWV) in collaboration with Crooked Lake WEA staff with input from other FWC divisions.

Location

Crooked Lake WEA protects 1,147 acres of pasture, flatwoods and swamps in Polk County (Figure 1). The property is adjacent to portions of the Polk County Crooked Lake West property and is an important part of a series of conservation lands both north to south between the Green Swamp and Lake Wales Ridge and east to west between the Peace River and Kissimmee River. Crooked Lake WEA supports a diversity of wildlife populations that provide opportunities for wildlife viewing.

Acquisition Purpose

Crooked Lake WEA was approved as an acquisition by the FWC as a Gopher Tortoise Mitigation Park in June, 2008. The FWC implemented the Mitigation Park Program in 1988 to provide land use regulatory programs with an alternative to on-site wildlife mitigation under Section 379.212, F.S.. This statute established the Fish and Wildlife Habitat Program for the purpose of acquiring, assisting other agencies or local governments in acquiring, or managing lands important to the conservation of fish and wildlife. Under this authority, FWC, or its designee, is responsible for managing these lands for the primary purpose of maintaining and enhancing their habitat value for fish and wildlife.

II. Resource Inventory

Topography and Hydrology

Crooked Lake WEA is relatively flat with elevations ranging from 135 feet in the basin swamps to the west to 165 feet in the sandhill and scrub on the eastern portion of the WEA. Standing water can be found in the swamp, baygall and marsh communities and during periods of higher rainfall the wet flatwoods, and to a lesser extent the mesic flatwoods and pastures, can hold water. The flat topography provides easy to moderate hiking opportunities in the uplands.

Natural Communities

(see Figure 2)

Natural Community Type	Acres	% Area
Pasture – Improved	295.33	25.75%
Wet Flatwoods	230.28	20.07%
Mesic Flatwoods	125.28	10.92%
Basin Swamp	118.16	10.30%
Baygall	88.85	7.74%
Pasture – Semi-Improved	77.83	6.78%
Ruderal	62.84	5.47%
Sandhill	57.72	5.03%
Depression Marsh	30.10	2.62%
Successional Hardwood Forest	21.25	1.85%
Scrub	19.87	1.73%
Scrubby Flatwoods	15.49	1.35%
Dome Swamp	3.91	0.34%

Crooked Lake WEA consists of a mix of upland, wetland and altered natural communities. Predominant habitats include basin swamp and pasture on the west side of the WEA; sandhill, scrub and baygall on the east side. Wet flatwoods, with a significant cutthroatgrass component, and pasture lie between the two. Areas near the wetlands and the successional hardwood forest (late-successional scrub and sandhill) provide shade for trails and recreational amenities. The cutthroatgrass seeps are especially rare statewide and at the same time prevalent on the area and would be appropriate for interpretation of the ecology and management of the area.

Sensitive Areas

Organic soils in wetlands areas are susceptible to being churned up by disturbance and wetlands plants are easily displaced. Sandhill ground cover and cutthroatgrass are also susceptible to ground disturbance. Access to these areas should be controlled and monitored to avoid damage.

Wildlife

Eastern indigo snakes, southeastern American kestrels, Sherman’s fox squirrels, and several species of bats have been identified on the property. In 2006, the gopher tortoise population was measured at 1.0 to 1.7 tortoises per acre. Wildlife viewing can be good at almost any spot on the WEA with better visibility near the natural communities with more open understory and edges between communities.

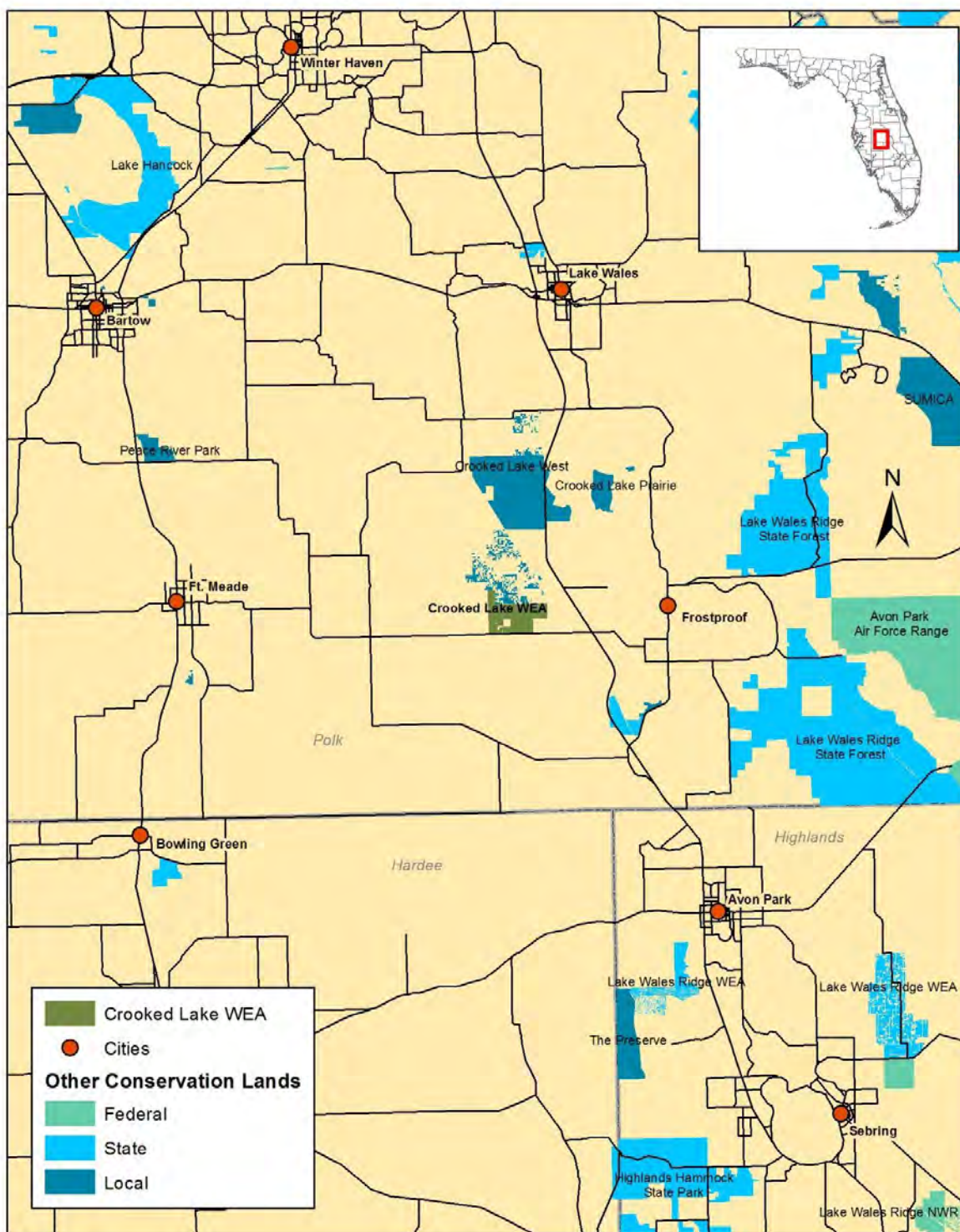
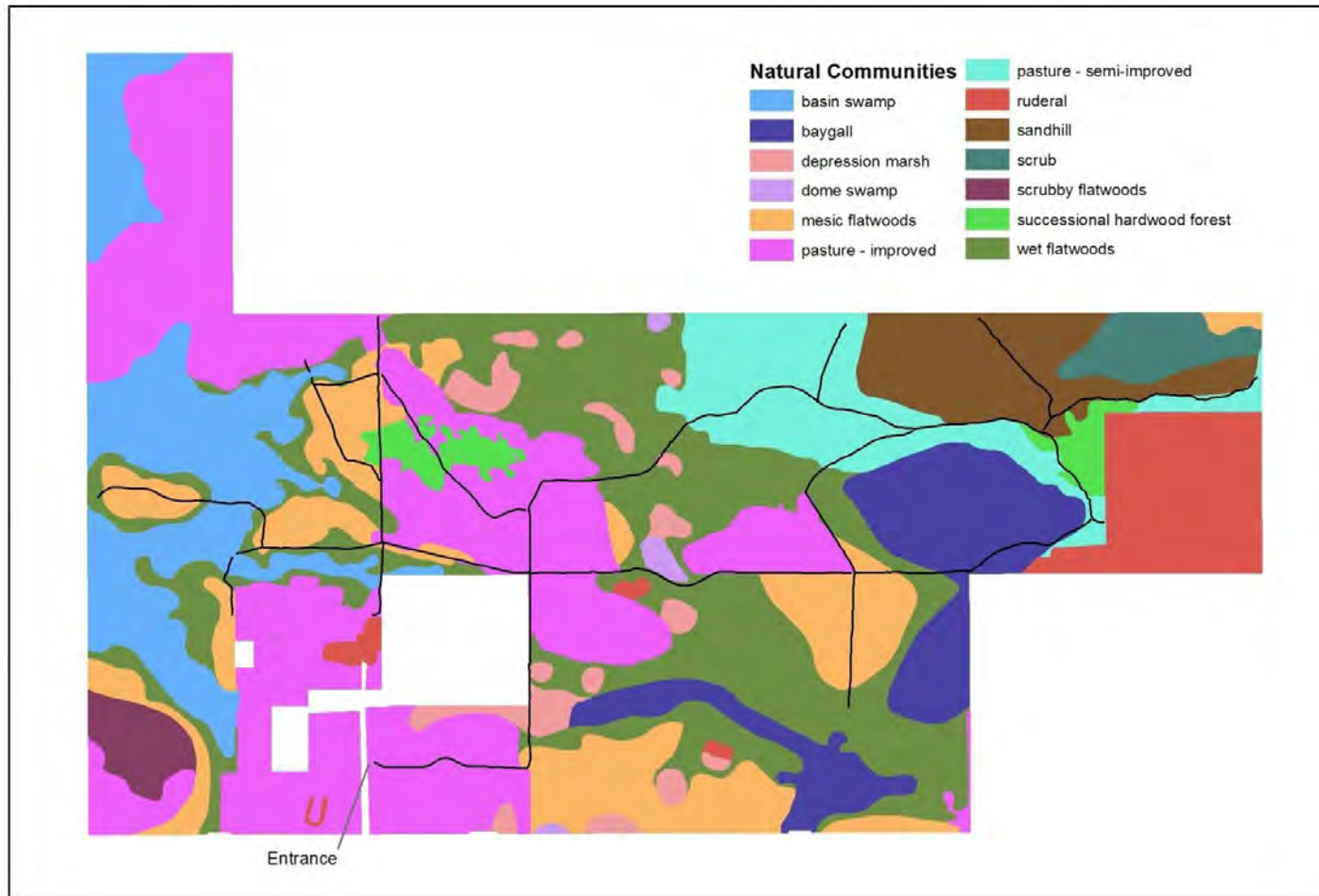


Figure 1: Crooked Lake WEA Location Map



Cultural Resources

The Florida Master Site File does not contain any archaeological or historic sites within the boundary of Crooked Lake WEA. The site of the old town of Midland is 0.5 mile from the northwest corner of the WEA.

Scenic Resources

The wet flatwoods of Crooked Lake WEA provide scenic vistas with their open canopy and cutthroat grass groundcover. The gnarled, twisting trunks of the oak trees in the successional hardwood forest also hold particular scenic interest. The trail network being developed for the area will provide opportunities to experience these and other areas of the WEA.

Resource Management

The FWC's primary resource management goal for the area is to promote habitat conditions most critical to meeting the life history requirements of the gopher tortoise. All proposed uses and activities are reviewed for compatibility with this purpose. Habitat management activities taken on behalf of the gopher tortoise should improve habitat conditions for other upland imperiled wildlife. Where opportunities exist to perform specific activities to benefit other imperiled wildlife, such activities are considered provided the activity does not cause a substantial decrease to the quality of gopher tortoise habitat.

III. Visitor Experience Goals

Crooked Lake WEA has the potential to provide visitors with opportunities to see and learn about the area's natural resources, plant communities, wildlife and wildlife management, while engaging in recreational activities focused on fish and wildlife resources. Visitor experience goals are those concepts and experiences we want visitors to take away from their time at Crooked Lake. These goals guide both interpretive and recreation planning.

At Crooked Lake WEA, the FWC will provide opportunities for visitors to:

1. Become oriented to and participate in a range of recreational activities on Crooked Lake WEA while:
 - Becoming acquainted with wildlife and natural plant communities through interpretive materials at welcome kiosks, trails and wildlife viewing sites.
 - Understanding Crooked Lake WEA's natural, cultural and commercial history, within the context of the state's history and prehistory.
 - Understanding how we are working to conserve gopher tortoises and other species on this WEA that was purchased and established through FWC's Mitigation Park Program, which used fees paid by developers to purchase high-quality habitat for endangered and threatened species.

- Appreciating Crooked Lake WEA as an oasis providing a retreat from the pressures of urban life and an opportunity to connect with the natural world.

2. Have an enjoyable recreational experience without impairing the natural and cultural values of the site. In terms of wildlife viewing, FWC's goal will be to facilitate positive, memorable experiences that keep wildlife disturbances to a minimum.

3. Understand the management goals and activities of the FWC on Crooked Lake WEA and their emphasis on protecting and enhancing habitats important to upland endangered or threatened wildlife, especially the gopher tortoise.

IV. Recreation Planning Context

Public recreation areas within 20 miles of Crooked Lake WEA:

Area	Hiking	Biking	Camping	Paddling	Fishing	Horseback Riding	Hunting	Wildlife Viewing
Allen David Broussard Catfish Creek Preserve State Park	?	?	?	?	?	?	?	?
Avon Park Air Force Range (Dept. of Defense)	?	?	?	?	?	?	?	?
Crooked Lake Prairie (Polk Co.)	?	?	?	?	?	?	?	?
Crooked Lake Sandhill (Polk Co.)	?	?	?	?	?	?	?	?
Crooked Lake West (Polk Co.)	?	?	?	?	?	?	?	?
Hickory Lake Scrub Park (Polk Co.)	?	?	?	?	?	?	?	?
Highlands Hammock State Park	?	?	?	?	?	?	?	?
Kissimmee Chain of Lakes (SFWMD)		?	?	?	?	?	?	?
Lake Kissimmee State Park	?	?	?	?	?	?	?	?
Lake Wales Ridge National Wildlife Refuge	?	?	?	?	?	?	?	?
Lake Wales Ridge State Forest (FFS)	?	?	?	?	?	?	?	?
Lake Wales Ridge WEA (FWC)	?	?	?	?	?	?	?	?
North/Walk-in-Water Creek (Polk Co.)	?	?	?	?	?	?	?	?
Paynes Creek Historic State Park	?	?	?	?	?	?	?	?

Peace River Hammock (Polk Co.)	?	?	?	?	?	?	?	?
SUMICA (Polk Co.)	?	?	?	?	?	?	?	?
The Preserve (Highlands Co.)	?	?	?	?	?	?	?	?

V. Recreation Assessment

Recreation Inventory and Enhancement

The purpose of this section is to identify and describe the existing recreational uses and facilities on Crooked Lake WEA and note their status and condition (Figure 3) as well as to propose enhancements to these uses. This informs recommendations for achieving visitor experience goals and meeting future recreation demands and needs.

Crooked Lake WEA offers opportunities for a variety of high quality, wildlife-focused recreation activities. Based on the approved uses and activities as stated in the 2011-2021 Management Plan, the analysis of existing resources and uses and the interpretive themes developed for the area, the following activities should be continued and enhanced as described in this section.

Conditional activities are those that require additional permits or permission.

- ☐ Bicycling
- ☐ Ecotourism (Conditional)
- ☐ Environmental Education
- ☐ Fishing (Conditional)
- ☐ Geocaching (Conditional)
- ☐ Hiking
- ☐ Horseback Riding
- ☐ Wildlife Observation
- ☐

Visitation to Crooked Lake WEA is not being monitored at this time, and no traffic or infrared counters are installed.

Visitor Contact Points and Roads/Vehicle Access- The main entrance for Crooked Lake WEA is on an unpaved road, Turtle Run Trail (formerly Rhoden Meyer Road), just off of US 98. There are no approach signs on US 98. A visitor entrance point has been developed at the main entrance, including stabilized parking, an ADA accessible parking spot with a sidewalk to a kiosk and picnic shelter. There is a fence walk-through near a second picnic shelter and a horse gate with water for horses. A welcome map has been installed in the kiosk and will be updated as new facilities and trails are developed.

Motor vehicles are prohibited within the WEA. The seven miles of roads that are within the area include grass two-tracks or firebreaks.

There is currently no wayfinding signage on interior roads and the roads are not named.

Hunting – Hunting is not an approved activity on Crooked Lake WEA.

Fishing/Boating/Paddling – There are no paddling or boating opportunities on Crooked Lake WEA. Limited fishing opportunities exist in some of the deeper areas of the swamps and a few scattered artificial ponds.

Trail Use – Hiking, horseback riding and bicycling are permitted on all existing roads, and firebreaks of Crooked Lake WEA. These activities will also be permitted on proposed designated trails.

Trail infrastructure – There are currently no designated trails or trail infrastructure on the WEA. Two designated loop trails will be established. A four-mile loop will start at the parking area and traverse the wet flatwoods in the interior of the WEA to the NE corner and loop back skirting the large baygall on the eastern side. A shorter trail of less than 0.5 mile trail will start at the parking area and loop through the mesic flatwoods to the east of the parking area. See Figure 3.

Wildlife Viewing and Nature Study – Wildlife viewing opportunities are available throughout Crooked Lake WEA. The road network and proposed trails provide access to examples of all of the major natural communities on the WEA. The diverse matrix of natural communities provides excellent wildlife viewing opportunities. Suggested wildlife viewing locations will be indicated on trail maps and a bird list will be developed for the WEA. The area may be an appropriate stop on the Great Florida Birding and Wildlife Trail.

Picnicking – There are two picnic shelters at the parking area. Additional picnic tables will be installed at suitable site(s) along the proposed trail system.

Camping – Camping is not permitted.

Geocaching – is allowed on the area. There are currently no permitted geocaches on Crooked Lake WEA. Approval of new geocaches and disposition of existing geocaches is at the discretion of the site manager and coordinated by FWC's PAWV in accordance with FWC guidelines.

Special Events/Tours – There are no regular events at Crooked Lake WEA.

Staff/Volunteers- A Fish and Wildlife Technician is shared between Crooked Lake and other nearby WEAs.

Summary of Proposed Improvements

(Figure 3)

- ❑ A four- to five-mile network of marked trails using existing two-track roads and newly constructed single track trails.

- ☐ Possible picnic tables or covered picnic shelters along the trail network
- ☐ Interpretive signs as appropriate along the trail network
- ☐ Install approach signs on US 98
- ☐ Propose Crooked Lake as a stop on the Great Florida Birding and Wildlife Trail

Carrying Capacity

In order to minimize disturbance of wildlife and other natural resources and to provide an enjoyable experience for visitors, FWC calculates a carrying capacity for its managed areas (Appendix 2). This carrying capacity takes into consideration natural community sensitivity, known locations of sensitive natural communities, known archaeological and historic sites, existing recreation facilities and wildlife disturbance distances with a turnover rate that varies with the activity or facility. This capacity is not a visitation goal but rather is a level at which the natural and recreation resources of the area can sustain use without damage. If all planned facilities are constructed, the carrying capacity will be 86 people per day.

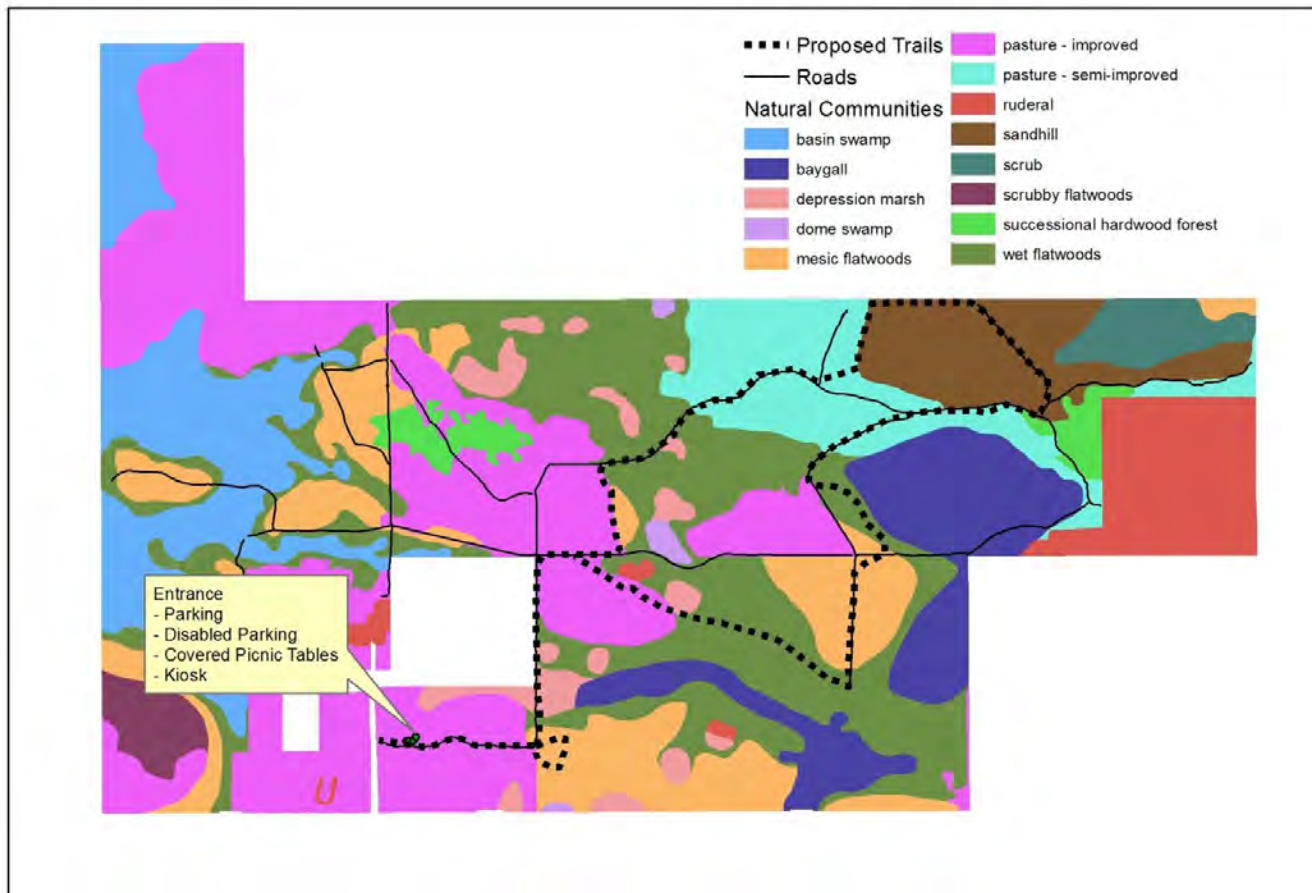


Figure 3: Crooked Lake WEA Existing and Proposed Facilities

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and Environmental Area Management Plan

Work Plan

PAWV will work with local staff to prepare annual work plans and budgets to implement the Recreational Trail Plan for Crooked Lake WEA. PAWV will be responsible for 1) developing cost estimates for recreation-related facilities; 2) coordinating design and permitting; and 3) obtaining construction bids and the work of contractors during the construction phase. This includes pre-construction meetings, site visits at construction milestones and final reviews.

Generally, the area manager and staff monitor construction sites frequently during the construction process to make sure contractor is not doing damage to the surrounding area.

PAWV will design interpretive materials for the area in consultation with area staff. Generally, the cost of producing maps and interpretive products and maps comes out of the PAWV budget.

1. Short-term (1-2 years)

- Develop a four- to five- mile network of hiking trails
- Develop an interpretive sign plan

2. Long-term (3-10 years)

- Install approach signs on US 98
- Install trail amenities
- Install Interpretive signage

Monitoring and Management of Recreation Facilities

PAWV will monitor recreation infrastructure on the WEA biannually including trail and structure photopoints. PAWV will also create an annual monitoring report at the end of each fiscal year. Any impacts encountered during each monitoring will be brought to the attention of PAWV and WEA staff to determine the best course of action for correction and prevention.

Measurable indicators for monitoring key aspects of the visitor's experience and resources at Crooked Lake WEA are described in Appendix 3. Indicators should be monitored for each zone, and when necessary, management actions taken to ensure that visitor use and resource impacts remain within the established standards

References

A Management Plan for Crooked Lake Wildlife and Environmental Area 2011 – 2021 (Draft). Florida Fish and Wildlife Conservation Commission (2011).

Florida Natural Areas Inventory (FNAI). 2010. Guide to the natural communities of Florida: 2010 edition. Florida Natural Areas Inventory, Tallahassee, FL.

Resource Scoping Summary for Crooked Lake Wildlife and Environmental Area, April 2009. Florida Fish and Wildlife Conservation Commission (2009).

12.13 Timber Assessment

**TIMBER ASSESSMENT
CROOKED LAKE
WILDLIFE AND ENVIRONMENTAL AREA
PREPARED BY
BUTCH MALLET
SENIOR FORESTER, OTHER PUBLIC LANDS REGION 4
BUREAU OF FOREST MANAGEMENT
FLORIDA DIVISION OF FORESTRY
APRIL 2010**

PURPOSE

This document is intended to fulfill the timber assessment requirement for Crooked Lake Wildlife and Environmental Area (CLWEA) as required by Section 1. Section 253.036, Florida Statutes. The goal of this *Timber Assessment* is to evaluate the potential and feasibility of managing timber resources for conservation and revenue generation purposes.

BACKGROUND

CLWEA is typical of tracts within the south central Florida peninsula. Historically, the land was made up of relatively flat sandy soils. Minor variations in elevation and drainage create habitat types such as small creeks surrounded by hardwood drains, hydric/mesic flatwood seeps, sandhills, and xeric scrub. All of which are present on CLWEA.

Prior to acquisition by the State, this tract was operated as a cattle ranch. Mostly in areas of flatwoods, a majority of the native groundcover was totally removed and replaced with improved pasture. Semi-improved pastures have had non-native grasses planted, but still have remnants of native vegetation.

Throughout the tract, all valuable and accessible pine timber was harvested one or more times. As a result, the only native longleaf pines currently remaining on the site are either trees that were too crooked or knotty to sell during previous harvests or their offspring. Some mature slash pine trees were protected from earlier harvest by the swampy conditions where they grew. Dense stands of young slash pines have re-established themselves on higher ground near the swamp edges.

GOALS AND OBJECTIVES

The primary management objectives for CLWEA (and the one for which it was purchased) is to provide good quality gopher tortoise habitat. At the same time, conditions favorable for the tortoises will likely benefit many other species.

Also found on this tract is cutthroat grass. Cutthroat is a rare plant, found only in this region of Florida. It has been severely impacted by drainage and development. Both tortoises and cutthroat grass prefer habitats characterized by an open canopy, lots of sunlight, dense groundcover, and frequent fire.

Re-establishment of a more natural fire cycle on CLWEA is crucial to long-term maintenance of these ecosystems.

TIMBER MANAGEMENT

Soil and moisture conditions, such as those found in the flatwoods of CLWEA, favor rapid growth of valuable pine timber. However, a dense stand of pines, necessary to generate significant income, would tend to decrease native grass production necessary for healthy a tortoise population. Therefore, intensive forest management would be contrary to the purpose for which the land was acquired.

This does not mean that timber management should be barred from Crooked Lake. It is an effective tool used successfully throughout Florida to restore and maintain healthy ecosystems. The following are general examples of how and where timber management should be used on CLWEA to further management objectives:

In areas where young pines have seeded in next to swamp edges, thin the trees back to 20 to 40 sq. ft. of Basal Area per acre. This will allow ample sunlight to reach the ground and help favor groundcover growth. If the understory consists of saw palmettos, reduce the BA to 20 to 30 sq. ft. and concentrate the leave trees in clusters. This method will allow the palmettos to be roller-chopped for better control. Breaking up the palmettos will also make re-introduction of prescribed fire safer and more controllable.

Sand pines are not numerous anywhere on the tract. Where they have invaded sandhill ecosystems, attempt to harvest all merchantable trees when thinning nearby flatwoods.

Use timber harvest anywhere else on the tract that pine timber is too thick and shading out desirable groundcover. All harvesting will need to be accomplished when conditions are fairly dry to avoid rutting and damage to groundcover such as the cutthroat grass.

Planting of pine trees presents opportunities for habitat restoration of improved pastures. Densely planted pines can be used to help shade out unwanted grasses in these severely disturbed sites. Once the bahia (or other) grass is weakened by the shading of the pine trees, elimination is much easier and less expensive with chemical treatment. Portions of these pastures in strips or small blocks can be left unplanted with pines to provide forage sites within the plantations for tortoises.

Planting recommendation is for at least 600 (6' X 12') but preferably 871 (5' X 10') or more seedlings per acre. At least 5 rows should be planted next to each other. Narrower spacing and more rows side-by-side insures quicker and better shading of the grass under the trees. Skipping 2 or 3 rows unplanted between planted strips will provide forage for tortoises. It is also possible to alternate species of pines when planting to make sure that after thinning the appropriate tree for the site has been reintroduced. Once the canopy begins to close and the non-native grasses fade, the pines can be thinned and the residual pasture grasses treated to prepare the soil for planting of native groundcover.

Frequent fire is essential to maintaining this new groundcover. Needles from the planted pines provide the fuel continuity necessary to carry prescribed fire in green-grassy and bare soil areas.

SUMMARY

Soils on CLWEA would support intensive forest management. However, relatively dense stands of pine timber are not conducive to maximizing groundcover and open sunlight essential for good gopher tortoise habitat. Primarily, timber management on CLWEA should be confined to thinning existing stands to promote desired native grass and herbs. Where dense saw palmetto understory is a problem, thinning overstory pines allows for reduction by mechanical means. Prescribed fire can then be safely reintroduced for groundcover rehabilitation and maintenance.

Sand pines have invaded sandhill communities from nearby scrub sites. Timber harvesting in nearby flatwoods should be expanded to remove sand pines that otherwise would be killed in subsequent prescribed fires.

A third opportunity to use timber management involves planting pine seedlings to help shade out unwanted grasses in improved pastures. Once the non-native grasses are controlled or eliminated, the pines can be heavily thinned to open the canopy and native groundcovers replanted. This method can be used to establish native systems at a fraction of the cost of other currently popular treatments.

Mechanical equipment, used in timber harvests, helps reduce dense understory vegetation such as sabal palms, saw palmetto, gallberry and invasive plants. Thinning of dense timber stands also allows a tractor pulled roller-drum chopper to reduce the understory vegetation. This fuel reduction makes the introduction of prescribed fire easier, safer and more effective. The ability to maintain a frequent burning schedule is essential to keeping healthy ground cover.

There is a strong market for small diameter pine timber in this region. Managers should be able to sell pine trees that need to be removed to achieve the desired groundcover responses. While it is possible to open the canopy using fire, controlled timber harvests allow the people of Florida to receive value for trees being removed and still meet management objectives.

12.14 Management Procedures Guidelines - Management of Archaeological and Historical Resources

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *‘Historic property’ or ‘historic resource’ means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state.’*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:

<http://www.flheritage.com/preservation/compliance/guidelines.cfm>

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf.

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward

Division of Historical Resources

Bureau of Historic Preservation

Compliance and Review Section

R. A. Gray Building

500 South Bronough Street

Tallahassee, FL 32399-0250

Phone: (850) 245-6425

Toll Free: (800) 847-7278

Fax: (850) 245-6435

12.15 Land Management Uniform Accounting Council Categories

Land Management Uniform Cost Accounting Council

Uniform Land Management Cost Categories and Subcategories

1. Resource Management

- a. Exotic Species Control. -- Invasive exotic plant and animal removal activities and costs for inventorying, planning, preparing, executing, evaluating, monitoring and reporting. Also includes equipment, chemicals, protective clothing and supplies. Includes nuisance native feral animal and plant control.
- b. Prescribed Burning. -- Prescribed burning activities and costs for assessing, planning, preparing, executing, evaluating and reporting. Also includes equipment, protective clothing and supplies.
- c. Cultural Resource Management. -- Management activities and costs for assessing, planning, executing, evaluating and reporting, and for all maintenance, restoration or monitoring activities for prehistoric and historic sites, features and collection objects.
- d. Timber Management. -- Activities and costs related to the establishment of a stand of potentially merchantable timber, harvest of merchantable timber, and cultural treatments intended primarily to improve the growth and overall health of a stand of merchantable timber. Also includes activities and costs related to the cutting of merchantable timber in natural community and habitat restoration projects.
- e. Hydrological Management. -- Hydrological management and restoration activities and costs for assessing, monitoring, planning, preparing, executing, evaluating and reporting. Includes water level management, repair, removal or back-filling of ditches, canals, berms and dams. Also includes water quality and water quantity monitoring.
- f. Other. -- All other resource management activities and costs not captured in other specific subcategories. Examples include natural community and habitat restoration through other techniques; plant, animal or biological community survey, monitoring and research; listed species management; technical assistance; and evaluating and commenting on resource impacts to parks.

2. Administration

- a. Central Office/Headquarters. -- Headquarters units conducting general administration of land under management by the agency. Includes upper management direction, administration and fiscal, budget, personnel, purchasing and record keeping required for operations oversight and specific programs. Includes all duties unless they specifically relate to other categories or subcategories.
- b. Districts/Regions. -- Sub-state administrative districts or regions conducting general administration of the properties under their management. Includes all duties, unless they specifically relate to other categories or subcategories. General operating costs of district or region administrative facilities are included.
- c. Units/Projects. -- Conducting general administration duties at a specific management unit (state park, state forest, state wildlife management area, etc.). Includes supervisory duties, fiscal and record keeping duties, and any other duties that do not specifically relate to other categories or subcategories. General operating costs for the property, such as utilities, telephones and garbage collection, are included.

3. Support

- a. Land Management Planning. -- Developing land management plans required by Sec. 253.034, F.S. Includes researching and compiling plan information, materials and maps, coordinating planning activities, conducting review activities (internal reviews, public meetings, advisory group meetings, ARC, etc.), and promulgating draft plans and final plans.
- b. Land Management Reviews. -- Planning, organizing and conducting land management reviews by teams created under Sec. 259.036, F.S. Includes preparing and responding to land management review reports. Also includes similar work conducted as part of internal agency land management reviews.
- c. Training/Staff Development. -- Staff training and development costs incurred in any facet of the agency's land management activities.
- d. Vehicle Purchase. -- Acquisition of any vehicle purchased primarily for land management purposes or to support any category of land management activity by the agency.
- e. Vehicle Operation and Maintenance. -- Costs of operating and upkeep of any vehicle used by the agency to support any category of land management activity.
- f. Other. -- Any other support activity or cost not captured by other categories or subcategories.

4. Capital Improvements

- a. New Facility Construction. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all new facility design and construction activities. Includes new roads, parking and all other infrastructure.
- b. Facility Maintenance. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all repairs or renovations to existing facilities, roads or other infrastructure. Also includes ADA accessibility improvements and renovations.

5. Visitor Services/Recreation

- a. Information/Education Programs. -- Interpretive, environmental education and marketing programs that explain or promote the agency's mission or instill in visitors an understanding and appreciation for Florida's natural and cultural resources and their proper use and care. Includes signs, brochures, maps and other public information materials that are produced or disseminated.
- b. Operations. -- Includes the non-administrative and non-support costs involved in providing public access to lands. Includes all actions required to manage visitor activities in a way to ensure safe and enjoyable use by the public. Includes routine maintenance, cleaning and other work required to provide safe and efficient utilization of facilities and resources that support visitor use and recreation. Includes protection activities required by staff to safeguard natural and cultural resources, facilities, material, staff and visitors.

6. Law Enforcement

The provision of all activities for enforcing criminal, conservation and boating laws on land, freshwater and marine environments and all costs associated with these services. Includes the provision of uniform patrol. Includes overt and covert criminal investigations. Includes regulation of commercial wildlife trade. Also includes the direction and administration of all law enforcement programs and activities, and all associated costs.

Land Management Uniform Accounting Council and FWC Activity Code Groupings

Resource Management

Exotic Species Control

- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)

Prescribed Burning

- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks

Cultural Resource Management

- 201 Cultural resource management

Timber Management

- 202 Timber management

Hydrological Management

- 215 Hydrology management
- 216 Dams, dikes, levees
- 217 Canals
- 218 Water level management
- 194 Lake restoration

Other

- 185 GIS
- 186 Biometrics
- 200 RESOURCE MANAGEMENT
- 203 Tree and shrub planting
- 213 Wildlife management
- 214 Listed Species management
- 219 Upland restoration
- 282 Herbaceous seeding
- 283 Clearings
- 289 Native vegetation management (mechanical)
- 290 Native vegetation management (chemical)
- 221 Animal surveys
- 228 Inland aerial surveys
- 235 Vegetation and plant surveys
- 250 MONITORING AND ASSESSMENTS
- 252 Biomedical monitoring
- 253 Ecological monitoring
- 256 Habitat monitoring analysis
- 263 Nest box monitoring
- 264 Population demographics

295	Biological data collection, analysis, and reporting
275	Permits and authorizations
276	Commission rule development and review
277	Relocation
278	CITES tags
281	Other resource management
284	Feeding/watering
285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
296	Habitat protection technical assistance
750	URTD assessment
789	Site Preparation – GCR
790	Irrigation – GCR
791	Seed Collection – Hand
792	Seed Collection – Mechanical
793	Herbicide Maintenance Treatment

Administration

Central Office/Headquarters

- 100 ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
- 104 Budget/purchasing/accounting

Districts/Regions

See Location code

Units/Projects

See Location code

Support

Land Management Planning

- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 204 Resource planning

Land Management Reviews

- 209 Land Management Reviews
- 101 Project inspection C field inspections of projects.

Training/Staff Development

150 PERSONNEL MANAGEMENT C recruitment, hiring, training, counseling, and supervising.

Vehicle Purchase

128 New Vehicle and Equipment Purchase
Vehicle Operation and Maintenance

923 FEM C vehicles/equipment

Other

140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
141 Grant applications
180 SYSTEMS ADMINISTRATION AND MANAGEMENT
182 Data management
184 Metadata development and management
187 IT
188 Web development
721 Geospatial analysis techniques
191 Stamp design coordination
226 Human dimensions surveys

Capital Improvements

New Facility Construction

910 New facility construction C buildings/structures
912 New construction C roads/bridges
913 New construction C trails
914 New construction C fences

Facility Maintenance

920 Facility and equipment maintenance (FEM) C buildings/structures
921 FEM C utilities
922 FEM C custodial functions
925 FEM C boating access
926 FEM C roads/bridges
927 FEM C trails
928 FEM C fences

Visitor Services/Recreation

Information/Education Programs

145 Technical bulletin

Operations

311 Boundary signs
312 Informational signs
320 Outreach and education C attending or developing educational or informational materials or events for the public
327 Becoming an Outdoor Woman C enhancement
331 Wings Over Florida
339 Range safety operations
341 Public use administration (hunting)
342 Public use administration (non-hunting)

- 350 Customer service support C disseminating written or verbal information or assistance to the public
- 700 STUDIES
- 740 EVALUATIONS AND ASSESSMENTS

Law Enforcement

FWC Activity Code Numeric Listing

- 100 ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
- 101 Project inspection C field inspections of projects.
- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 104 Budget/purchasing/accounting
- 128 New Vehicle and Equipment Purchase
- 140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
- 141 Grant applications
- 145 Technical bulletin
- 150 PERSONNEL MANAGEMENT C recruitment, hiring, training, counseling, and supervising.
- 180 SYSTEMS ADMINISTRATION AND MANAGEMENT
- 182 Data management
- 184 Metadata development and management
- 185 GIS
- 186 Biometrics
- 187 IT
- 188 Web development
- 191 Stamp design coordination
- 194 Lake restoration
- 200 RESOURCE MANAGEMENT
- 201 Cultural resource management
- 202 Timber management
- 203 Tree and shrub planting
- 204 Resource planning
- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks
- 209 Land Management Reviews
- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)
- 213 Wildlife management

214	Listed Species management
215	Hydrology management
216	Dams, dikes, levees
217	Canals
218	Water level management
219	Upland restoration
221	Animal surveys
226	Human dimensions surveys
228	Inland aerial surveys
235	Vegetation and plant surveys
250	MONITORING AND ASSESSMENTS
252	Biomedical monitoring
253	Ecological monitoring
256	Habitat monitoring analysis
263	Nest box monitoring
264	Population demographics
275	Permits and authorizations
276	Commission rule development and review
277	Relocation
278	CITES tags
281	Other resource management
282	Herbaceous seeding
283	Clearings
284	Feeding/watering
285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
289	Native vegetation management (mechanical)
290	Native vegetation management (chemical)
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
295	Biological data collection, analysis, and reporting
296	Habitat protection technical assistance
311	Boundary signs
312	Informational signs
320	Outreach and education C attending or developing educational or informational materials or events for the public
327	Becoming an Outdoor Woman C enhancement
331	Wings Over Florida
339	Range safety operations
341	Public use administration (hunting)
342	Public use administration (non-hunting)

350 Customer service support C disseminating written or verbal information or assistance to the public

700 STUDIES

721 Geospatial analysis techniques 740 EVALUATIONS AND ASSESSMENTS

750 URTD assessment

789 Site Preparation – GCR

790 Irrigation – GCR

791 Seed Collection – Hand

792 Seed Collection – Mechanical

793 Herbicide Maintenance Treatment

910 New facility construction C buildings/structures

912 New construction C roads/bridges

913 New construction C trails

914 New construction C fences

920 Facility and equipment maintenance (FEM) C buildings/structures

921 FEM C utilities

922 FEM C custodial functions

923 FEM C vehicles/equipment

925 FEM C boating access

926 FEM C roads/bridges

927 FEM C trails

928 FEM C fences

12.16 Operation Plan Fiscal Year 2017-2018

Fiscal Year
2017-2018

Activity	Title	Man Days	Salary	FuelCost	Other	Total	Units
100	Administration	25	\$5,449.50	\$212.50	\$10,000.00	\$15,662.00	0
128	New Vehicle and Equipment Purchases	0	\$0.00	\$0.00	\$38,000.00	\$38,000.00	1
200	Resource Management	15	\$3,269.70	\$127.50	\$15,000.00	\$18,397.20	0
203	Tree and shrub planting	0	\$0.00	\$0.00	\$5,000.00	\$5,000.00	0
204	Resource planning	20	\$4,359.60	\$170.00	\$0.00	\$4,529.60	0
206	Prescribed burning - growing season	20	\$4,359.60	\$170.00	\$8,750.00	\$13,279.60	100
207	Prescribed burning - dormant season	20	\$4,359.60	\$170.00	\$8,750.00	\$13,279.60	100
208	Firebreaks	10	\$2,179.80	\$85.00	\$5,000.00	\$7,264.80	8
210	Exotic species control	20	\$4,359.60	\$170.00	\$50,000.00	\$54,529.60	200
218	Water level management	0	\$0.00	\$0.00	\$0.00	\$0.00	0
235	Vegetation and plant surveys	5	\$1,089.90	\$42.50	\$30,000.00	\$31,132.40	0
289	Native vegetation management (mechanical)	20	\$4,359.60	\$170.00	\$25,000.00	\$29,529.60	150
910	New facility construction -- buildings/structures	0	\$0.00	\$0.00	\$0.00	\$0.00	0
912	New construction -- roads/bridges	0	\$0.00	\$0.00	\$0.00	\$0.00	0
914	New construction -- fences	0	\$0.00	\$0.00	\$0.00	\$0.00	0
920	FEM -- buildings/structures	25	\$5,449.50	\$212.50	\$50,000.00	\$55,662.00	5
923	FEM -- vehicles/equipment	20	\$4,359.60	\$170.00	\$20,000.00	\$24,529.60	7
926	FEM -- roads/bridges	6	\$1,307.88	\$51.00	\$100,000.00	\$101,358.88	5
928	FEM -- fences	10	\$2,179.80	\$85.00	\$5,000.00	\$7,264.80	0

12.17 Arthropod Control Plan



ADAM H. PUTNAM
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Section 388.4111, F.S.
Telephone: (850) 617-7995

Return to:
Mosquito Control Program
3125 Conner Blvd, Bldg 6,
Tallahassee, Florida 32399-1650

For use in documenting an Arthropod Control Plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein. Fill this form out if control work is necessary or planned.

Name of Designated Land: Crooked Lake Wildlife and Environmental Area

Is Control Work Necessary: ☐ Yes ☒ No

Location: Polk County

Land Management Agency: Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary? ☐ Yes ☒ No
If "Yes", please explain:

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

- | | | |
|--|--------------------------------------|--|
| ☐ Landing Rate Counts | ☐ Light Traps | ☐ Sentinel Chickens |
| ☐ Citizen Complaints | ☐ Larval Dips | ☐ Other |

If "Other", please explain: N/A

Arthropod Species for Which Control is Proposed: N/A

Proposed Larval Control: N/A

Proposed larval monitoring procedure:

Are post treatment counts being obtained: ☐ Yes ☒ No

Biological Control of Larvae:

Might predacious fish be stocked: ☐ Yes ☒ No

Other biological controls that might be used:

Material to be Used for Larvaciding Applications: (Please Check All That Apply.) N/A

☐ Bti

☐ Bs

☐ Methoprene

☐ Non-Petroleum Surface Film

☐ Other, please specify:

Please specify the following for each larvacide: N / A

Chemical or Common name: N/A

☐ Ground ☐ Aerial

Rate of application:

Method of application:

Proposed Adult Mosquito Control: N/A

Aerial adulticiding ☐ Yes ☒ No

Ground adulticiding ☐ Yes ☒ No

Please specify the following for each adulticide: N / A

Chemical or common name:

Rate of application:

Method of application:

Proposed Modifications for Public Health Emergency Control: In the event of a declared public health emergency, control may be performed by the arthropod control agency, as part of a larger treatment plan to safeguard public health. Land managers of the area will be notified prior to treatment.

Proposed Notification Procedure for Control Activities:

Manager of the area will be notified by e-mail when treatment of the area will occur. The notice should include a map of the area being treated, the material to be used and the general time of day the treatment will occur.

Records:

Are records being kept in accordance with Chapter 388, F.S.:

☒ Yes ☐ No

Records Location: **Polk County Mosquito Control. 4177 Ben Durrance Rd, Bartow, FL 33830.**

How long are records maintained: **5 years**

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

None

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed:

None

Include proposed operational schedules for water fluctuations:

None

List any periodic restrictions, as applicable, for example peak fish spawning times.

None

Proposed Modification of Aquatic Vegetation:

None

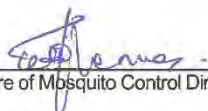
Land Manager Comments:

Arthropod Control Agency Comments:

David B. Johnson

Digitally signed by
David B. Johnson
Date: 2019.04.25
11:54:20 -04'00'

Signature of Lands Manager or Representative Date


Signature of Mosquito Control Director / Manager Date
April 25 2019

Carl . K. Boohene

12.18 Polk County Letter of Compliance with Local Government Comprehensive Plan

Florida's Crossroads of Opportunity

330 West Church Street
PO Box 9005 • Drawer GM01
Bartow, Florida 33831-9005



Board of County Commissioners

PHONE: 863-534-6486
FAX: 863-534-6471
www.polk-county.net

LONG RANGE PLANNING DIVISION

June 18, 2019

Re: Management Plan for Crooked Lake Wildlife and Environmental Area in Polk County.

Dear Ms. Imlah,

This is in response to your request for a determination from Polk County regarding the consistency for the Management Plan for Crooked Lake Wildlife and Environmental Area with the Polk County Comprehensive Plan.

The Crooked Lake Wildlife and Environmental Area is quite extensive in size and is located in southern Polk County, west of Frostproof, FL. This management area is comprised of Agricultural Residential-Rural (A/RR) Future Land Use designation. It should be noted that a Polk County's Future Land Use Maps indicate that Crooked Lake Wildlife and Environmental Area will continue to be designated as Agricultural Residential-Rural. Agricultural Residential-Rural land use designation is to provide for the continued viability of agriculture by providing for low-density residential development.

Based upon our review of those areas of the Management Plan for Crooked Lake Wildlife and Environmental Area that are located in unincorporated Polk County, it is determined to be complaint with both the Future Land Use Designations on the properties, and all applicable policies of Polk County's Comprehensive Plan.

Thank you for the opportunity to review your management plan. If I can be of further assistance, please let me know.

Sincerely,

Julie Fife, Planner III
Long Range Planning Division

COMMISSIONERS: George Lindsey III, Chairman • Rick Wilson • Bill Braswell • Martha Santiago • John Hall, Vice Chairman

Florida Fish and Wildlife Conservation Commission | Crooked Lake Wildlife and
Environmental Area Management Plan