



A Management Plan for Andrews Wildlife Management Area 2019 - 2029

Levy County, Florida



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



FLORIDA DEPARTMENT OF Environmental Protection

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3900 Commonwealth Boulevard
Tallahassee, FL 32399

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Lt. Governor

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Secretary

October 21, 2019

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

RE: Andrews Wildlife Management Area (WMA) – Lease No. 4612

Dear Mr. Houston:

On **October 18, 2019**, the Acquisition and Restoration Council (ARC) recommended approval of the **Andrews WMA** management plan. Therefore, Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves **Andrews WMA** management plan. The next management plan update is due October 18, 2029.

Pursuant to s. 253.034(5)(a), F.S., each management plan is required to describe both short-term and long-term management goals and include measurable objectives to achieve those goals. Short-term goals shall be achievable within a 2-year planning period, and long-term goals shall be achievable within a 10-year planning period.” Upon completion of short-term goals, please submit a signed letter identifying categories, goals, and results with attached methodology to the Division of State Lands, Office of Environmental Services.

Pursuant to s. 259.032(8)(g), F.S., by July 1 of each year, each governmental agency and each private entity designated to manage lands shall report to the Secretary of Environmental Protection, via the Division of State Lands, on the progress of funding, staffing, and resource management of every project for which the agency or entity is responsible.

Pursuant to s. 259.036(2), F.S., management areas that exceed 1,000 acres in size, shall be scheduled for a land management review at least every 5 years.

Pursuant to s. 259.032, F.S., and Chapter 18-2.021, F.A.C., management plans for areas less than 160 acres may be handled in accordance with the negative response process. This process requires small management plans and management plan amendments be submitted to the Division of State Lands for review, and the Acquisition and Restoration Council (ARC) for public notification. The Division of State Lands will approve these

plans or plan amendments submitted for review through delegated authority unless three or more ARC members request the division place the item on a future council meeting agenda for review. To create better efficiency, improve customer service, and assist members of the ARC, the Division of State Lands will notice negative response items on Thursdays except for weeks that have State or Federal holidays that fall on Thursday or Friday. The Division of State Lands will contact you on the appropriate Friday to inform you if the item is approved via delegated authority or if it will be placed on a future ARC agenda by request of the ARC members.

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

Sincerely,

A handwritten signature in black ink that reads "Paula L. Allen". The signature is written in a cursive style with a long horizontal line extending to the left of the name.

Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

**A Management Plan
for
Andrews Wildlife Management Area**

Levy 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: Andrews Wildlife Management Area

Location: Levy County, Florida

Acreage Total: 3,582 Acres

Acreage Breakdown:

<u>Land Cover Classification</u>	<u>Acres*</u>	<u>Percent of Area</u>
Abandoned pasture	7.31	0.2%
Alluvial forest	146.50	4.1%
Borrow area	1.04	0.1%
Clearing/regeneration	22.91	0.6%
Developed	0.50	0.0%
Floodplain swamp	320.83	9.0%
Pine plantation	80.08	2.2%
Restoration upland mixed woodland	37.62	1.1%
Upland hardwood forest	2,329.05	65.0%
Upland mixed woodland	541.19	15.1%
Xeric hammock	65.20	1.8%

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

Lease/Management Agreement No.: 4612 (Appendix 12.1)

Use: Single _____

Multiple X

Management Responsibilities:

Agency FWC

Responsibilities

LEAD, SUBLESSEE (Wildlife Management Area, resource protection, law enforcement)

Designated Land Use: Wildlife Management Area

Sublease (s): None

Encumbrances: Andrews Family Life Estate and Lifetime Hunting Rights

Type Acquisition: Fish and Wildlife Habitat Program

Unique Features: Natural: Natural communities, scenic views of and access to Suwannee River

Archaeological/Historical: Eight historic sites, one historic structure, and one historic cemetery documented on AWMA.

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: 1,875 acres FWC Additions and Inholdings list; 374 acres remaining in the Florida's First Magnitude Springs Florida Forever Project.

Surplus Lands/Acreage: None

Public Involvement: Management Advisory Group consensus building meeting and Public Hearing (Appendix 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	1
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	3
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	7
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	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	4, 5, 76
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	46
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	78, 79
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	10
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, 7, 43-46
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	8-9

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	45
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	43-46
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	46
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	7
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	73

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	80
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)	44-46
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	44-46
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	Board Of Trustees requirement	Appendix 12.16
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	14, 83
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	44
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	Appendix 12.5
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	46

*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
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)	13, Appendix 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	Appendix 12.8
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	Appendix 12.8
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	Appendix 12.8

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, 16, Appendix 12.4
33	Insert FNAI based natural community maps when available.	ARC consensus	18
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	15-43

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	15-43
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	40
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	40
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	30-40
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	30-34, 39
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	40, 41, 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)	43, 73, 86
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.	↓	59-93
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.		83-84
42-C.	The associated measurable objectives to achieve the goals.		83-84
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>		83-88, Appendix 12.9
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.		91-93
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)	30-34
44	Sustainable Forest Management, including implementation of prescribed fire management	18-2.021, 253.034(5) & 259.032(10) ↓	
44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		73, 76

44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		86
44-C.	Measurable objectives (see requirement for #42-C).		86
44-D.	Related activities (see requirement for #42-D).		61-65, 73, 86
44-E.	Budgets (see requirement for #42-E).		91-93
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).	↓	66, 67, 84
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		84
45-C.	Measurable objectives (see requirement for #42-C).		84
45-D.	Related activities (see requirement for #42-D).		66, 67, 84
45-E.	Budgets (see requirement for #42-E).		91-93
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)	67, 68
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.	Board of Trustees requirement via lease language	Appendix 12.5
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).	↓	67, 68, 85
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85
48-C.	Measurable objectives (see requirement for #42-C).		85
48-D.	Related activities (see requirement for #42-D).		67, 68, 85
48-E.	Budgets (see requirement for #42-E).		91-93

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	40

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	40
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	30-33
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. <i>See footnote.</i>	253.034(5)	30-33, 40
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).	↓	72-73, 86
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		86
53-C.	Measurable objectives (see requirement for #42-C).		86
53-D.	Related activities (see requirement for #42-D).		72-73, 86, Appendix 12.11
53-E.	Budgets (see requirement for #42-E).		91-93

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	43
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	43
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	73, Appendix 12.12
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).	↓	73, 86
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		86
57-C.	Measurable objectives (see requirement for #42-C).		86
57-D.	Related activities (see requirement for #42-D).		73, 86, Appendix 12.12
57-E.	Budgets (see requirement for #42-E).		91-93

**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)	74
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).	↓	69-72, 74, 85, 87
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85, 87
59-C.	Measurable objectives (see requirement for #42-C).		85, 87
59-D.	Related activities (see requirement for #42-D).		69-72, 74, 85, 87
59-E.	Budgets (see requirement for #42-E).		91-93
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	69-72
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).	↓	69-72, 85, 87
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		85
61-C.	Measurable objectives (see requirement for #42-C).		85
61-D.	Related activities (see requirement for #42-D).		69-72, 74, 85, 87
61-E.	Budgets (see requirement for #42-E).		91-93

Section H: Other/ Managing Agency Tools			
Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
62	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	iii
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	ii
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	47-59
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	83-88

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)	91-93
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)	91-93
68	A statement of gross income generated, net income and expenses.	18-2.018	91-93, Appendix 12.14

*** = 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.

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Management Plan Acronym Key

ADA	Americans with Disabilities Act
ARC	Acquisition and Restoration Council
AWMA	Andrews Wildlife Management Area
BEBR	Bureau of Economic and Business Research
CARL	Conservation and Recreation Lands Program
CAS	Conservation Action Strategy
DACS	Department of Agriculture and Consumer Services
DEP	Department of Environmental Protection
DHR	Division of Historical Resources
DSL	Division of State Lands
FAC	Florida Administrative Code
FFS	Florida Forest Service
FLEPPC	Florida Exotic Pest Plant Council
FNAI	Florida Natural Areas Inventory
FS	Florida Statute(s)
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information Systems
GPS	Geographic Positioning System
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
MAG	Management Advisory Group
MSL	Mean Sea Level
NRCS	Natural Resources Conservation Service
NWR	National Wildlife Refuge
OBVM	Objective-Based Vegetation Management
OCPB	Optimal Conservation Planning Boundary
OFW	Outstanding Florida Waters
ORB	Optimal Resource Boundary
PASO	Public Access Services Office
SOR	Save Our Rivers
SRWMD	Suwannee River Water Management District
WCPR	Wildlife Conservation Prioritization and Recovery
WMA	Wildlife Management Area

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1 Introduction and General Information

Protecting approximately four miles of the Suwannee River, the Andrews Wildlife Management Area (AWMA) provides quality habitat for numerous wildlife species and a variety of outdoor recreation opportunities for Florida’s residents and visitors. AWMA contains one of Florida’s largest remaining unaltered contiguous upland hardwood hammock forests representing xeric and mesic vegetative communities in close proximity. Of the estimated 20,000 to 25,000 acres of upland hardwood forest that once existed along the lower Suwannee, the last remaining large tract is located within AWMA. Andrews's old-growth upland hardwood forest shows little evidence of human disturbance. Its well-developed canopy with trees in various stages of growth and decay provides food, cover, and nesting and denning sites for many wildlife species. AWMA offers high-quality hunts and excellent fishing along the banks of the Suwannee. Other opportunities to hike, jog, or bike along pleasant, well-marked trails are also offered.

AWMA is owned by the Suwannee River Water Management District (SRWMD) and the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) of the State of Florida. The Florida Fish and Wildlife Conservation Commission (FWC) holds the



lease and has lead management authority for all resources within AWMA’s established boundary. AWMA is managed to conserve and restore natural wildlife habitats, and to provide high-quality fish- and wildlife-based public outdoor recreation opportunities.

1.1 Management Plan Purpose

This Management Plan serves as the basic statement of policy and direction for the management of AWMA. It provides information including the past usage, conservation acquisition history, and descriptions of the natural and historical resources found on AWMA. Furthermore, it identifies 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 AWMA’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 through the Florida Department of Environmental Protection's Division of State Lands (DSL), in compliance with paragraph seven of Lease No. 4612 (Appendix 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 used in this Management Plan (Appendix 2) 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 and solicits additional input from user groups and the general public at a public hearing (Appendix 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 AWMA Management Plan (Sections 5 – 8).

Further management planning input is received through Land Management Reviews (LMR) conducted every five years, which includes a review of the previous Management Plan, as well as a field review of AWMA. The LMR report (Section 5.1, Appendix 12.8) 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 FWC so they may be adequately addressed in this Management Plan, and thus guide the implementation of the LMR team recommendations on AWMA.

Furthermore, 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 DSL and ARC for review and consideration.

1.2 Location

The AWMA is situated along the east bank of the Suwannee River in western Levy County. The area is adjacent to the southern limits of the City of Fanning Springs. It is approximately five miles northwest of Chiefland and 35 miles west-southwest of Gainesville (Figure 1). One designated entrance, which is located at the end of 160th street approximately one mile west of U.S. 19/U.S. 98, provides public access to the area. The western boundary of AWMA is formed by the Suwannee River (Figure 2). The area is located in Sections 28, 29, 31, and 32 of Township 10 South, Range 14 East, Sections 1, 11, and 12 of Township 11 South, Range 13 East, and Sections 5 through 8 of Township 11 South, Range 14 East (Figure 3).

1.3 Acquisition

1.3.1 Purpose for Acquisition of the Property

The high intrinsic wildlife value, relatively unspoiled mature hardwood forest, and the importance of the area's floodplain to the Suwannee River were primary reasons for acquiring AWMA. The tract is one of the very few remaining large contiguous areas of old growth upland hardwood forest in Florida. Save Our Rivers (SOR) legislation calls for the management and maintenance of lands acquired with SOR funds "in an environmentally acceptable manner, and to the extent practicable, in such a way as to restore and protect their natural state and condition. These lands shall also be used for general public recreational purposes to the maximum extent possible considering the environmental sensitivity and suitability of those lands." The primary management intent for the Conservation and Recreation Lands (CARL) lands, as expressed in the CARL assessment, is the following: (1) to provide protection to significant ecological and historical components, and (2) to manage the area's intrinsically high floral and faunal resources for public outdoor recreation.

According to the CARL Assessment document, the Andrews tract qualified under five of the six purchase categories under the Environmentally Endangered Lands criteria. The summary recommended that the area should "be acquired as an outstanding natural area, and to protect fish and wildlife habitat as well as water quality." It was further recommended that outdoor recreation be emphasized, and major efforts directed toward "protecting the pristine state of the mature hardwood forest," and the area be managed as "a high-quality, resource-based natural area where wild plants and animals are the feature attraction."

The AWMA is managed by FWC for the purpose of operating a Wildlife Management Area, providing ecological diversity, providing managed habitat for both common and imperiled wildlife, and for providing the public with fish- and wildlife-oriented outdoor recreational opportunities.

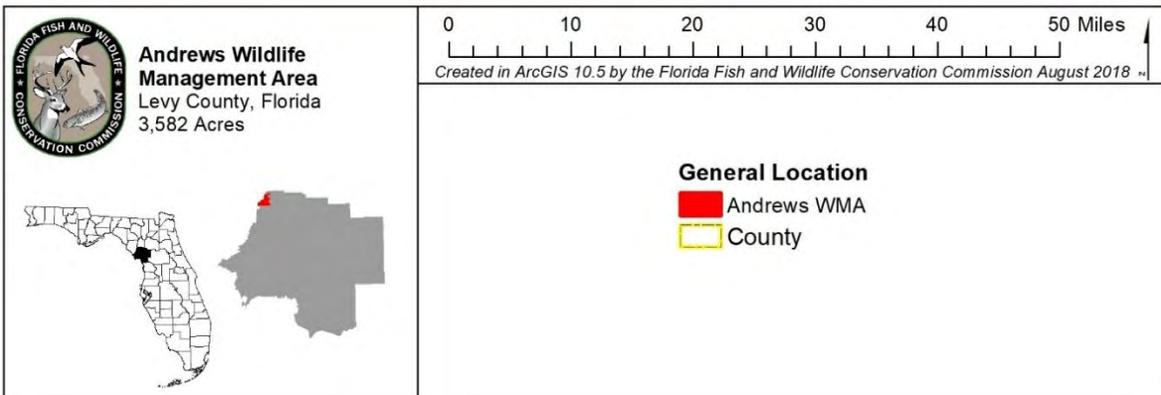
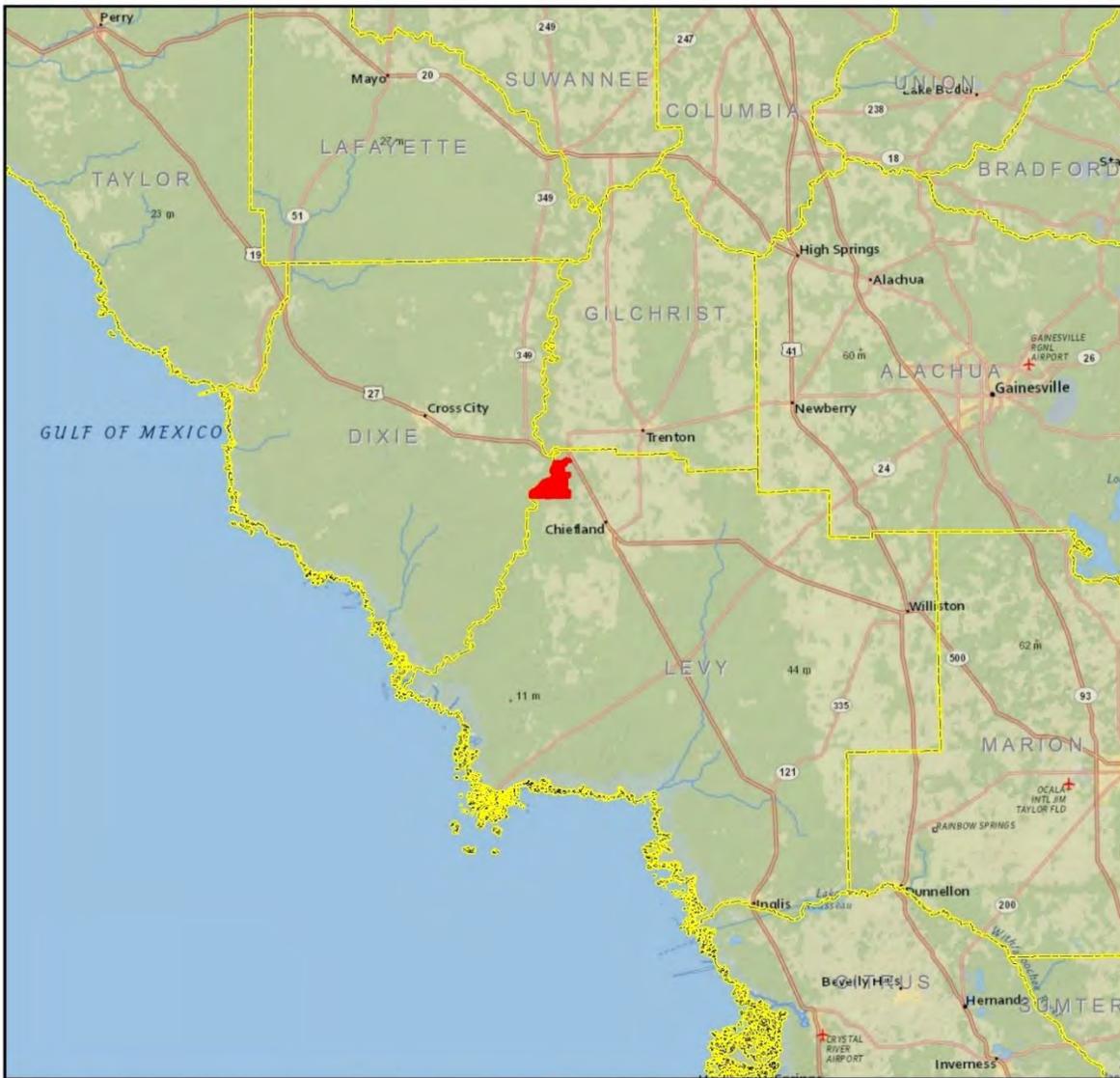


Figure 1: General Location of AWMA

Florida Fish and Wildlife Conservation Commission | Andrews WMA Management Plan

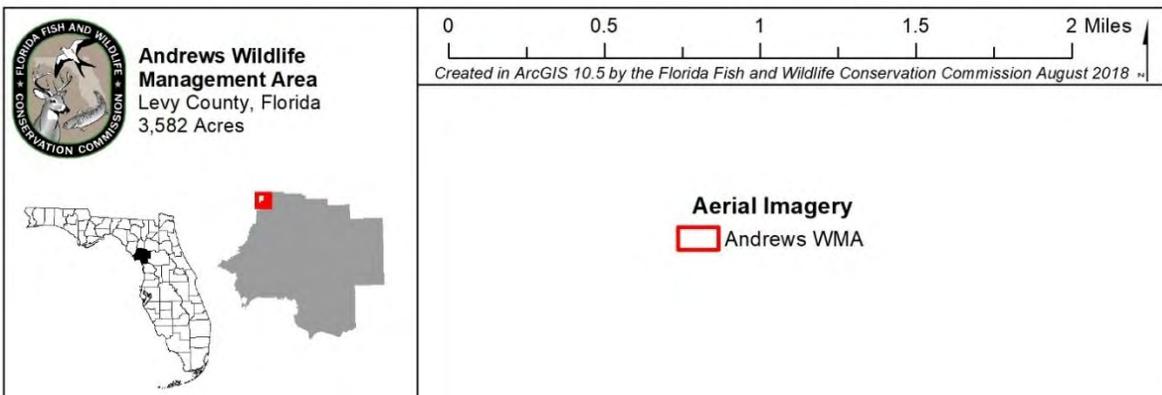
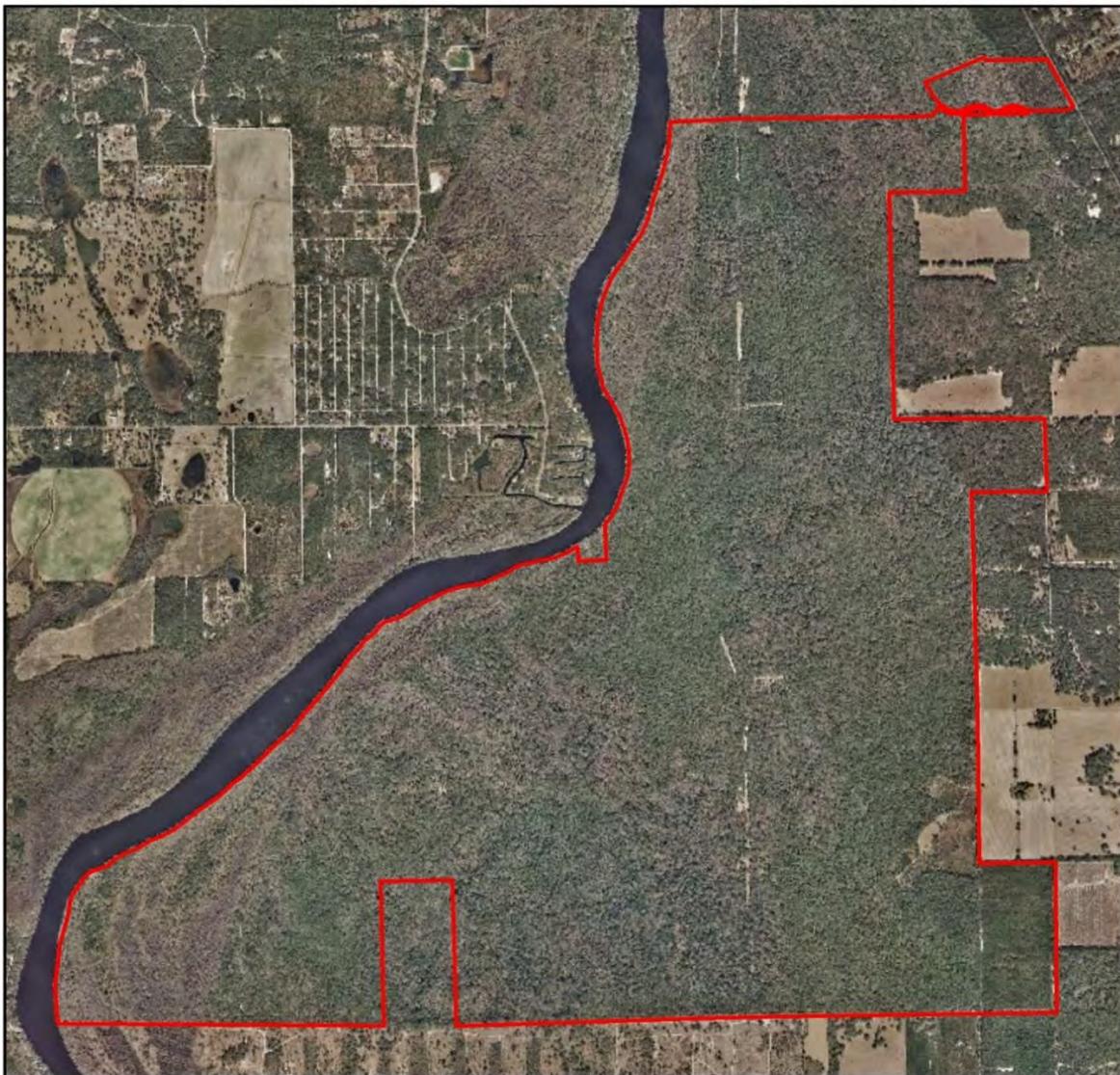


Figure 2: Aerial Imagery of AWMA

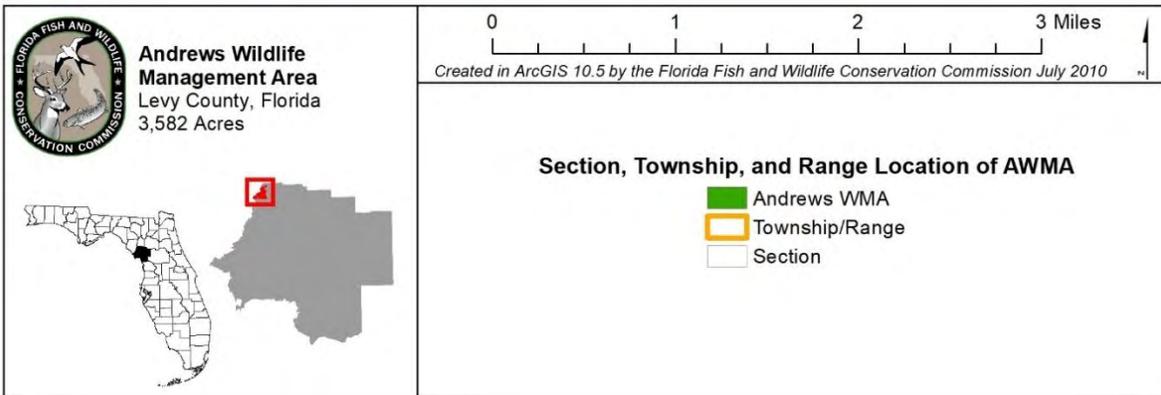
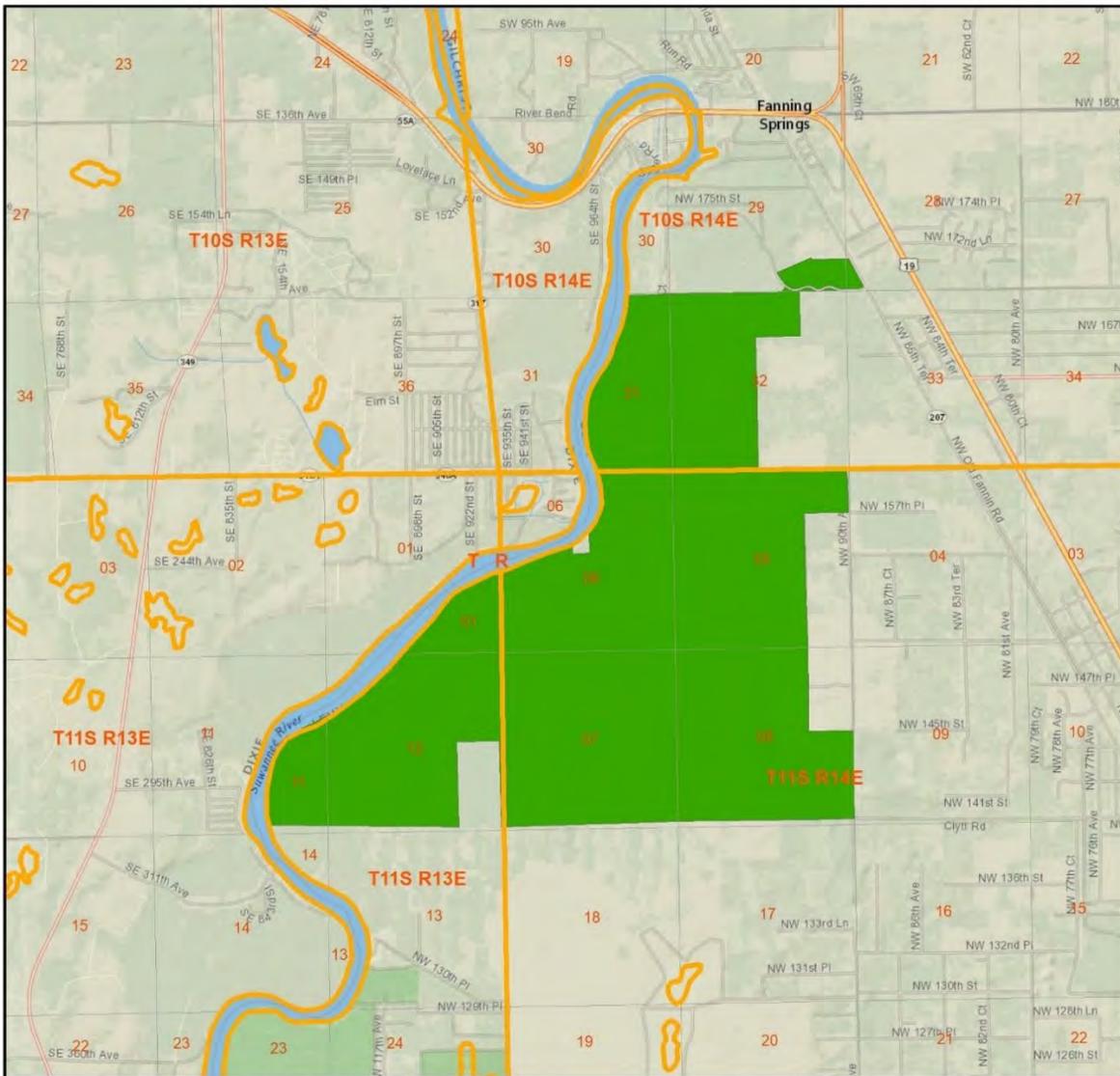


Figure 3: Section, Township, and Range Location of AWMA

Florida Fish and Wildlife Conservation Commission | Andrews WMA Management Plan

1.3.2 Acquisition History

The AWMA was purchased in 1985 by the State of Florida under two land acquisition programs. The 576 acres of floodplain within AWMA were acquired by the Suwannee River Water Management District (SRWMD) under the SOR Program. The SOR program was approved in 1981 and established as the Water Management Lands Trust Fund (Ch. 373.59, FS). Funds for SOR land acquisition program are generated from the documentary stamp tax on properties purchased in Florida, and its funds are specifically designed for the purchase of environmentally sensitive riverine lands. The remaining 2,921.67 acres were purchased by the Department of Environmental Protection (DEP) with CARL funds (Ch. 259.032, FS) with assistance from The Nature Conservancy. The CARL program was established in 1979 to acquire environmentally endangered lands for preservation and natural resource-based recreation. The CARL Trust Fund relied on funds generated principally from the documentary stamp tax and severance taxes on phosphate rock. The CARL program was succeeded by the Preservation 2000 program and then the current Florida Forever program with similar purposes. In 1995, the Game and Fresh Water Fish Commission (now FWC) acquired 3.33 acres of an existing inholding with funds from the Preservation 2000 Inholdings and Additions program. Other such adjacent lands have been nominated for acquisition under the same program. Additionally, FWC acquired an 81-acre parcel in 2008 under the FWC Florida Forever Inholdings and Additions Program.

1.4 Management Authority

The FWC is the designated lead managing agency for AWMA under the authority granted by Lease Number 4612 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, and of the Florida Statutes. These constitutional provisions and laws provide 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 4612 with FWC directs 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 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 AWMA is vested in the Board of Trustees (Governor and Cabinet). In October 1986, DSL, as staff to the Board of Trustees, entered into Lease

Agreement Number 3587, a 50-year lease agreement, granting FWC management authority for AWMA. The Florida Forest Service (FFS) was named as a cooperating manager in the lease agreement. In December 2012, DSL entered into Lease Agreement Number 4612, which replaced the previous lease. On September 10, 2013, FWC and the SRWMD entered into a Cooperative Management Agreement to allow FWC to continue to manage the portion of AWMA that is titled to the SRWMD.

The Andrews family maintains two life estates on AWMA (1.9 acres and 2.8 acres). Additionally, there is an easement for ingress and egress to Mr. Andrews and Timber Development, Inc.

1.7 Proximity to Other Public Conservation Lands

The AWMA is located in the vicinity of an extensive network of conservation lands, including lands managed by the SRWMD, DEP and FWC (Figure 4). Several Florida Forever projects are also located near the area. Tables 1 and 2 list the conservation lands and Florida Forever Projects within a 20-mile radius of AWMA, 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: Conservation Lands With 20 Miles of AWMA

Federal Government	Managing Agency
Lower Suwannee National Wildlife Refuge	USFWS
State of Florida	Managing Agency
Bell Ridge Longleaf Wildlife and Environmental Area	FWC
Big Bend Wildlife Management Area	FWC
Circle Pine Farm Agricultural and Conservation Easement	FFS
Fanning Springs State Park	DEP
Goethe State Forest	FFS
Lafayette Forest Wildlife and Environmental Area	FWC
Land Family Agricultural and Conservation Easement #1	FFS
Land Family Agricultural and Conservation Easement #2	FFS
Manatee Springs State Park	DEP
Nature Coast State Trail	DEP
Watermelon Pond Wildlife and Environmental Area	FWC
Water Management District	Managing Agency
Florida Fish and Wildlife Conservation Commission Andrews WMA Management Plan	

Table 1: Conservation Lands With 20 Miles of AWMA

Anderson Conservation Easement	SRWMD
Bailey Brothers Conservation Easement	SRWMD
California Creek Conservation Area	SRWMD
David and Sarah Meeks Conservation Easement	SRWMD
Forest Systems Conservation Easement	SRWMD
Fowlers Bluff Conservation Area	SRWMD
G. L. Drummond Conservation Easement	SRWMD
Hatchbend Conservation Area	SRWMD
Jack and Loy Ann Mann Conservation Easement	SRWMD
Log Landing Conservation Area	SRWMD
Lyme Cross City Forest Company, LLC Conservation Easement	SRWMD
Mallory Swamp Restoration Area	SRWMD
NATC Oak Hammock Conservation Easement	SRWMD
NATC Suwannee Swamp Conservation Easement	SRWMD
Rock Bluff Conservation Area	SRWMD
Sheppard Conservation Easement	SRWMD
Strickland Field Conservation Easement	SRWMD
Tisdale Conservation Easement	SRWMD
Upper Waccasassa Conservation Area	SRWMD
Usher Trust Conservation Easement	SRWMD
Wannee Conservation Area	SRWMD
Yellow Jacket Conservation Area	SRWMD

Local Government	Managing Agency
Devil's Hammock	Levy County
Hart Springs Park	Gilchrist County
Watermelon Pond Park	Alachua County
Watermelon Pond Preserve - Gladman	Alachua County
Watermelon Pond Preserve - Metzger	Alachua County

Table 2: Florida Forever Projects Within 20 Miles of AWMA

Florida Forever Project	Remaining Acres
Florida's First Magnitude Springs - Fanning Springs	364
Lafayette Forest	10,251
Longleaf Pine Ecosystem - Bell Ridge Sandhills	3,384
Lower Suwannee River and Gulf Watershed	50,383
North Waccasassa Flats	14,153
Watermelon Pond	5,696

1.8 Adjacent Land Uses

Currently, the private property surrounding AWMA is primarily in residential and agricultural use. Immediately north of AWMA is privately held land within the city limits of the City of Fanning Springs. This land is largely undeveloped and is primarily hardwood hammocks and forest, though there are over 30 platted residential parcels in private ownership. These parcels range in size from approximately one acre to approximately 3.7 acres.

The land immediately adjacent to the south of AWMA has a land use designation of Agricultural/Rural Residential. This category provides for agricultural uses, accessory and supportive uses to agriculture, resource-based recreational uses, conservation uses, and very low-density residential development. The Agricultural/Rural Residential land use has a maximum residential density of one dwelling unit per ten acres.

The land immediately east of AWMA is a mix of land with Agricultural/Rural Residential, Rural Residential, and Low-Density Residential designations. The Rural Residential land use category allows for rural low-density residential uses and limited agricultural uses. This category has a maximum residential density of one dwelling unit per three acres. The Low-Density Residential category allows for low density residential uses at a maximum density of one dwelling unit per acre. If central water and sewer are provided, the maximum permitted residential density is two dwelling units per acre.

The U.S. Census Bureau estimates that there were 40,355 people living in Levy County in 2017. The Bureau of Economic and Business Research's (BEBR) medium-range population projection indicates that by 2030, there will be 44,400 people living in the county. Population projections for the counties surrounding Levy County for 2030 are as follows: Alachua County – 289,900; Citrus County – 157,700; Dixie County – 17,700; Gilchrist County – 19,100; Marion County – 404,900.

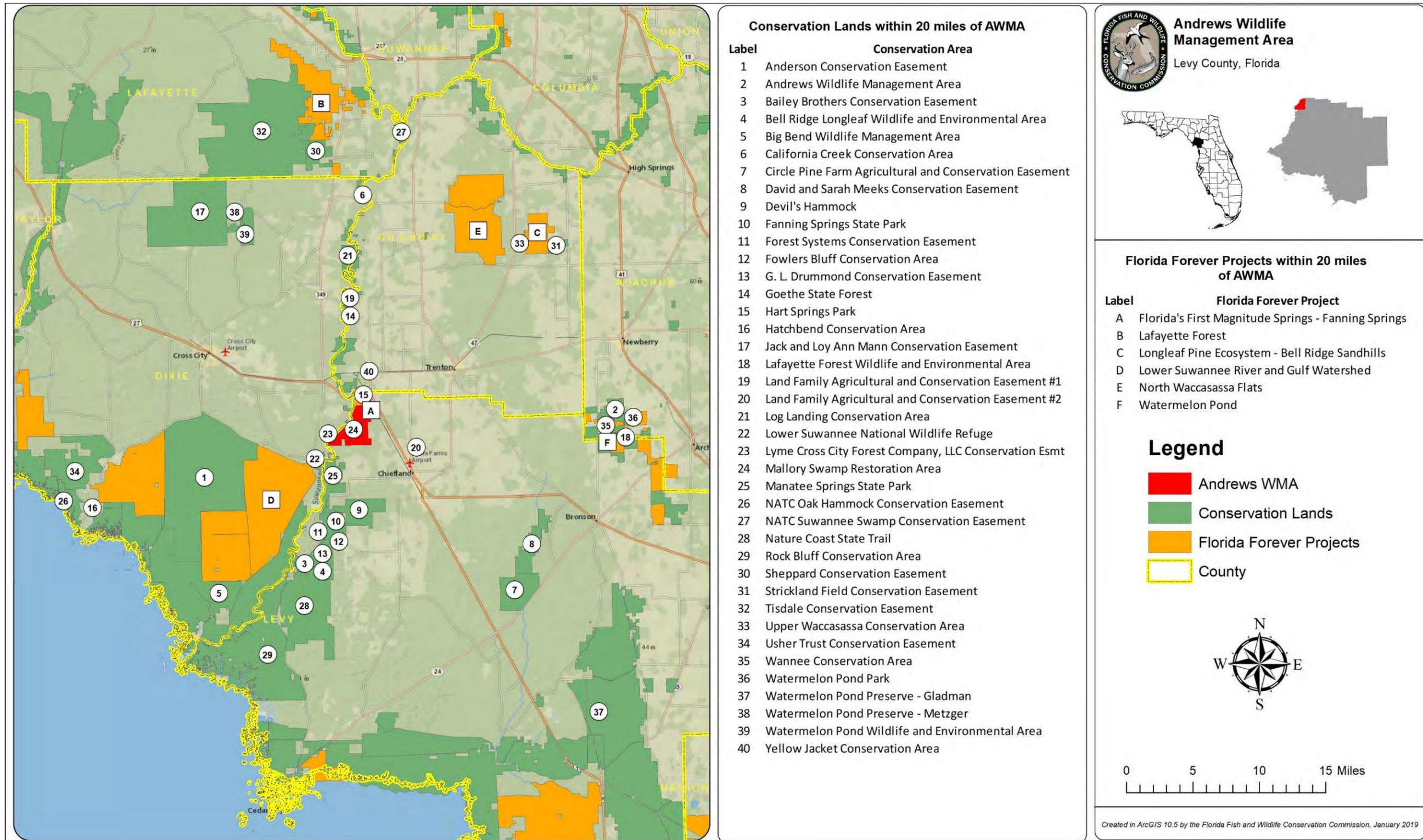


Figure 4: Nearby Conservation Lands and Florida Forever Projects

1.9 Public Involvement



The FWC conducted a Management Advisory Group (MAG) meeting in Fanning Springs, Florida on September 12, 2018 to obtain input from both public and private stakeholders regarding management of AWMA. Results of this meeting were used by FWC to develop management goals and objectives and to identify opportunities and strategies for inclusion in this Management Plan. A

summary of issues and opportunities raised by the MAG, as well as a listing of participants, is included as Appendix 12.3.1. Further, a public hearing, as required by Chapter 259.032(10), FS, was held in Bronson, Florida on November 1, 2018 to solicit input and comments from the general public regarding this Management Plan. The report of that hearing is contained in Appendix 12.3.2. 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 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

2.1.1 Climate

Levy County is located in a warm, temperate region of Florida. Average temperatures range from 82 degrees Fahrenheit in the summer to 58 degrees Fahrenheit in the winter. Winter freezes are infrequent. Rainfall averages 56 inches annually with average monthly precipitation ranging from two to nine inches. The wet season normally extends from July through September, while winter is the normal dry season.

2.1.2 Topography

The Gulf Coastal Lowlands geomorphic province parallels the present Gulf Coast of Florida from Ft. Myers northward, then westward around the Big Bend to the Alabama line. In the vicinity of Levy County, the Gulf Coastal Lowlands extend inland from the modern Gulf of Mexico shoreline distances of between 15 and 30 miles, stopping at the western edge of the Brooksville Ridge. The Gulf Coastal Lowlands in Levy County are characterized by broad, flat marine erosional plains, underlain by Eocene limestones, and blanketed by thin Pleistocene sands deposited by the regressing Gulf of Mexico.

Elevations within this province vary from zero feet mean sea level (MSL) at the Gulf shoreline to about 60 feet MSL near the Brooksville Ridge. Several geomorphic subdivisions, based on topography, punctuate the Gulf Coastal Lowlands zone in Levy County. These include the Waccasassa Flats, the Limestone Shelf and Hammocks, the Chiefland Limestone Plain, the Suwannee River Valley Lowlands, and the Coastal Marsh Belt. On AWMA, the area gradually slopes from 40-foot elevations in the southeastern portions to about five feet above MSL at the Suwannee River. Uplands are fairly uniform with slopes generally less than five percent, whereas the riparian portion of the tract consists of low river bluffs (15 feet high by one-half mile long), sloughs, and flood-plain swamps.

2.1.3 Soils

The United States Department of Agriculture's Natural Resources Conservation Service (NRCS) data were used to identify AWMA's soil types and soil depth to water table. Nine soil map units described in the soil survey of AWMA are distributed as shown in Figure 5. The primary soil types found on the area include Otela-Candler complex, 1 to 5 percent slopes (59% of the area), and Jonesville-Otela-Seaboard complex, 1 to 5 percent slopes (23% of the area). Analysis of the depth to water table for soil units occurring within AWMA are also provided in Figure 6. The NRCS defines a soil 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. Soil unit descriptions may be found in Appendix 12.4.

2.1.4 Geologic Conditions

The AWMA is located within the Gulf Coastal Lowlands physiographic province, which is the largest province in Florida. The geology of this region represents Eocene epochs of the Tertiary period. The formation type is Ocala limestone.

2.2 Vegetation

Due to its location along the east bank of the Suwannee River, AWMA has a unique blend of floodplain and upland habitats. The FWC has completed natural and anthropogenic community mapping of AWMA through the services of the Florida Natural Areas Inventory (FNAI). Through this work, FNAI has identified and mapped a total of 11 plant communities within AWMA.

The plant communities located on AWMA are listed in Table 3 and shown in Figure 7. These communities are described in section 2.2.1. Native and rare plant species known to occur on AWMA are listed in Tables 4 and 5, respectively. Table 6 lists the exotic/invasive plant species found on the area and the Florida Exotic Pest Plant Council (FLEPPC) category for each species.

Table 3: Vegetative Communities Found at AWMA

Community Type	Acres
Abandoned pasture	7.31
Alluvial forest	146.50
Borrow area	1.04
Clearing/regeneration	22.91
Developed	0.50
Floodplain swamp	320.83
Pine plantation	80.08
Restoration upland mixed woodland	37.62
Upland hardwood forest	2,329.05
Upland mixed woodland	541.19
Xeric hammock	65.20

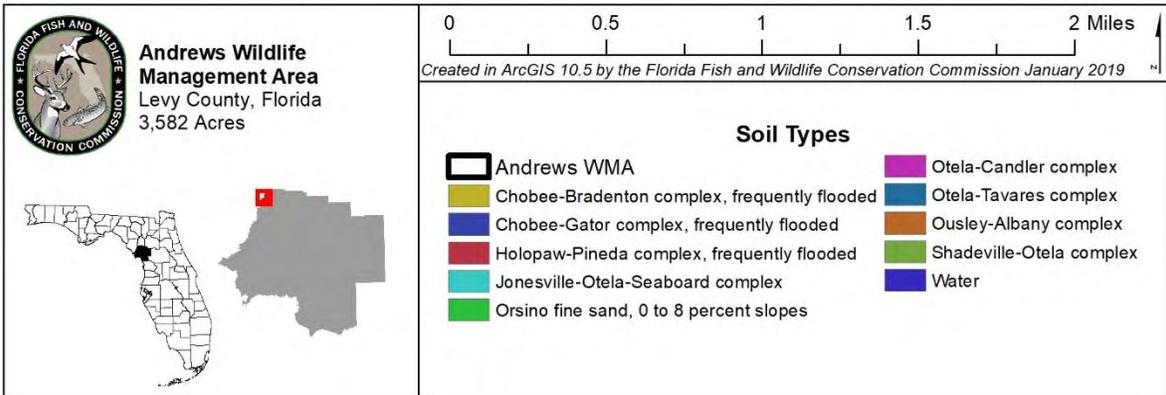
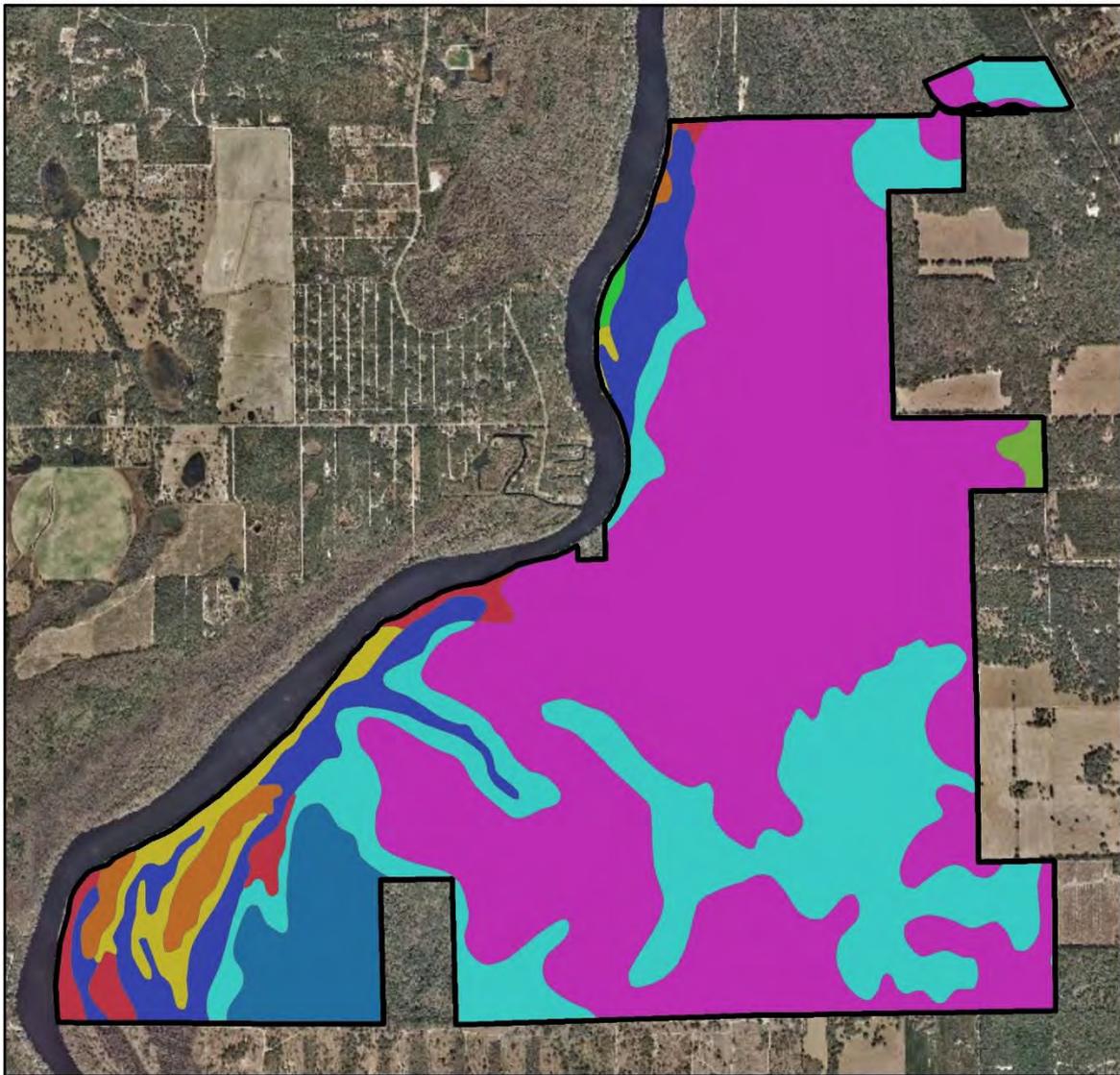


Figure 5: AWMA Soil Types

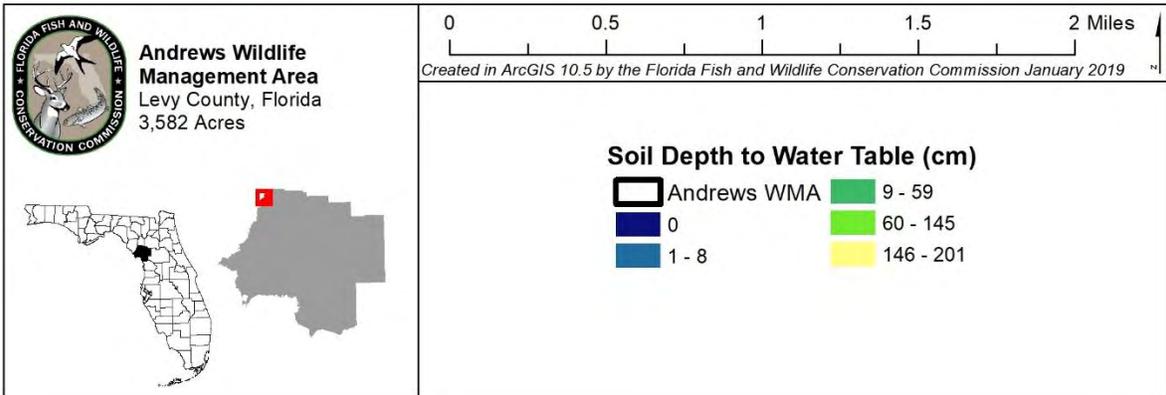
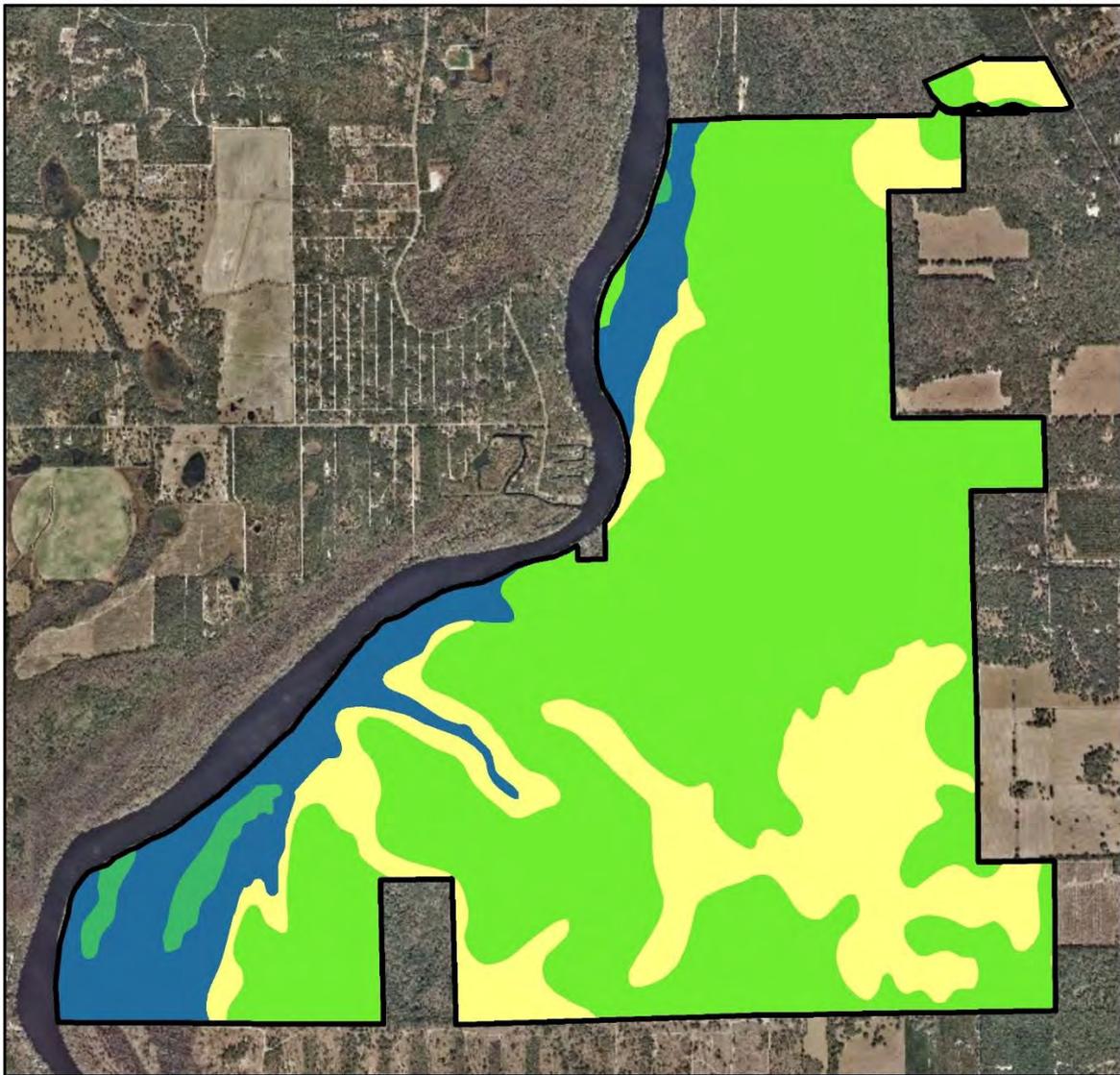


Figure 6: Soil Depth to the Water Table

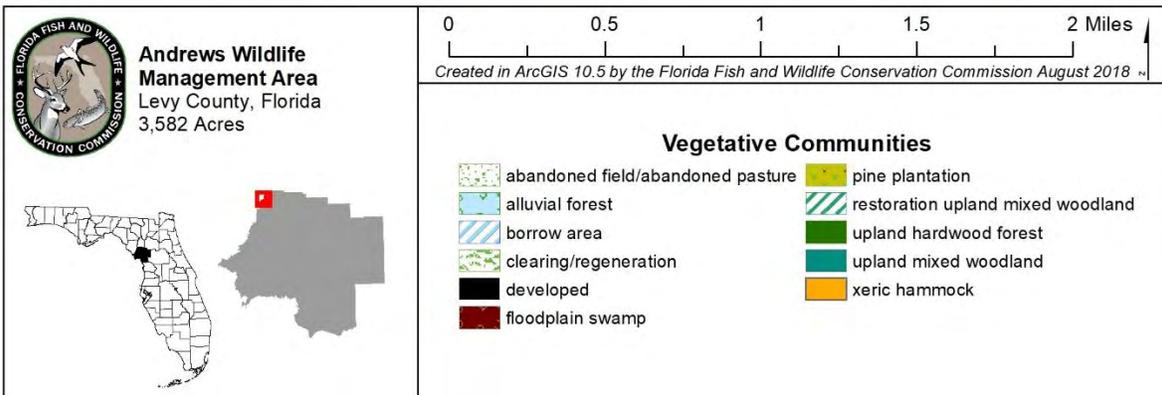
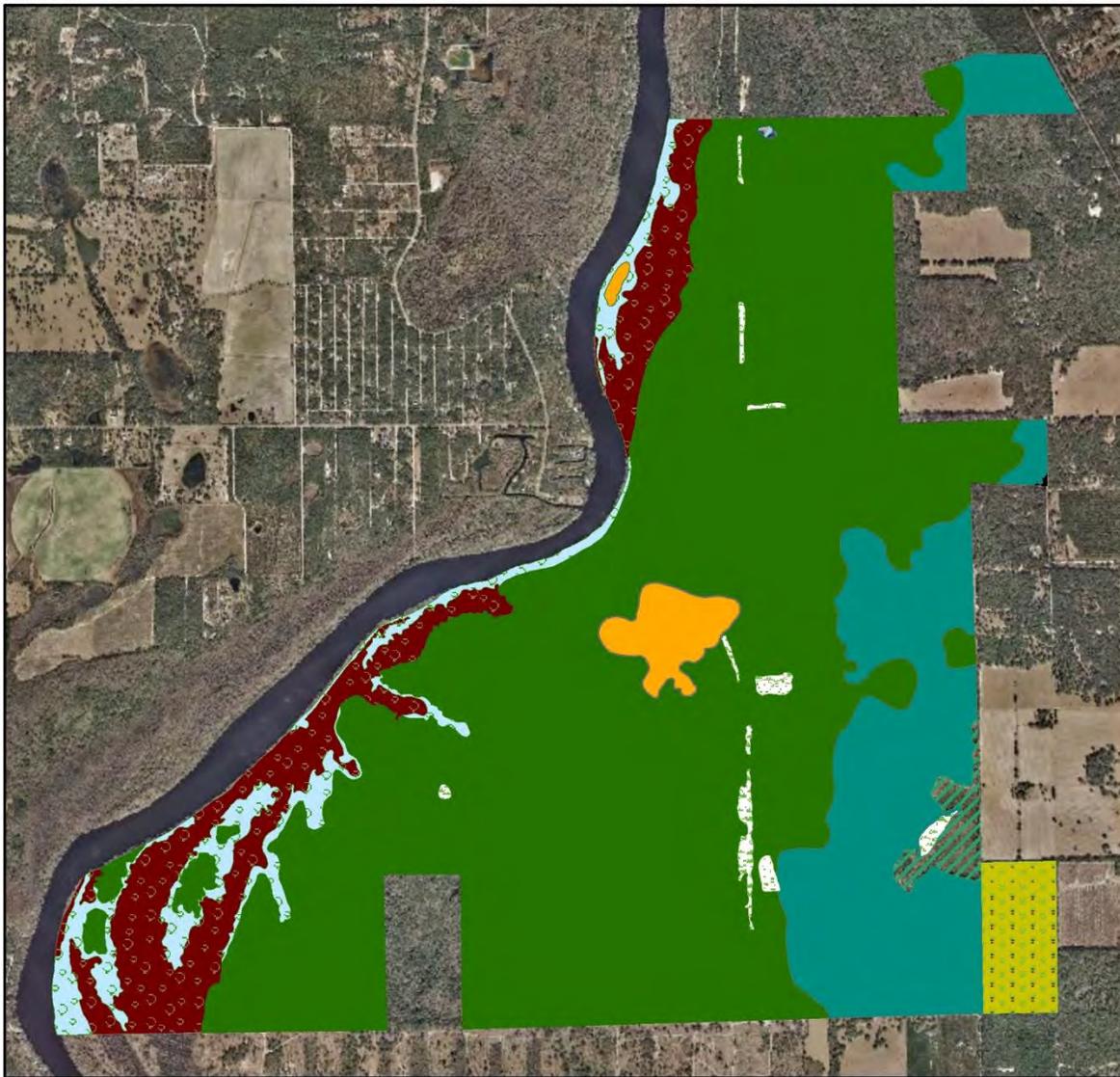


Figure 7: Vegetative Communities at AWMA

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Alabama black cherry	<i>Prunus serotina</i>
American beautyberry	<i>Callicarpa americana</i>
American black nightshade	<i>Solanum americanum</i>
American elm	<i>Ulmus americana</i>
American holly	<i>Ilex opaca</i> var. <i>opaca</i>
American hornbeam	<i>Carpinus caroliniana</i>
American pokeweed	<i>Phytolacca americana</i>
American snowbell	<i>Styrax americanus</i>
American witchhazel	<i>Hamamelis virginiana</i>
Anglestem beaksedge	<i>Rhynchospora caduca</i>
Arrowfeather threeawn	<i>Aristida purpurascens</i> var. <i>purpurascens</i>
Arrowhead	<i>Sagittaria latifolia</i>
Atlantic pigeon-wing	<i>Clitoria mariana</i>
Axilflower	<i>Mecardonia acuminata</i>
Bahiagrass	<i>Paspalum notatum</i>
Bald cypress	<i>Taxodium distichum</i>
Baldwin's flatsedge	<i>Cyperus croceus</i>
Baldwin's nailwort	<i>Paronychia baldwinii</i>
Bartram's air-plant	<i>Tillandsia bartramii</i>
Basswood	<i>Tilia americana</i>
Bastard white oak	<i>Quercus austrina</i>
Bayberry	<i>Morella</i> sp.
Beaked panicum	<i>Coleataenia anceps</i>
Beaksedge	<i>Rhynchospora</i> sp.
Bearded skeletongrass	<i>Gymnopogon ambiguus</i>
Bedstraw St. John's wort	<i>Hypericum galioides</i>
Beggarticks	<i>Bidens alba</i>
Bermudagrass	<i>Cynodon dactylon</i>
Big carpetgrass	<i>Axonopus furcatus</i>
Black nightshade	<i>Solanum chenopodioides</i>
Blackberry	<i>Rubus</i> sp.
Blackedge sedge	<i>Carex nigromarginata</i> var. <i>floridana</i>
Blackgum	<i>Nyssa sylvatica</i> var. <i>sylvatica</i>
Blackjack oak	<i>Quercus marilandica</i>
Blackroot	<i>Pterocaulon pycnostachyum</i>
Blackseed needlegrass	<i>Piptochaetium avenaceum</i>
Blue mistflower	<i>Conoclinium coelestinum</i>
Blueberry	<i>Vaccinium</i> sp.
Bluejack oak	<i>Quercus incana</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Bluestem	<i>Andropogon sp.</i>
Bluestem palmetto	<i>Sabal minor</i>
Bluff oak	<i>Quercus sinuata</i>
Bosc's witchgrass	<i>Dichanthelium boscii</i>
Bracken fern	<i>Pteridium aquilinum</i>
Brazilian vervain	<i>Verbena brasiliensis</i>
Bristleseed yellow stargrass	<i>Hypoxis wrightii</i>
Broomsedge bluestem	<i>Andropogon virginicus var. virginicus</i>
Browne's savory	<i>Clinopodium brownei</i>
Brownhair snoutbean	<i>Rhynchosia cinerea</i>
Bully	<i>Sideroxylon sp.</i>
Bushy bluestem	<i>Andropogon glomeratus var. pumilus</i>
Butterflyweed	<i>Asclepias tuberosa</i>
Butterweed	<i>Packera glabella</i>
Cabbage palm	<i>Sabal palmetto</i>
Camphorweed	<i>Heterotheca subaxillaris</i>
Canadian blacksnakeroot	<i>Sanicula canadensis</i>
Canadian germander	<i>Teucrium canadense</i>
Canadian horseweed	<i>Conyza canadensis</i>
Cancerroot	<i>Conopholis americana</i>
Caribbean purple everlasting	<i>Gamochaeta antillana</i>
Carolina ash	<i>Fraxinus caroliniana</i>
Carolina coralbead	<i>Cocculus carolinus</i>
Carolina desertchicory	<i>Pyrrhopappus carolinianus</i>
Carolina horsenettle	<i>Solanum carolinense</i>
Carolina indigo	<i>Indigofera caroliniana</i>
Carolina laurelcherry	<i>Prunus caroliniana</i>
Carolina ponysfoot	<i>Dichondra carolinensis</i>
Carolina silverbell	<i>Halesia carolina</i>
Cat greenbrier	<i>Smilax glauca</i>
Centipede grass	<i>Eremochloa ophiuroides</i>
Chalky bluestem	<i>Andropogon virginicus var. glaucus</i>
Chamber bitter	<i>Phyllanthus urinaria</i>
Chapman's goldenrod	<i>Solidago odora var. chapmanii</i>
Ciliate redtop panicum	<i>Coleataenia longifolia</i>
Climbing hempvine	<i>Mikania scandens</i>
Climbing hydrangea	<i>Hydrangea barbara</i>
Clustered sedge	<i>Carex glaucescens</i>
Coastal bedstraw	<i>Galium hispidulum</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Coastal foxtail	<i>Setaria corrugata</i>
Coastal lovegrass	<i>Eragrostis refracta</i>
Coastal rosegentian	<i>Sabatia calycina</i>
Coastal sandbur	<i>Cenchrus spinifex</i>
Coastalplain dawnflower	<i>Stylisma patens</i>
Coastalplain honeycomb-head	<i>Balduina angustifolia</i>
Coastalplain staggerbush	<i>Lyonia fruticosa</i>
Coastalplain willow	<i>Salix caroliniana</i>
Coffeeweed	<i>Senna obtusifolia</i>
Colombian waxweed	<i>Cuphea carthagenensis</i>
Comfortroot	<i>Hibiscus aculeatus</i>
Common blue violet	<i>Viola sororia</i>
Common buttonbush	<i>Cephalanthus occidentalis</i>
Common hoptree	<i>Ptelea trifoliata</i>
Common persimmon	<i>Diospyros virginiana</i>
Common ragweed	<i>Ambrosia artemisiifolia</i>
Common sneezeweed	<i>Helenium autumnale</i>
Common yellow stargrass	<i>Hypoxis curtissii</i>
Common yellow woodsorrel	<i>Oxalis corniculata</i>
Coralbean	<i>Erythrina herbacea</i>
Corolina violet	<i>Viola villosa</i>
Cottonweed	<i>Froelichia floridana</i>
Creeping burrhead	<i>Echinodorus cordifolius</i>
Creeping cucumber	<i>Melothria pendula</i>
Creeping primrosewillow	<i>Ludwigia repens</i>
Cretan brake	<i>Pteris cretica</i>
Crossvine	<i>Bignonia capreolata</i>
Crowngrass	<i>Paspalum sp.</i>
Cuban jute	<i>Sida rhombifolia</i>
Curtiss' nutrush	<i>Scleria ciliata</i>
Cypress swamp sedge	<i>Carex jorii</i>
Dahoon	<i>Ilex cassine var. cassine</i>
Deerberry	<i>Vaccinium stamineum</i>
Devil's walkingstick	<i>Aralia spinosa</i>
Dillenius' tick-trefoil	<i>Desmodium glabellum</i>
Dogfennel	<i>Eupatorium capillifolium</i>
Dogtongue wild buckwheat	<i>Eriogonum tomentosum</i>
Dollarleaf	<i>Rhynchosia reniformis</i>
Dotted smartweed	<i>Persicaria punctata</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Doubleform snoutbean	<i>Rhynchosia difformis</i>
Downy milkpea	<i>Galactia volubilis</i>
Dwarf hawthorn	<i>Crataegus uniflora</i>
Dwarf huckleberry	<i>Gaylussacia dumosa</i>
Dwarf St. John's wort	<i>Hypericum mutilum</i>
Earleaf greenbrier	<i>Smilax auriculata</i>
Eastern bluestar	<i>Amsonia tabernaemontana</i>
Eastern hophornbeam	<i>Ostrya virginiana</i>
Eastern milkpea	<i>Galactia regularis</i>
Eastern poison ivy	<i>Toxicodendron radicans</i>
Eastern swampprivet	<i>Forestiera acuminata</i>
Ebony spleenwort	<i>Asplenium platyneuron</i>
Elliott's blueberry	<i>Vaccinium elliotii</i>
Elliott's lovegrass	<i>Eragrostis elliotii</i>
Evans' reindeer lichen	<i>Cladina evansii</i>
False indigobush	<i>Amorpha fruticosa</i>
False nettle	<i>Boehmeria cylindrica</i>
False rosemary	<i>Conradina canescens</i>
Fascicled beaksedge	<i>Rhynchospora fascicularis</i>
Fetterbush	<i>Lyonia lucida</i>
Fewflower tick-trefoil	<i>Desmodium paniculatum</i>
Fingergrass	<i>Eustachys sp.</i>
Fireweed	<i>Erechtites hieraciifolius</i>
Flatsedge	<i>Cyperus sp.</i>
Flatwoods plum	<i>Prunus umbellata</i>
Florida bully	<i>Sideroxylon reclinatum</i>
Florida hoary-pea	<i>Tephrosia florida</i>
Florida Keys hempvine	<i>Mikania cordifolia</i>
Florida maple	<i>Acer saccharum ssp. floridanum</i>
Florida needlegrass	<i>Piptochaetium avenacioides</i>
Flowering dogwood	<i>Cornus florida</i>
Forked bluecurls	<i>Trichostema dichotomum</i>
Fourangle flatsedge	<i>Cyperus tetragonus</i>
Fragrant flatsedge	<i>Cyperus odoratus</i>
Frost grape	<i>Vitis vulpina</i>
Giant ironweed	<i>Vernonia gigantea</i>
Giant sedge	<i>Carex gigantea</i>
Giant white-top	<i>Rhynchospora latifolia</i>
Glade lobelia	<i>Lobelia glandulosa</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Gopher apple	<i>Geobalanus oblongifolius</i>
Grassleaf rush	<i>Juncus marginatus</i>
Greater marsh St. John's wort	<i>Hypericum walteri</i>
Green ash	<i>Fraxinus pennsylvanica</i>
Green hawthorn	<i>Crataegus viridis</i>
Greendragon	<i>Arisaema dracontium</i>
Greenwhite sedge	<i>Carex albolutescens</i>
Groundcherry	<i>Physalis sp.</i>
Groundsel tree	<i>Baccharis halimifolia</i>
Gulf sebastian-bush	<i>Ditrysinia fruticosa</i>
Gum bully	<i>Sideroxylon lanuginosum</i>
Hairy indigo	<i>Indigofera hirsuta</i>
Hairy lespedeza	<i>Lespedeza hirta</i>
Hairy maiden fern	<i>Thelypteris hispidula var. versicolor</i>
Hairy pinweed	<i>Lechea mucronata</i>
Hairy shadow-witch	<i>Ponthieva racemosa</i>
Hammock snakeroot	<i>Ageratina jucunda</i>
Haspan flatsedge	<i>Cyperus haspan</i>
Hawthorn	<i>Crataegus sp.</i>
Hemlock witchgrass	<i>Dichanthelium portoricense</i>
Hercules' club	<i>Zanthoxylum clava-herculis</i>
Hop-hornbeam	<i>Ostrya virginica</i>
Horse sugar	<i>Symplocos tinctoria</i>
Husk tomato	<i>Physalis pubescens</i>
Indian chickweed	<i>Mollugo verticillata</i>
Indian goosegrass	<i>Eleusine indica</i>
Indianpipe	<i>Monotropa uniflora</i>
Jessamine	<i>Gelsemium sp.</i>
Knotroot foxtail	<i>Setaria parviflora</i>
Lanceleaf greenbrier	<i>Smilax smallii</i>
Laurel oak	<i>Quercus hemisphaerica</i>
Lax hornpod	<i>Mitreola petiolata</i>
Least snoutbean	<i>Rhynchosia minima</i>
Leavenworth's tickseed	<i>Coreopsis leavenworthii</i>
Lesser creeping rush	<i>Juncus repens</i>
Lesser snakeroot	<i>Ageratina aromatica</i>
Lichen	<i>Cladina sp.</i>
Licoriceweed	<i>Scoparia dulcis</i>
Littlehip hawthorn	<i>Crataegus spathulata</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Live oak	<i>Quercus virginiana</i>
Lizard's tail	<i>Saururus cernuus</i>
Lobelia	<i>Lobelia sp.</i>
Loblolly pine	<i>Pinus taeda</i>
Longleaf pine	<i>Pinus palustris</i>
Longleaf woodoats	<i>Chasmanthium sessiliflorum</i>
Long's sedge	<i>Carex longii</i>
Looseflower water-willow	<i>Justicia ovata</i>
Lopsided indiagrass	<i>Sorghastrum secundum</i>
Lyreleaf sage	<i>Salvia lyrata</i>
Man-of-the-earth	<i>Ipomoea pandurata</i>
Manyflower beardtongue	<i>Penstemon multiflorus</i>
Manyflower marshpennywort	<i>Hydrocotyle umbellata</i>
Manyspike flatsedge	<i>Cyperus polystachyos</i>
Maple	<i>Acer sp.</i>
Marsh fern	<i>Thelypteris palustris var. pubescens</i>
Marshpennywort	<i>Hydrocotyle sp.</i>
Maryland wild sensitive plant	<i>Senna marilandica</i>
May haw	<i>Crataegus aestivalis</i>
Michaux's croton	<i>Croton michauxii</i>
Michaux's snoutbean	<i>Rhynchosia michauxii</i>
Milkpea	<i>Galactia sp.</i>
Millet beaksedge	<i>Rhynchospora miliacea</i>
Mockernut hickory	<i>Carya tomentosa</i>
Muscadine	<i>Vitis rotundifolia</i>
Myrtle oak	<i>Quercus myrtifolia</i>
Narrow plumegrass	<i>Saccharum baldwinii</i>
Narrowleaf silkgrass	<i>Pityopsis graminifolia</i>
Needleleaf witchgrass	<i>Dichanthelium aciculare</i>
Netted chain fern	<i>Woodwardia areolata</i>
Nightshade	<i>Solanum sp.</i>
Nodding nixie	<i>Apteria aphylla</i>
Nutrush	<i>Scleria sp.</i>
Oppositeleaf spotflower	<i>Acmella oppositifolia var. repens</i>
Orangegrass	<i>Hypericum gentianoides</i>
Overcup oak	<i>Quercus lyrata</i>
Pale meadowbeauty	<i>Rhexia mariana</i>
Panic grass	<i>Panicum sp.</i>
Parrot feather water milfoil	<i>Myriophyllum aquaticum</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Parsley hawthorn	<i>Crataegus marshallii</i>
Partridge pea	<i>Chamaecrista fasciculata</i>
Partridgeberry	<i>Mitchella repens</i>
Pecan	<i>Carya illinoensis</i>
Peppervine	<i>Nekemias arborea</i>
Piedmont pinweed	<i>Lechea torreyi</i>
Pignut hickory	<i>Carya glabra</i>
Pinebarren flatsedge	<i>Cyperus ovatus</i>
Pinebarren frostweed	<i>Crocanthemum corymbosum</i>
Pineland croton	<i>Croton linearis</i>
Pineland pimpernel	<i>Samolus valerandi ssp. parviflorus</i>
Pineland rayless goldenrod	<i>Bigelovia nudata ssp. nudata</i>
Pinewoods fingergrass	<i>Eustachys petraea</i>
Pineywoods dropseed	<i>Sporobolus junceus</i>
Pink thoroughwort	<i>Fleischmannia incarnata</i>
Pinweed	<i>Lechea sp.</i>
Pitted stripeseed	<i>Piriqueta cistoides ssp. caroliniana</i>
Planer tree	<i>Planera aquatica</i>
Pond cypress	<i>Taxodium ascendens</i>
Poor joe	<i>Diodia teres</i>
Prairie fleabane	<i>Erigeron strigosus</i>
Prairie wedgescale	<i>Sphenopholis obtusata</i>
Pricklypear	<i>Opuntia humifusa</i>
Purple bluestem	<i>Andropogon glomeratus var. glaucopsis</i>
Purple passion-flower	<i>Passiflora incarnata</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>
Rattan vine	<i>Berchemia scandens</i>
Red bay	<i>Persea borbonia</i>
Red buckeye	<i>Aesculus pavia</i>
Red cedar	<i>Juniperus virginiana</i>
Red maple	<i>Acer rubrum</i>
Red mulberry	<i>Morus rubra</i>
Redtop panicum	<i>Coleataenia rigidula</i>
Reindeer lichen	<i>Cladina subtenuis</i>
Resurrection fern	<i>Pleopeltis michauxiana</i>
Rice button aster	<i>Symphotrichum dumosum</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
River birch	<i>Betula nigra</i>
Rough flatsedge	<i>Cyperus retrofractus</i>
Rough Mexican clover	<i>Richardia scabra</i>
Roughfruit scaleseed	<i>Spermolepis divaricata</i>
Roughleaf dogwood	<i>Cornus asperifolia</i>
Roundhead lespedeza	<i>Lespedeza capitata</i>
Roundleaf bluet	<i>Houstonia procumbens</i>
Rugel's nailwort	<i>Paronychia rugelii</i>
Rustweed	<i>Polypremum procumbens</i>
Rusty staggerbush	<i>Lyonia ferruginea</i>
Saltwater falsewillow	<i>Baccharis angustifolia</i>
Sand blackberry	<i>Rubus cuneifolius</i>
Sand holly	<i>Ilex ambigua</i>
Sand live oak	<i>Quercus geminata</i>
Sand post oak	<i>Quercus margaretta</i>
Sand tick-trefoil	<i>Desmodium lineatum</i>
Sandyfield beaksedge	<i>Rhynchospora megalocarpa</i>
Sarsaparilla vine	<i>Smilax pumila</i>
Satincurls	<i>Clematis catesbyana</i>
Saw greenbrier	<i>Smilax bona-nox</i>
Saw palmetto	<i>Serenoa repens</i>
Sawtooth blackberry	<i>Rubus pensilvanicus</i>
Scurf hoary-pea	<i>Tephrosia chrysophylla</i>
Sedge	<i>Carex sp.</i>
Seedbox	<i>Ludwigia alternifolia</i>
Sesban	<i>Sesbania sp.</i>
Shiny blueberry	<i>Vaccinium myrsinites</i>
Shiny woodoats	<i>Chasmanthium nitidum</i>
Shortbristle horned beaksedge	<i>Rhynchospora corniculata</i>
Shortleaf gayfeather	<i>Liatris tenuifolia</i>
Shortleaf spikesedge	<i>Cyperus brevifolius</i>
Showy milkwort	<i>Asemeia violacea</i>
Silver croton	<i>Croton argyranthemus</i>
Slash pine	<i>Pinus elliottii</i>
Slender fimbry	<i>Fimbristylis autumnalis</i>
Slender flattop goldenrod	<i>Euthamia caroliniana</i>
Slender scratchdaisy	<i>Croptilon divaricatum</i>
Slender threeseed mercury	<i>Acalypha gracilens</i>
Slender woodoats	<i>Chasmanthium laxum</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Slimleaf pawpaw	<i>Asimina angustifolia</i>
Smallflower pawpaw	<i>Asimina parviflora</i>
Smutgrass	<i>Sporobolus indicus</i>
Snoutbean	<i>Rhynchosia sp.</i>
Softhair coneflower	<i>Rudbeckia mollis</i>
Southern beaksedge	<i>Rhynchospora microcarpa</i>
Southern beeblossom	<i>Oenothera simulans</i>
Southern crabgrass	<i>Digitaria ciliaris</i>
Southern dewberry	<i>Rubus trivialis</i>
Southern magnolia	<i>Magnolia grandiflora</i>
Southern red oak	<i>Quercus falcata</i>
Southern rockbell	<i>Wahlenbergia marginata</i>
Southern shield fern	<i>Thelypteris kunthii</i>
Spadeleaf	<i>Centella asiatica</i>
Spanish moss	<i>Tillandsia usneoides</i>
Spanish needles	<i>Bidens bipinnata</i>
Sparkleberry	<i>Vaccinium arboreum</i>
Spikerush	<i>Eleocharis sp.</i>
Spiny amaranth	<i>Amaranthus spinosus</i>
Spiny sowthistle	<i>Sonchus asper</i>
Spleenwort	<i>Asplenium sp.</i>
Splitbeard bluestem	<i>Andropogon ternarius</i>
Spotted beebalm	<i>Monarda punctata</i>
Spotted sandmat	<i>Euphorbia maculata</i>
Spurred butterfly pea	<i>Centrosema virginianum</i>
St. Andrew's cross	<i>Hypericum hypericoides</i>
Starrush white-top	<i>Rhynchospora colorata</i>
Strawcolored flatsedge	<i>Cyperus strigosus</i>
Sugarberry	<i>Celtis laevigata</i>
Sugarcane plumegrass	<i>Saccharum giganteum</i>
Summer farewell	<i>Dalea pinnata var. pinnata</i>
Summer grape	<i>Vitis aestivalis</i>
Swamp bay	<i>Persea palustris</i>
Swamp chestnut oak	<i>Quercus michauxii</i>
Swamp doghobble	<i>Eubotrys racemosus</i>
Swamp dogwood	<i>Cornus foemina</i>
Swamp holly	<i>Ilex decidua</i>
Swamp laurel oak	<i>Quercus laurifolia</i>
Swamp milkweed	<i>Asclepias perennis</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
Swamp tupelo	<i>Nyssa sylvatica var. biflora</i>
Swamp twinflower	<i>Dyschoriste humistrata</i>
Sweet everlasting	<i>Pseudognaphalium obtusifolium</i>
Sweet goldenrod	<i>Solidago odora</i>
Sweetbay	<i>Magnolia virginiana</i>
Sweetgum	<i>Liquidambar styraciflua</i>
Switchcane	<i>Arundinaria gigantea</i>
Switchgrass	<i>Panicum virgatum</i>
Tall elephantsfoot	<i>Elephantopus elatus</i>
Tall jointweed	<i>Polygonum pinicola</i>
Tall threeawn grass	<i>Aristida patula</i>
Thin paspalum	<i>Paspalum setaceum</i>
Thoroughwort	<i>Eupatorium sp.</i>
Threeawn	<i>Aristida sp.</i>
Titi	<i>Cyrilla racemiflora</i>
Tough bully	<i>Sideroxylon tenax</i>
Tread-softly	<i>Cnidocolus stimulosus</i>
Tropical bushmint	<i>Cantinoa mutabilis</i>
Tropical flatsedge	<i>Cyperus surinamensis</i>
Tropical resurrection fern	<i>Pleopeltis polypodioides</i>
Trumpet creeper	<i>Campsis radicans</i>
Turkey oak	<i>Quercus laevis</i>
Turkey tangle fogfruit	<i>Phyla nodiflora</i>
Variable witchgrass	<i>Dichanthelium commutatum</i>
Velvetleaf milkweed	<i>Asclepias tomentosa</i>
Vente conmigo	<i>Croton glandulosus</i>
Virginia buttonweed	<i>Diodia virginiana</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Virginia dwarfdandelion	<i>Krigia virginica</i>
Virginia pepperweed	<i>Lepidium virginicum</i>
Virginia snakeroot	<i>Aristolochia serpentaria</i>
Walter's viburnum	<i>Viburnum obovatum</i>
Water hickory	<i>Carya aquatica</i>
Water locust	<i>Gleditsia aquatica</i>
Water oak	<i>Quercus nigra</i>
Water tupelo	<i>Nyssa aquatica</i>
Wavyleaf noseburn	<i>Tragia urens</i>
Wax myrtle	<i>Morella cerifera</i>
Whip nutrush	<i>Scleria triglomerata</i>

Table 4: Plant Species Found at AWMA

Common name	Scientific name
White ash	<i>Fraxinus americana</i>
White fringe tree	<i>Chionanthus virginicus</i>
White thoroughwort	<i>Eupatorium album</i>
White wild indigo	<i>Baptisia alba</i>
Whitemouth dayflower	<i>Commelina erecta</i>
Whorled marshpennywort	<i>Hydrocotyle verticillata</i>
Wild olive	<i>Cartrema americanum</i>
Willow	<i>Salix sp.</i>
Winged elm	<i>Ulmus alata</i>
Winged sumac	<i>Rhus copallinum</i>
Wiregrass	<i>Aristida stricta</i>
Witchgrass	<i>Dichanthelium sp.</i>
Woodoats	<i>Chasmanthium sp.</i>
Woodsgrass	<i>Oplismenus hirtellus</i>
Woolly pawpaw	<i>Asimina incana</i>
Woollysheat threeawn	<i>Aristida lanosa</i>
Wrinkled jointgrass	<i>Coelorachis rugosa</i>
Yankeeweed	<i>Eupatorium compositifolium</i>
Yaupon	<i>Ilex vomitoria</i>
Yellow indiagrass	<i>Sorghastrum nutans</i>
Yellow jessamine	<i>Gelsemium sempervirens</i>
Yellowleaf hawthorn	<i>Crataegus flava</i>
Zarabacoa comun	<i>Desmodium incanum</i>

Table 5: Imperiled and Commercially Exploited Plants Found at AWMA

Common name	Scientific name	Status*
Angle pod	<i>Matelea gonocarpos</i>	ST
Coontie	<i>Zamia integrifolia</i>	CE
Florida mountain-mint	<i>Pycnanthemum floridanum</i>	ST
Florida spiny-pod	<i>Matelea floridana</i>	SE
Green-fly orchid	<i>Epidendrum conopseum</i>	CE
Needle palm	<i>Rhaphidophyllum hystrix</i>	CE
Royal fern	<i>Osmunda regalis</i>	CE
Snow squarestem	<i>Melanthera nivea</i>	ST

*ST = State Threatened; SE = State Endangered; CE = Commercially Exploited

Table 6: Exotic/Invasive Plants Found at AWMA

Common name	Scientific name	FLEPPC
Alligator weed	<i>Alternanthera philoxeroides</i>	II
Chinese brake fern	<i>Pteris vittata</i>	II
Chinese tallow	<i>Triadica sebifera</i>	I
Cogongrass	<i>Imperata cylindrica</i>	I
Japanese climbing fern	<i>Lygodium japonicum</i>	I
Mimosa	<i>Albizia julibrissin</i>	I
Torpedo grass	<i>Panicum repens</i>	I
Tropical soda apple	<i>Solanum viarum</i>	I

2.2.1 FNAI Natural Community Descriptions

2.2.1.1 Alluvial Forest

Alluvial forest is a hardwood forest found in river floodplains on low levees, ridges and terraces that are slightly elevated above floodplain swamp and are regularly flooded for a portion of the growing season. These habitats are greatly influenced by a fluctuating river bed which is both eroding and depositing substrates. Alluvial forest occupies low levees along channels, expansive flats located behind levees, low ridges alternating with swamps, and successional point bars. It is usually intermixed with lower areas of floodplain swamp and higher areas of bottomland forest, baygall, or upland hardwood forest. This forest develops along tertiary or higher order streams where deposition of alluvium becomes a significant factor in floodplain development (rather than simply erosional forces). Soils are variable mixtures of sand and alluvial sediments that have been deposited by the current drainage system and are often distinctly layered. Alluvial forest occupies an elevation within the broader floodplain that is inundated seasonally from river bank overflow for one to four months of the year during the growing season.

At AWMA, alluvial forest is located along the Suwannee river. Common canopy species within the alluvial forest at AWMA include live oak, swamp laurel oak, overcup oak, water oak, water hickory, red maple, and sweetgum. American hornbeam and cabbage palm are the main subcanopy trees. Bluestem palmetto is abundant and is the prevalent shrub. Herbaceous cover often is dominated by slender woodoats. Angle pod, state-listed as threatened, is an infrequent herbaceous vine.

2.2.1.2 Floodplain Swamp

Floodplain swamp is located within floodplains of any permanently moving stream or river. It ranges from narrow strips of cypress along primary and secondary streams to expansive stands along large rivers to tidally influenced freshwater swamps near river mouths. Often, floodplain swamps immediately border the stream or river channel. In many cases,

however, floodplain swamps are isolated from the main channel by riverbank levees and restricted to oxbows, overflow channels, old stream beds, and expansive flats commonly called backswamps. Soils are variable mixtures of alluvial and organic materials, sometimes with layers of sand in the subsoil. Inundation is seasonal and usually prolonged, restricting the growth of most shrubs and herbs and leaving most of the ground surface open or thinly mantled with leaf litter.

This community at AWMA seasonally receives floodwater inputs from the adjacent Suwannee River.

Adjacent alluvial forest occupies a considerable amount of acreage within the floodplain but lacks the extreme flood duration that characteristic floodplain swamp species can tolerate. An extensive



floodplain swamp borders the entire west side of AWMA. This forest consists of a closed canopy of tall, straight trees with few shrub or herb species. The canopy is dominated by bald cypress, water tupelo, red maple, and sweetgum. Typical subcanopy species are Carolina ash, buttonbush, and planer tree. The tall shrub, swamp privet, occurs occasionally. The soils are either organic or alluvial and the community is inundated for much of the year.

2.2.1.3 Upland Hardwood Forest

Upland hardwood forest occurs on rolling mesic hills, slopes above river floodplains, in smaller areas on the sides of sinkholes, and occasionally on rises within floodplains. Limestone or phosphatic rock may be near the surface. Soils are generally sandy clays or clayey sands with substantial organic and sometimes calcareous components. These soils have higher nutrient levels than the sandy soils prevalent in most of Florida. The moisture retention properties of clays and layers of leaf mulch conserve soil moisture and create decidedly mesic conditions. The dense canopy and multiple layers of midstory vegetation restrict air movement and light penetration, which maintains high relative humidity within the community.

On AWMA, the upland hardwood forest has older mature trees occurring on both the flat and rolling terrain in the middle of the site. The canopy is dominated by sand laurel oak and pignut hickory. Other abundant trees are southern magnolia and sweetgum. Live oak is common in some sections and absent in others. Pines are conspicuously absent or



infrequent throughout the upland hardwood forest. The subcanopy typically consists of young sand laurel oak, pignut hickory, red bay, and American holly, and in some locations, eastern hop-hornbeam. The shrub strata usually contain sparkleberry, red bay, horse-sugar, and occasional saw palmetto. The generally sparse groundcover is composed of black-edge sedge, four-angle flatsedge, and sarsaparilla vine.

2.2.1.4 Upland Mixed Woodland

Upland mixed woodland occurs on loamy soils on drier sites than upland hardwood forest and is often found in the ecotone between upland hardwood forest and frequently burned sandhill or upland pine where fires burn into the hardwood forest edge. Its dominant hardwood species are more resistant to fire than are those in the upland hardwood forest and less resistant than those of the sandhills.

Upland mixed woodland has developed at AWMA between the upland hardwood forest that borders the Suwannee River, on the western half of the property, and the historic sandhill that is generally found immediately east of the property. The close proximity to the Suwannee River, which produces a natural fire-shadowed landscape position, and the associated soil development of this site have created a unique upland mixed woodland vegetation assemblage. The remnant vegetation association contains high percentages of red bay, southern red oak, and no wiregrass; all of which are not typical of a sandhill community. This site and adjacent lands to the west contain some species, such as southern red oak, that are characteristic of upland mixed woodland. However, the presence of sandhill indicators such as longleaf pine, gopher tortoises, and Dogtongue wild buckwheat suggest that this area contained scattered inclusions of sandhill.

2.2.1.5 Xeric Hammock

Xeric hammock is an evergreen forest found on well-drained sandy soils. The low canopy is typically closed and usually dominated by sand live oak. An emergent canopy of pine may be present. Xeric hammock typically develops where fire-exclusion allows for the establishment of the oak canopy. This may occur naturally when the area has significant barriers to fire, or more commonly, as the result of human intervention. In these areas, xeric hammock can form extensive stands or can occur as small patches within or near sandhill or scrub. Xeric hammock can also occur on high islands within flatwoods, or on a high, well-drained ridge within a floodplain. Xeric hammock also can occur on barrier islands and in other coastal environs as an advanced successional stage of scrub.

At AWMA, xeric hammock contains a canopy of sand live oak and sand laurel oak with scattered longleaf pine as the dominants. The tall shrubs are mainly sparkleberry and the short shrubs, deerberry and occasional saw palmetto. Wild olive, coastalplain staggerbush and rusty staggerbush are locally abundant. The groundcover is relatively sparse, with panic grass being the most abundant.

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 the Florida Department of Agriculture and Consumer Services (DACS) 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.

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

While there has been no formal rare plant inventory on AWMA, there are four imperiled plant species known to occur on the area. Of these, one is state endangered and three are state threatened (Table 5). The protections afforded plants that occur on conservations lands, in conjunction with management actions that include exotic 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 AWMA.

In addition to the imperiled plants, four plants State listed as commercially exploited are known to occur on AWMA (Table 5). 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 species occur on AWMA, 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. Under the FWC’s management, these species have a higher probability of persistence than in the absence of this management.

2.2.3 Forest Resources

As described in detail above, AWMA contains several plant communities with timber resources, including upland mixed woodland and pine plantation. Some portions of the area have experienced timber harvesting in the past. Currently, the FWC is working to restore the natural communities of the area with timber thinning, planting, prescribed burning, and other forest maintenance management actions. Many of these restoration efforts have been focused in the southeast and northeast corners of AWMA, which is where existing pine plantations are located. The FFS has completed an updated Timber Assessment for AWMA in 2011 (Appendix 12.5). The FWC will continue to cooperate with FFS on all actions that involve the timber resources of AWMA.

2.3 Fish and Wildlife Resources

As described above, AWMA 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 AWMA an excellent place to view wildlife. The AWMA’s floodplain swamp, alluvial forest, upland hardwood forest, and upland mixed woodland communities provide critical habitat for resident and migratory wildlife.

The FWC maintains an inventory of fauna occurring on AWMA listed in the following tables, including 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 AWMA (feral hog).

Table 7: Mammal Species Observed at AWMA

Common Name	Scientific Name
Armadillo	<i>Dasypus novemcinctus</i>
Cotton mouse	<i>Peromyscus gossypinus</i>
Cotton rat	<i>Sigmodon hispidus</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Eastern harvest mouse	<i>Reithrodontomys humulis</i>
Eastern woodrat	<i>Neotoma floridana</i>
Evening bat	<i>Nycticeius humeralis</i>
Florida mouse	<i>Podomys floridanus</i>
Golden mouse	<i>Ochrotomys nuttalli</i>
Gray fox	<i>Urocyon cinereoargenteus</i>

Table 7: Mammal Species Observed at AWMA

Common Name	Scientific Name
Gray squirrel	<i>Sciurus carolinensis</i>
Least shrew	<i>Cryptotis parva</i>
Oldfield mouse	<i>Peromyscus polionotus</i>
Raccoon	<i>Procyon lotor</i>
Seminole bat	<i>Lasiurus seminolus</i>
Southeastern bat	<i>Myotis austroriparius</i>
Southeastern pocket gopher	<i>Geomys pinetis</i>
Southern flying squirrel	<i>Glaucomys volans</i>
Sherman's fox squirrel	<i>Sciurus niger shermani</i>
Southern short-tailed shrew	<i>Blarina carolinensis</i>
Swamp rabbit	<i>Sylvilagus aquaticus</i>
Tricolored bat	<i>Perimyotis subflavus</i>
Virginia opossum	<i>Didelphis virginiana</i>
White-tailed deer	<i>Odocoileus virginianus</i>

Table 8: Bird Species Observed at AWMA

Common Name	Scientific Name
Bald eagle	<i>Haliaeetus leucocephalus</i>
Black-and-white warbler	<i>Mniotilta varia</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Eastern bluebird	<i>Sialia sialis</i>
Eastern towhee	<i>Pipilo erythrophthalmus</i>
Osceola wild turkey	<i>Meleagris gallopavo osceola</i>
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>
Southeastern American kestrel	<i>Falco sparverius paulus</i>

Table 9: Reptile and Amphibian Species Observed at AWMA

Common Name	Scientific Name
American bullfrog	<i>Lithobates catesbeiana</i>
Barking tree frog	<i>Hyla gratiosa</i>
Bird-voiced tree frog	<i>Hyla avivoca</i>
Broad-headed skink	<i>Plestiodon laticeps</i>
Brown anole	<i>Anolis sagrei</i>
Carolina anole	<i>Anolis carolinensis</i>
Central Florida crowned snake	<i>Tantilla relicta neilli</i>
Common five-lined skink	<i>Plestiodon fasciatus</i>
Common musk turtle	<i>Sternotherus odoratus</i>
Cope's gray treefrog	<i>Hyla chrysoscelis</i>
Cuban flat-headed frog	<i>Eleutherodactylus planirostris</i>

Table 9: Reptile and Amphibian Species Observed at AWMA

Common Name	Scientific Name
Eastern coachwhip	<i>Coluber flagellum</i>
Eastern coral snake	<i>Micrurus fulvius fulvius</i>
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>
Eastern fence lizard	<i>Sceloporus undulatus</i>
Eastern glass lizard	<i>Ophisaurus ventralis</i>
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>
Eastern newt	<i>Notophthalmus viridescens</i>
Eastern ratsnake	<i>Pantherophis alleghaniensis</i>
Eastern spadefoot	<i>Scaphiopus holbrookii</i>
Florida box turtle	<i>Terrapene carolina</i>
Florida brownsnake	<i>Storeria victa</i>
Florida redbelly snake	<i>Stoeria occipitomaculata obscura</i>
Glossy swampsnake	<i>Liodytes rigida</i>
Gopher tortoise	<i>Gopherus polyphemus</i>
Gray ratsnake	<i>Elaphe obsoleta</i>
Greater siren	<i>Siren lacertina</i>
Green anole	<i>Anolis carolinensis</i>
Green frog	<i>Lithobates clamitans</i>
Green tree frog	<i>Hyla cinerea</i>
Greenhouse frog	<i>Eleutherodactylus planirostris</i>
Ground skink	<i>Scincella lateralis</i>
Harlequin coralsnake	<i>Micrurus fulvius</i>
Little brown skink	<i>Scincella lateralis</i>
Little grass frog	<i>Pseudacris ocularis</i>
North American racer	<i>Coluber constrictor</i>
Oak toad	<i>Anaxyrus quercicus</i>
Pig frog	<i>Lithobates grylio</i>
Pinewoods tree frog	<i>Hyla femoralis</i>
Red cornsnake	<i>Pantherophis guttatus</i>
Red-bellied mudsnake	<i>Farancia abacura</i>
Redbelly water snake	<i>Nerodia erythrogaster</i>
Ring-necked snake	<i>Diadophis punctatus</i>
River frog	<i>Lithobates heckscheri</i>
Scarlet kingsnake	<i>Lampropeltis elapsoides</i>
Scarlet snake	<i>Cemophora coccinea</i>
Short-tailed snake	<i>Stilosoma extenuatum</i>
Six-lined racerunner	<i>Aspidoscelis sexlineata</i>
Slimy salamander	<i>Plethodon grobmani</i>
Smooth earth snake	<i>Virginia valeriae</i>

Table 9: Reptile and Amphibian Species Observed at AWMA

Common Name	Scientific Name
Southeastern crowned snake	<i>Tantilla coronata</i>
Southeastern five-lined skink	<i>Plestidon inexpectatus</i>
Southern black racer	<i>Coluber constrictor priapus</i>
Southern leopard frog	<i>Lithobates sphenoccephalus</i>
Southern toad	<i>Anaxyrus terrestris</i>
Southern watersnake	<i>Nerodia fasciata</i>
Spring peeper	<i>Pseudacris crucifer</i>
Squirrel tree frog	<i>Hyla squirella</i>
Suwannee river cooter	<i>Pseudemys concinna floridana</i>
Two-toed amphiuma	<i>Amphiuma means</i>
Yellow-bellied slider	<i>Trachemys scripta scripta</i>

2.3.1 Integrated Wildlife Habitat Ranking System

The FWC has developed the Integrated Wildlife Habitat Ranking System (IWHRS) as a Geographic Information Systems (GIS)-based assessment tool that incorporates a wide variety of land cover and wildlife species data. The IWHRS evaluates the Florida landscape based upon the habitat needs of wildlife as a way to identify ecologically significant lands in the state, and to assess the potential impacts of management and land-use changes. The IWHRS was developed to provide technical assistance to various local, regional, state, and federal agencies, and entities interested in wildlife needs and conservation in order to: (1) determine ways to avoid or minimize project impacts by evaluating alternative placements, alignments, and transportation corridors during early planning stages, (2) assess direct, secondary, and cumulative impacts to habitat and wildlife resources, and (3) identify appropriate parcels for public land acquisition for wetland and upland habitat mitigation purposes. The IWHRS (2009) indicates that AWMA has a very high mean wildlife value of 7.4 (Figure 8).

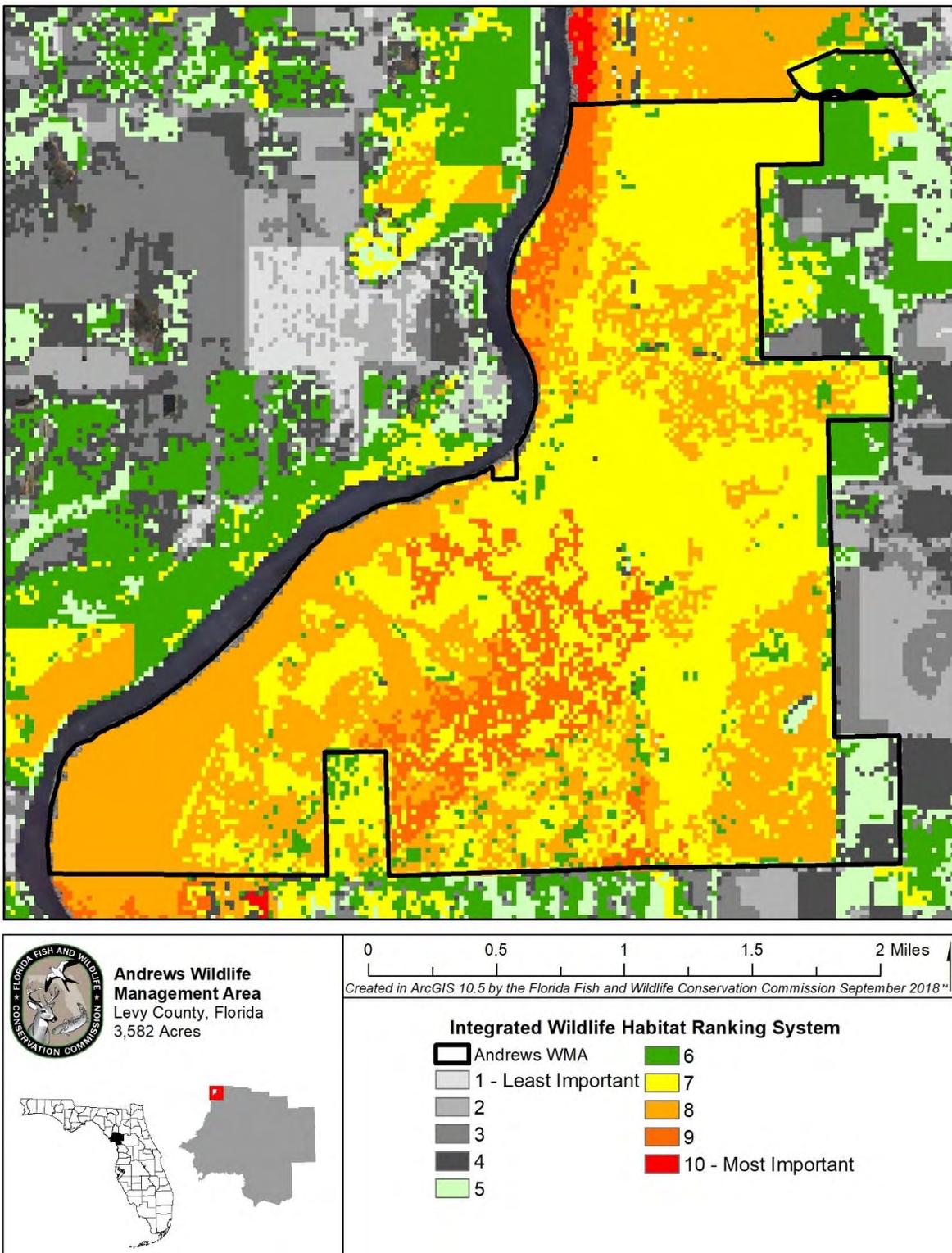


Figure 8: Integrated Wildlife Habitat Ranking System

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2.3.2 Imperiled Fish and Wildlife

Six imperiled animal species have been documented at AWMA (Table 10). All abbreviations and status determinations were derived from Florida’s Endangered and Threatened Species List published by FWC in January 2017. The FWC maintains the state list of animals designated as Federally-designated endangered or threatened, State-designated endangered or threatened, or State-designated species of special concern, in accordance with Rules 68A-27.003, and 68A-27.005, respectively, FAC.

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 U.S. Fish and Wildlife Service. 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 (<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 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 Animals Observed at AWMA

Common Name	Scientific Name	Status*
Alligator snapping turtle	<i>Macrolemys temminckii</i>	SSC
American alligator	<i>Alligator mississippiensis</i>	FT(S/A)
Eastern indigo snake	<i>Drymarchon corais couperi</i>	ST
Gopher tortoise	<i>Gopherus polyphemus</i>	ST
Gulf sturgeon	<i>Acipenser oxyrhynchus desotoi</i>	FT
Short-tailed snake	<i>Stilosoma extenuatum</i>	ST

*SSC = Species of Special Concern, FT(S/A) = Federally Threatened (due to Similarity of Appearance), ST = State Threatened

2.3.3 FWC Wildlife Observations and FNAI Element Occurrences

FNAI assigns a rank to each “element” occurrence, which is an exemplary or rare component of the natural environment. As defined by FNAI, an “element” can include a number of features such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological features. 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. 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.

Known locations of FWC wildlife observations and FNAI element occurrences on AWMA from the most recent GIS databases of the respective agencies are displayed in Figure 9. Appendix 12.6 contains a letter from FNAI authorizing the FWC to utilize their database for the purpose of displaying known plant and animal resources.

2.4 Native Landscapes

As previously discussed, the landscape of AWMA contains communities within the floodplain of the Suwannee River as well as upland communities. These communities are described in detail in section 2.2.1.

2.5 Water Resources

The AWMA is situated entirely within the lower segment of the Suwannee River drainage basin (Figure 10). Other than the river, there are no significant waterbodies on the area.

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 AWMA 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 portions of AWMA closest to the Suwannee River are designated as OFW. No degradation of water quality, other than that allowed in subsections Chapter 62-4.242(2) and (3) FAC, is permitted in these OFW, notwithstanding any other DEP rules that may allow water quality lowering.

2.6 Beaches and Dunes

The AWMA does not contain any beach or dune resources.

2.7 Mineral Resources

There are no known commercially viable mineral deposits on AWMA.

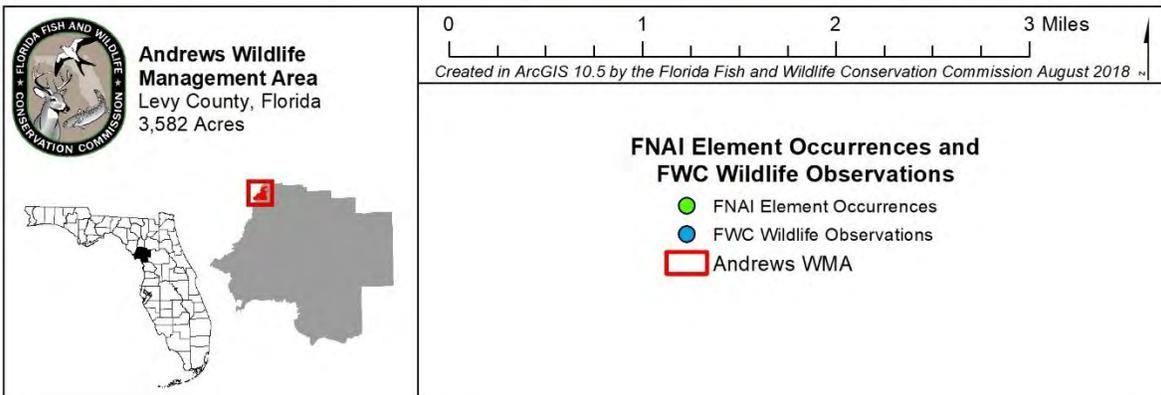
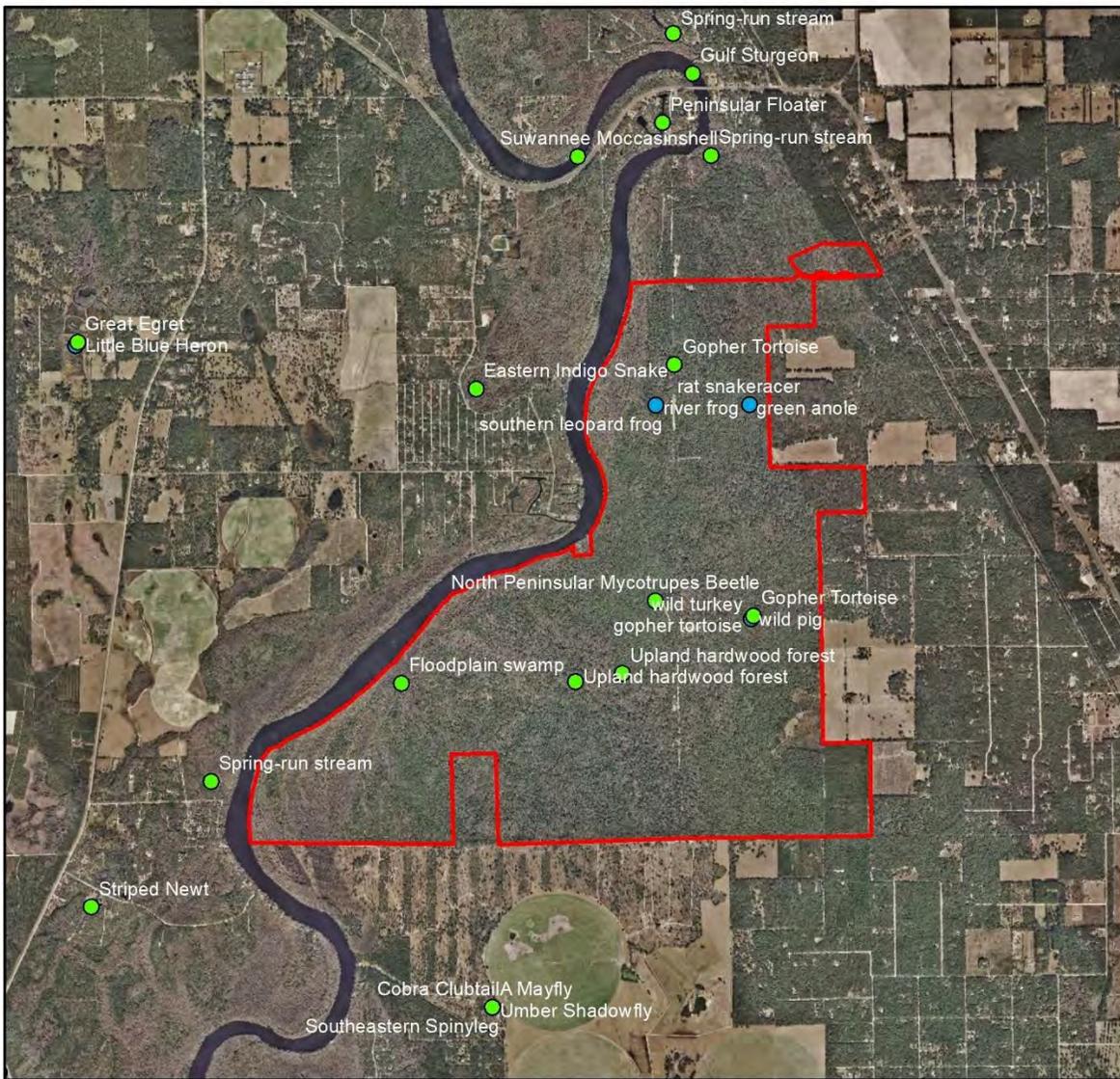


Figure 9: FNAI Element Occurrences and FWC Wildlife Observations

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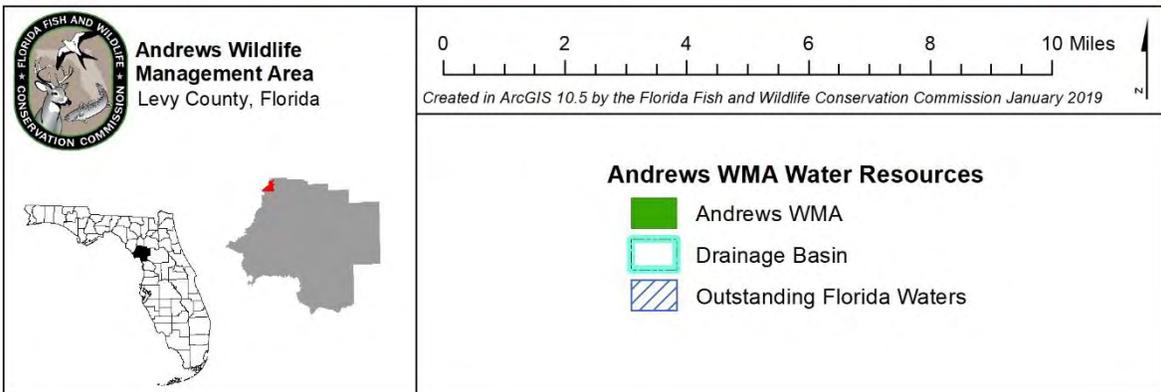
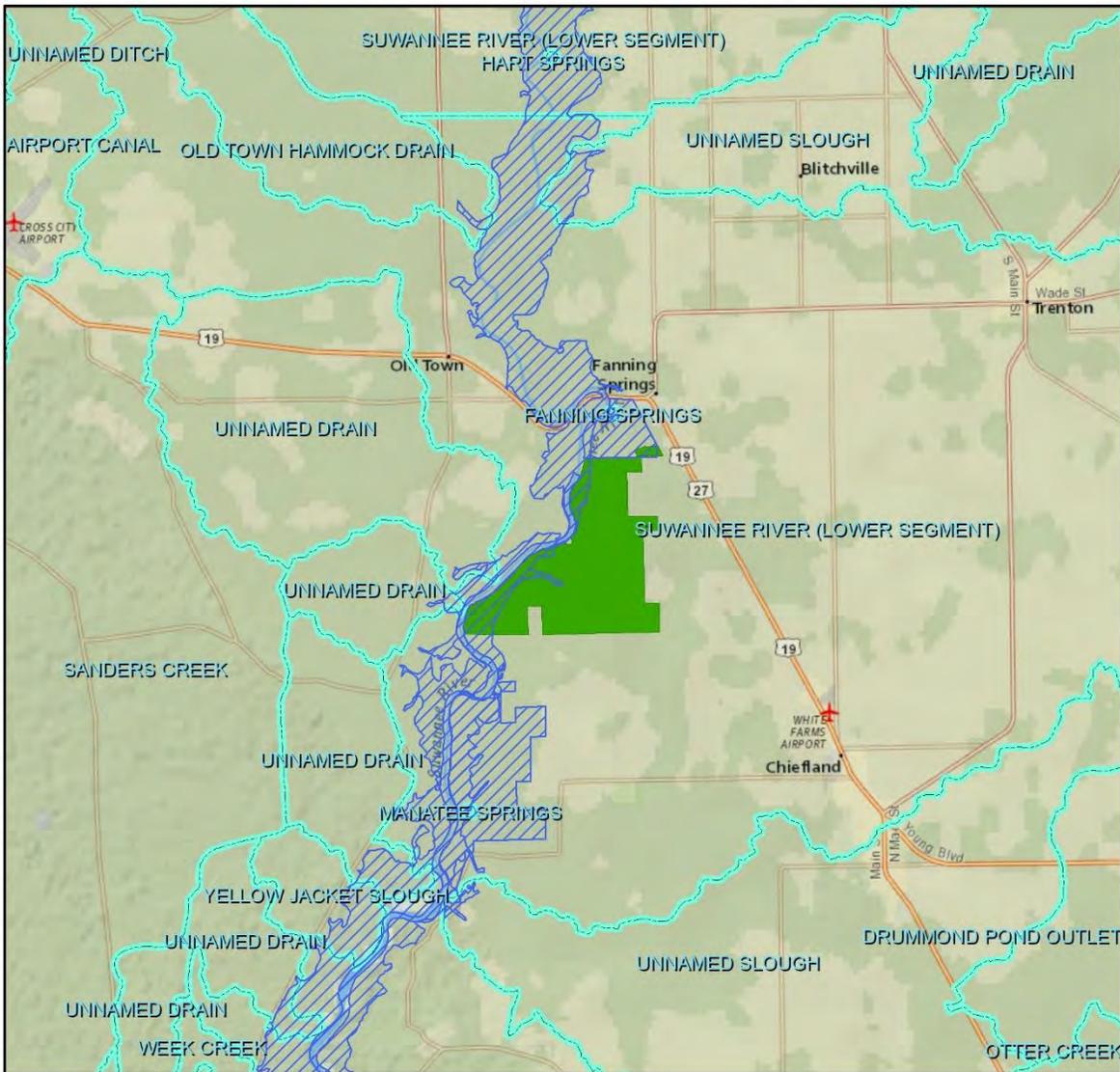


Figure 10: Drainage Basins Near AWMA

2.8 Historical Resources

The Florida Department of State's Division of Historical Resources (DHR) observations are broken down into five categories: historic sites, resource groups, historical structures, historic bridges, and historic cemeteries. There are eight historic sites, one historic structure, and one historic cemetery documented on AWMA. Additionally, four field surveys have been conducted on the area. All Master Site recordings, assessments, and preservation strategies will be coordinated with DHR.

2.9 Scenic Resources

The collection of vegetative communities found at AWMA make the area a scenic venue for outdoor activities including hiking and wildlife viewing. Visitors to the area are also treated to excellent views of the Suwannee River.

3 Uses of the Property

3.1 Previous Use and Development

No doubt Native Americans took advantage of the natural bounty of the Suwannee and the neighboring forest. By around 7500 BC the Native American population increased, and people began to settle, at least for a time, along rivers and lakes. They fished, gathered freshwater snails, and hunted deer. Within Andrews on the bluff above the Suwannee are the remains of an ancient hunting and fishing camp.

When Spanish explorer Narvarez crossed the Suwannee thousands of years later, his men called it the "River of the Deer." Later, Native Americans escaping to Florida from other parts of the Southeast named it "Suwani," meaning "echo river" in Creek. Sound echoes from the river's limestone bluffs, especially when the water is low.

By the 1830s the tranquil, tree-lined Suwannee became an important navigation route. Steamboats carried lumber to Cedar Key for transport by steamship to Europe and the Northeast. Much of the virgin cypress in the Suwannee floodplain was harvested in the early 1900s. Furrows created by "snaking" huge cypress logs are still visible along the banks of the Suwannee.

In the early part of the 1900s what was later to become AWMA was subject to a wide range of uncontrolled uses, including open range livestock grazing. Recreational hunting, fishing, cattle grazing, and logging were common land uses. Range hogs readily adapted to the habitat and are still present on AWMA today.

In 1945 the Andrews family purchased the area. They managed the land for outdoor recreation and were careful to protect natural resources. Limited weekend hunts were held for deer, turkey, and squirrel. The Andrews family created four, five-acre clearings in the

upland hardwoods and scattered roadside openings. Following storm damage, a small section of uplands was planted to slash pine in the early 1960s. No mining or significant timber harvest occurred during the time of Andrews' family ownership. The state purchased the land in 1985.

3.2 Current Use of the Property

Currently, AWMA is managed for the conservation and protection of fish and wildlife habitat and fish and wildlife based public outdoor recreation. A wide range of operational and resource management actions are conducted on AWMA each year including activities such as prescribed burning; wildlife habitat restoration and improvement; invasive exotic species maintenance and control; road repairs and maintenance; imperiled species management, monitoring and protection; facilities and infrastructure maintenance and repair; conservation acquisition and stewardship activities; archeological and historical resources monitoring and protection; and research related activities.

Current and anticipated resource uses of the property are diverse. Hunting continues to be a popular recreational activity on AWMA. 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 boating on the Suwannee River.

Due to the proximity of population centers in Levy and Gilchrist Counties, public use can be expected to increase as public awareness of opportunities increases. Annual use of AWMA is estimated to be 365 user-days for all activities combined. The FWC administers hunts in the fall and spring for various game species including small game, deer, turkey, and feral hogs, which account for a little more than half of the user-days.

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 AWMA and contribute to the overall economy for the North Central region of Florida. In Fiscal Year 2017-18, an estimated 8,440 people visited AWMA. Primarily, as a result of this visitation and use of the area, the FWC economic analysis estimates indicate that AWMA generated an estimated annual economic impact of \$964,270 for the State and the North Central Florida region. This estimated annual economic impact has aided in the support or creation of an estimated 17 jobs.

Further revenue generating potential of AWMA will depend upon future uses described in this Management Plan. Additional revenue from environmental lands such as AWMA 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 AWMA will be managed under the multiple-use concept as a Wildlife Management Area. The AWMA 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 AWMA 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 AWMA. 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		✓	

	<u>Approved</u>	<u>Conditional</u>	<u>Rejected</u>
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 AWMA 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 AWMA.

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 AWMA (Sections 5 -8). A detailed assessment of the benefits and potential impacts of planned uses and activities on natural and historical resources was an integral part of the development of the management activities and intent, goals, objectives, challenges, and strategies sections of this Management Plan.

3.4 Acreage 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, ARC, and the Board of Trustees. This evaluation consists of GIS modeling and analysis, aerial photography interpretation, analysis of fish and wildlife resources, a review of resource and operational management needs, and a review of public access and recreational use of the area. Also, FWC considers recommendations for surplus lands as they relate to Florida’s “No Net Loss of Hunting Lands” legislation (Ch. 379.3001 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 AWMA by FWC has determined that all portions of the area are being managed and operated for the original purposes of acquisition, 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 AWMA is recommended for potential surplus review.

4 Accomplished Objectives from the AWMA Management Plan 2012 – 2022

This section is dedicated to reporting the extent to which the Objectives described in the AWMA Management Plan 2012 – 2022 (pages 59 - 67) were successfully completed. Accomplishments for AWMA 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 2012 – 2022 the AWMA Management Plan describe the planned activities for AWMA during this period. The degree to which FWC was able to accomplish the planned activities during this period is reflected as **Percent Accomplished** for each associated Objective.

Objectives Accomplished from the 2012 Andrews Wildlife Management Area Habitat Management Plan

Goals and Objectives	Percent Accomplished
Goal 1: Habitat Restoration and Improvement: Maintain the old-growth characteristics of the extant floodplain swamp, floodplain forest, xeric hammock, upland hardwood forest, and remnant sandhill/upland mixed woodland communities. Improve extant habitat for fire adapted communities.	
Short-term	
Objective 1: Prescribe burn 120 acres per year on fire adapted communities including sandhill intermixed with xeric hammock on the southeastern portion of AWMA. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 2: Maintain ~600 acres (100%) within 3 - 5-year target fire return interval. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 3: Consult with FNAI regarding ~600 acre of natural community currently classified as xeric hammock, but may be a mixture of overgrown, fire-suppressed sandhill/upland mixed woodland, to determine if the occurrence of southern red oak should redefine the classification. <i>Comment: FNAI has changed the classification to Upland Mixed Woodland</i>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 4: Conduct habitat/natural community improvement including planting of wiregrass plugs on 20 acres per year of historic sandhill located in the southeastern portion of AWMA (2008 acquisition parcel; ~40 acres total). <i>Comment: Initial Planting was completed, but further plantings were suspended because of low success and development of a restoration plan.</i></p>	100%
Long-term	
<p>Objective 5: Continue to prescribe burn 120 acres per year on fire adapted communities including sandhill/upland mixed woodland intermixed with xeric hammock on southeastern portion of AWMA. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 6: Continue to maintain 600 acres (100%) per year within 3 - 5-year target fire return interval. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 7: As appropriate, continue habitat/natural community improvement including supplemental planting of wiregrass plugs on five acres per year of historic sandhill located in the southeastern portion of AWMA (2008, 80-acre addition; ~40 acres planted in longleaf pine). <i>Comment: Wiregrass planting was suspended due to prior limited planting success and to develop a more holistic restoration plan</i></p>	0%
<p>Goal 2: Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration: Maintain, improve, and restore imperiled species, populations, and habitats.</p>	
Short-term	
<p>Objective 1: Develop and implement a WCPR strategy. <i>Comment: The WCPR strategy was completed in December 2013.</i></p>	100%
<p>Objective 2: Continue to collect opportunistic rare and imperiled wildlife species occurrence data. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 3: Monitor known occurrences of Florida milkweed and document any new occurrences of imperiled plant species. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 4: Continue to maintain the mixture of sandhill and xeric hammock habitat for the benefit of species including Sherman’s fox squirrels, gopher tortoise, gopher frog, Florida mouse, and Eastern indigo snake. <i>Comment: Prior sandhill and xeric hammock are now classed as upland mixed woodland</i></p>	100%
<p>Objective 5: Monitor river access points for erosion and runoff that could negatively impact the water quality of the Suwannee River, and thereby protect and benefit imperiled aquatics species including West Indian manatee, Suwannee bass, Suwannee moccasin shell (Medionidus walker), gulf sturgeon, alligator snapping turtle, and Suwannee cooter. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
Long-term	
<p>Objective 6: Continue to implement WCPR strategy by managing identified habitats and monitoring identified species. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 7: Conduct a gopher tortoise survey (July 2016 – July 2017). <i>Comment: Since the WCPR strategy was developed, FWC has entered into an agreement with USFWS and changed survey protocols for gopher tortoise and prioritized WMAs for survey efforts. Andrews is a low priority for implementation of the line transect distance sampling gopher tortoise survey protocol. A herpetological study was completed in 2017.</i></p>	0%
<p>Objective 8: Continue to collect opportunistic rare and imperiled wildlife species occurrence data. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 9: Continue to monitor known occurrences of Florida milkweed and document any new occurrences of imperiled plant species. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 10: Continue to maintain the mixture of sandhill and xeric hammock habitat for the benefit of species including Sherman’s fox squirrels, gopher tortoise, gopher frog, Florida mouse, and Eastern indigo snake. <i>Comment: Prior sandhill and xeric hammock are now classified as upland mixed woodland.</i></p>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 11: Continue to monitor and maintain river access points for erosion and runoff that could negatively impact the water quality of the Suwannee River, and thereby protect and benefit imperiled aquatics species including west Indian manatee, Suwannee bass, Suwannee moccasin shell, gulf sturgeon, alligator snapping turtle, and Suwannee cooter. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Goal 3: Other Wildlife (Game and Nongame) Habitat Maintenance, Enhancement, Restoration, or Population Restoration: Maintain, improve, or restore game and non-game species populations and habitats.</p>	
<p>Short-term</p>	
<p>Objective 1: Continue to conduct annual track count monitoring surveys for white tailed deer. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 2: Continue to collect biological harvest data at check station. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 3: Continue to participate in the USFWS Migratory Bird Management Program by annually capturing and banding mourning dove (<i>Zenaida macroura</i>). <i>Comment: FWC participated in the program until 2015.</i></p>	100%
<p>Objective 4: Continue to maintain ~30 acres of wildlife openings and food plots. <i>Comment: FWC maintains 25 acres of wildlife openings and food plots three times per year.</i></p>	100%
<p>Objective 5: Continue to mow biannually ~100 acres of roadside wildlife openings. <i>Comment: FWC mows 30 acres of roadside openings twice per year.</i></p>	100%
<p>Objective 6: Pursuant to the FWC Apiary Policy, conduct an assessment to determine if leased apiaries are suitable on AWMA. <i>Comment: The apiary assessment was completed in 2011</i></p>	100%
<p>Objective 7: Continue to conduct annual track count monitoring surveys for white tailed deer. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Long-term</p>	
<p>Objective 8: Continue to collect biological harvest data at check station. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 9: Continue to participate in the USFWS Migratory Bird Management Program by annually capturing and banding mourning dove. <i>Comment: FWC participated in the program until 2015.</i></p>	43%
<p>Objective 10: Continue to collect opportunistic wildlife occurrence data. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 11: Continue to maintain ~30 acres of wildlife openings and food plots. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 12: Continue to mow biannually ~100 acres of roadside wildlife openings <i>Comment: FWC mows 30 acres of roadside wildlife openings twice per year.</i></p>	100%
<p>Goal 4: Public Access and Recreational Opportunities: Provide public access, and fish- and wildlife-based recreational opportunities.</p>	
<p>Short-term</p>	
<p>Objective 1: Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 181 visitors per day. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 2: Create a tree and shrub species brochure. <i>Comment: A tree and shrub species checklist was developed in 2018</i></p>	100%
<p>Objective 3: Continue to provide interpretation and educational website, six kiosks, recreational guide brochure, bird species list, hunting brochure, and youth education outreach. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 4: Continue to provide an FWC interpretive and educational program by periodically participating in the local wildlife festivals conducted in the Fanning Springs area. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 5: Maintain ~7.3 miles of trails. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 6: Investigate the feasibility of adjusting limited access hunting opportunities to include mobility-impaired hunting seasons. <i>Comment: FWC continuously evaluates the recreational opportunities it provides at AWMA to provide a high-quality user experience while protecting the resources of the area.</i></p>	100%

Goals and Objectives	Percent Accomplished
Long-term	
Objective 7: Update the Recreation Master Plan (2014 -2015). <i>Comment: The RMP has been updated.</i>	100%
Objective 8: Continue to maintain ~7.3 miles of trails. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 9: Develop additional public access and recreational opportunities including a new ~four-mile riverfront hiking trail to allow for an increased carrying capacity of 261 visitors per day. <i>Comment: The riverside trail was determined to be not feasible. A boardwalk was constructed to provide a loop hiking trail that takes hikers to the river.</i>	50%
Objective 10: Monitor trails biannually for visitor impacts. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 11: Reassess recreational opportunities every three years. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 12: Continue to provide hunting opportunities for deer, turkey, small game, and feral hogs. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 13: Continue to provide access for paddling opportunities on the Suwannee River. <i>Comment: FWC provides two boat launching areas and a boat /fishing dock.</i>	100%
Objective 14: Continue to provide access to fishing opportunities on the Suwannee River. <i>Comment: Anglers are able to fish from the bank of the Suwannee River at AWMA. A boat /fishing dock is also available.</i>	100%
Objective 15: Cooperate with SRWMD; DEP, DRP; Office of Greenways and Trails; FFS; other agencies; nongovernmental organizations; Levy, Dixie, and Gilchrist counties; stakeholders; and regional landowners to investigate regional recreational opportunities including linking hiking and multi-use trail systems between adjacent public areas. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 16: Continue to identify partnerships that could provide for environmental educational programs and outreach. <i>Comment: Several university studies have been conducted at AWMA.</i>	100%
Objective 17: Continue to periodically participate in the local wildlife festivals conducted in the Fanning Springs area. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%

Goals and Objectives	Percent Accomplished
Goal 5: Hydrological Preservation and Restoration: Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.	
Short-term	
Objective 1: To help protect karst geological features, surface and groundwater resources, conduct or obtain a hydrological assessment to identify potential hydrology restoration needs for AWMA in cooperation with the SRWMD. <i>Comment: A hydrological assessment for AWMA as completed in 2017.</i>	100%
Objective 2: To maintain and enhance natural hydrological functions, continue to maintain culverts as appropriate. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Long-term	
Objective 3: To maintain and enhance natural hydrological functions, continue to maintain culverts as appropriate. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 4: Based on results and recommendations of hydrological assessment, implement hydrological restoration plan as feasible and appropriate in cooperation with the SRWMD. <i>Comment: The hydrological assessment did not identify any restoration needs at AWMA.</i>	100%
Goal 6: Forest Resource Management: Manage timber resources to improve or restore natural communities for the benefit of wildlife.	
Short-term	
Objective 1: Consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Long-term	
Objective 2: Continue to consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 3: For the purposes of habitat restoration, conduct a timber harvest on 41 acres of off-site slash pine plantation located in the southeastern portion of AWMA (2008 acquisition parcel; ~41 acres total). <i>Comment: The trees within the slash pine plantation in the southwest corner of AWMA were not large enough to be merchantable. FWC will continue to work to restore this portion of AWMA.</i></p>	0%
<p>Objective 4: Continue to conduct habitat/natural community restoration activities including planting of longleaf pine on 33 acres of current clearcut (former slash pine plantation) located in the southeastern corner of AWMA adjacent to the observation tower. <i>Comment: Longleaf pine planting in the southeast portion of AWMA was completed in December 2011. Additional longleaf pines were planted in the northeast corner of AWMA in January 2018.</i></p>	100%
<p>Goal 7: Exotic and Invasive Species Maintenance and Control: Remove exotic and invasive plants and animals and conduct needed maintenance and control activities.</p>	
<p>Short-term</p>	
<p>Objective 1: Treat and GPS record FLEPPC Category I and Category II invasive exotic plant species throughout the area (~700 acres) as needed. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 2: Continue control measures on feral hogs by providing expanded hunting seasons as necessary. <i>Comment: FWC has added additional hog hunting opportunities at AWMA</i></p>	100%
<p>Long-term</p>	
<p>Objective 3: Continue to treat and GPS record EPPC Category I and Category II invasive exotic plant species throughout the area (3,582 acres) as needed. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 4: Continue control measures on feral hogs by providing expanded hunting seasons as necessary. <i>Comment: FWC has added additional hog hunting opportunities at AWMA.</i></p>	100%
<p>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.</p>	

Goals and Objectives	Percent Accomplished
Short-term	
Objective 1: Continue to maintain ten facilities. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 2: Maintain 22.6 miles of roads. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 3: Maintain 7.3 miles of existing trails. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Long-term	
Objective 4: Complete the remainder of the River loop-trail boardwalk. <i>Comment: The boardwalk was completed in November 2016.</i>	100%
Objective 5: Monitor trails and infrastructure biannually. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 6: Continue to maintain ten facilities. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 7: Continue to maintain 22.6 miles of roads. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 8: Continue to maintain 7.3 miles of trails existing on site. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 9: Replace two wildlife viewing towers (2018 – 2021). <i>Comment: FWC is reassessing the need to replace these viewing towers.</i>	0%
Objective 10: Design and develop ~four miles of additional riverfront hiking trail. <i>Comment: FWC has constructed a boardwalk to complete a loop hiking trail that comes out to the riverfront.</i>	0%
Objective 11: Construct two vaulted toilet restroom facilities. <i>Comment: Design and planning efforts are currently underway to include a public restroom facility with the upgrades to the entrance facility.</i>	25%
Goal 9: Cultural and Historical Resources: Protect, preserve and maintain cultural and historic resources.	
Short-term	
Objective 1: Ensure all known sites are recorded in the Division of Historical Resources (DHR) Master Site file. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 2: To protect, preserve, and monitor the three identified cultural sites. <i>Comment: FWC currently monitors 10 sites at AWMA.</i></p>	100%
<p>Objective 3: Continue to coordinate with DHR to assess the need for conducting a cultural resource survey. <i>Comment: DHR completed a cultural resources survey at AWMA in July 2014.</i></p>	100%
Long-term	
<p>Objective 4: As necessary, utilize FWC cultural resource trained staff, DHR staff, and/or professional archaeological consultants in designing site plans for development of infrastructure. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 5: Continue to monitor, protect, and preserve the three identified cultural sites. <i>Comment: FWC currently monitors 10 sites at AWMA.</i></p>	100%
<p>Objective 6: Coordinate with DHR to ensure area staff has cultural resource management guidelines training. <i>The AWMA lead biologist is ARM certified.</i></p>	100%
<p>Goal 10: Research Opportunities: Explore and pursue cooperative research opportunities.</p>	
Short-term	
<p>Objective 1: Explore and pursue cooperative research opportunities through universities and/or Fish and Wildlife Research Institute. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
Long-term	
<p>Objective 2: Continue to cooperate with researchers, universities, and others as appropriate. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 3: Continue to assess the need for and pursue research and environmental education partnership opportunities as appropriate. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%

Goals and Objectives	Percent Accomplished
Goal 11: Conservation Acquisition and Stewardship Partnerships: Enhance fish and wildlife conservation, resource and operational management through development of an optimal conservation planning boundary (OCPB).	
Short-term	
Objective 1: Identify potential important wildlife habitat, landscape-scale linkages, wildlife corridors, and operational/resource management needs. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 2: Identify and develop conservation stewardship partnerships. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 3: Identify and pursue conservation acquisition needs. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 4: Develop and maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC OCPB and for FWC’s LAP and Land Acquisition Programs. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 5: Develop a Conservation Action Strategy. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 6: Contact and inform adjoining landowners about the FWC LAP to pursue non-acquisition conservation stewardship partnerships. (October 2011-October 2013) <i>Comment: FWC works with adjacent landowners regularly.</i>	50%
Objective 7: Determine which parcels should be added to the FWC acquisition list. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 8: Identify potential non-governmental organization partnerships and grant program opportunities. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 9: Determine efficacy of conducting an adjacent landowner’s assistance/conservation stewardship partnership workshop. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%
Objective 10: Identify potential conservation easements donations. <i>Comment: FWC is continuing to implement this ongoing objective.</i>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 11: Evaluate and determine if any portions of AWMA are no longer needed for conservation purposes, and therefore may be designated as surplus lands. <i>Comment: Currently, all lands within AWMA are being managed for their original purpose of acquisition. Therefore, no lands at AWMA are being recommended for surplus. FWC is continuing to implement this ongoing objective.</i></p>	100%
Long-term	
<p>Objective 12: To minimize fragmentation of the area, continue to identify strategic parcels to revise the completed OCPB boundary for AWMA as appropriate and necessary. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 13: Continue to identify and develop conservation stewardship partnerships. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 14: Continue to identify and pursue conservation acquisition needs. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 15: Continue to maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC OCPB and for the FWC LAP and Land Acquisition Program. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 16: Continue to propose nominations of selected properties as additions to the FWC acquisition list. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 17: Continue to pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow. <i>Comment: FWC is continuing to implement this ongoing objective.</i></p>	100%
<p>Objective 18: Periodically (every three to five years) continue to contact and meet with adjacent landowners to determine their willingness to participate in the Conservation Action Strategy. <i>Comment: Two out of seven landowners have been contacted. FWC will continue to reach out to, and work with, adjacent landowners.</i></p>	29%
<p>Objective 19: Coordinate and conduct landowner assistance/conservation stewardship partnership workshop(s) as necessary and appropriate. <i>Comment: These workshops have not been necessary for AWMA. FWC works with adjacent landowners regularly.</i></p>	100%

Goals and Objectives	Percent Accomplished
<p>Objective 20: Continue to identify potential conservation easements donations. <i>Comment: FWC continuously pursues land conservation opportunities. Several parcels have been identified within the AWMA OCPB and FWC’s Additions and Inholdings list.</i></p>	100%
<p>Objective 21: Continue to evaluate and determine if any portions of AWMA are no longer needed for conservation purposes, and therefore may be designated as surplus lands. <i>Comment: Currently, all lands within AWMA are being managed for their original purpose of acquisition. Therefore, no lands at AWMA are being recommended for surplus. FWC is continuing to implement this ongoing objective.</i></p>	100%

5 Management Activities and Intent

The following section provides a description of agency plans to locate, identify, protect, preserve or otherwise use fragile natural resources and nonrenewable historical resources. In general, the FWC management intent for AWMA 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 FWC’s intent to provide quality fish and wildlife resource based public outdoor recreational opportunities on AWMA. The FWC will utilize the best available data, guidelines, natural resource management practices, and recreational management practices to achieve these outcomes in accordance with the original purposes for acquisition. Furthermore, as noted earlier, the management activities described in this section are in compliance with those of the Conceptual State Lands Management Plan.

5.1 Land Management Review

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, FS. 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, FS. 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 LMR of the AWMA was conducted in June of 2018, and the results of that review and FWC responses to recommendations are included as Appendix 12.8. It was determined that

AWMA 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 AWMA.

5.2.1 Monitoring

A well-developed monitoring protocol is also one of the primary required criteria for the management of AWMA. 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 FWC's Objective-Based Vegetation Management (OBVM, Section 5.3.1) program, which monitors how specific vegetative attributes are responding to FWC management. For imperiled and

locally important fish and wildlife species, monitoring protocols are established through the FWC's Wildlife Conservation Prioritization and Recovery (WCPR, Section 5.4.2, Appendix 12.17) program. FWC staff may monitor additional fish and wildlife species when deemed appropriate. Exotic and invasive plant and animal species (Section 5.5) are also monitored as needed and appropriate. Recreational uses are monitored through the FWC's Public Access Services Office (PASO) program, and work in conjunction with the establishment and adjustment of public access carrying capacities (Section 5.6.3). Historical resources (Section 5.9) are monitored with guidance from 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 AWMA 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 AWMA 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 AWMA, FWC will focus on managing for native habitat diversity, emphasizing maintenance of high-quality natural communities, and restoration of disturbed areas. Restoration may be achieved on disturbed areas by the re-introduction of fire, restoring historic hydrological conditions and/or the use of mechanical or chemical forest management techniques as appropriate. Retention of the native old growth component of forests, while also providing for natural regeneration, remains an important consideration. The AWMA has high-quality native communities including upland hardwood forest and upland mixed woodland that FWC will continue to manage and protect. On disturbed upland sites, FWC intends to initiate ground cover and natural community restoration.

The FNAI has conducted surveys and mapped the current vegetative communities and historic vegetation communities on AWMA. 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 maintain FWC-managed areas. Restoring the form and function of Florida's natural communities is the foundation of this management philosophy. The FWC uses OBVM to monitor how specific vegetative attributes are responding to FWC management.

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

After natural communities have been mapped, FWC land managers will identify those natural communities that will influence and guide management decisions, known as the actively managed natural communities. Through OBVM monitoring, the FWC collects data on a number of specific vegetation attributes that provide insight about the condition of the natural community. Because the FWC is interested in the overall effect of management on the natural communities, OBVM data is analyzed at the natural community level.

Measurable habitat management objectives referred to as 'desired future conditions' are established for each actively managed natural community. Desired future conditions are the acceptable range of values for quantifiable vegetation attributes, such as basal area, shrub height and cover, and ground cover. 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 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 provides 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.

Timber removal, site preparation, drainage, and lack of fire have all combined to alter the plant species composition of the area resulting in a loss of fuel and inhibiting the return to a more "natural" fire management regime. Site-specific combinations of prescribed fire, mechanical and chemical vegetation control, reforestation, and restoration of natural water regimes are 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 AWMA in accordance with vegetative management objectives. As fire moves across a landscape, some areas carry fire better than others. Areas with higher vegetative fuel loads typically burn more evenly and with greater intensity. Areas with lower vegetative fuel loads or wetland areas inundated with water typically will not carry fire as evenly, and usually burn at a lower intensity. Employing a burning program with different burning frequencies, intensities, and seasonality (dormant season vs. growing season) of prescribed burns create habitat diversity and a mosaic of vegetation patterns. This mosaic is designed to have both frequently burned and infrequently burned aspects.

On some areas, prescribed burning is limited by the buildup of mid-story brush and a lack of pyrogenic groundcover fuels. This condition creates unsuitable habitat for many wildlife species. Mechanical control of brush on upland sites by roller chopping, logging, shredding,

or incidentally by equipment during commercial thinning operations, can reduce shading and encourage the grasses and forbs that are necessary to sustain prescribed fire.

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

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

The transitional areas between two adjacent but different vegetative cover types, such as forests and wetlands, are known as ecotones. With the possible exception of wildfire suppression, mechanical soil disturbance in ecotones will be avoided in order to protect habitats for important rare species that often occur between flatwoods and riparian drainages. Silvicultural site preparation and creation of firebreaks are avoided when possible in these zones. Additionally, fires are allowed to burn into the edges of marshes, swamps and other wetlands in order to maintain these habitats. Once fuel loads have been reduced and a more open appearance has returned, vegetative management objectives will likely dictate a fire return interval that averages 1-4 years, preferably during the spring and early summer months.

In addition to the general prescribed fire management guidelines described above, an area-specific Prescribed Fire Plan has been developed and implemented for AWMA. This plan includes delineation of burn management units, detailed descriptions of prescribed fire methodology, safety, and smoke management guidelines (Appendix 12.9).

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, FWC plans to conduct prescribed burning on 100% of 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 AWMA are discussed in more detail below.

5.3.3 Habitat Restoration

FWC is conducting habitat restoration work at three altered sites on AWMA. These sites include a 35.9-acre clear-cut in the northeast corner of AWMA, a 37.6-acre clear-cut in the southeast corner of AWMA, and an 80.1-acre pine plantation that is also in the southeast corner of AWMA. FWC is working to restore these sites to their historic natural communities of upland mixed woodland and sandhill as described in the AWMA Restoration Plan (Appendix 12.10).

Natural communities on AWMA that may undergo some level of habitat restoration include upland hardwood forest and upland mixed woodland. Continuing habitat management activities on AWMA will focus on enhancing natural communities, maintaining recommended fire return intervals for fire adapted communities, treating and removing exotic plant species, and controlling vegetation through mowing and roller chopping as needed. Chemical and mechanical treatments may also be implemented in some select hardwood habitats in the upland mixed woodlands in order to restore these areas to an earlier successional condition. Exotic species control is more extensively discussed in Section 5.5, below. Further specific habitat management and improvement objectives planned for AWMA are described 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 AWMA. 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 alluvial forest, floodplain swamp, upland hardwood forest, and upland mixed woodland.



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

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

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

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

5.4.2 Imperiled 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 maintain FWC-managed areas. Restoring the form and function of Florida's natural communities is the foundation of this management philosophy. The FWC uses OBVM to monitor how specific vegetative parameters are responding to the FWC management, and uses the WCPR program to ensure management is having the desired effect on wildlife.

The goal of WCPR is to provide assessment, recovery, and planning support for the FWC-managed areas to enhance management of locally-important species and the recovery of imperiled species. 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 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 combines these assessments with area-specific management considerations to develop a Species 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 as well as select WCPR 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 AWMA. In the long-term, by implementing these strategies on FWC-managed lands and continuing to assess wildlife species' needs, FWC will continue to play an integral role in aiding the recovery of imperiled species and preventing the future imperilment of declining wildlife species.

During the previous planning period, the FWC monitored several locally important species at AWMA including gopher tortoise and Florida mouse. These projects, along with other ongoing imperiled or locally important species management activities, will continue to be implemented in accordance with AWMA 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 FLEPPC Category I or II plants on AWMA. 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 AWMA and treated annually by FWC include Alligator weed, Chinese brake fern, Chinese tallow, popcorn tree, cogongrass, Japanese climbing fern, mimosa, torpedo grass, and tropical soda apple. Exotic and invasive plant species have been identified as occurring at low densities along the roads of AWMA. The FWC's methodology for determining the number of acres "infested" with invasive exotic plants only represents a cumulative acreage and does not reflect the degree of the invasive exotic occurrence. The degree of infestation among areas identified with invasive exotic plant occurrences often varies substantially by species, level of disturbance, environmental conditions, and the status of ongoing eradication and control efforts. The FWC will continue to focus treatments on areas identified as having invasive exotic plant occurrences, as well as treating any new occurrences as they are identified through continued monitoring.

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

An exotic animal species of concern on AWMA 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 are controlled by hunts during the wild hog-still, archery, small game, general gun, and muzzleloading gun hunt seasons. 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.

Currently, maintenance and control of invasive exotic plant species (Table 6) continues to be a management challenge at AWMA. During the previous 10-year planning period, FWC continued to implement exotic and invasive species control and maintenance activities throughout AWMA. These include spot treating exotic and invasive plants within areas classified as infested, resulting in an overall 100% of AWMA currently being in a maintenance condition. 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. Ongoing exotic plant species objectives and challenges for AWMA are further detailed in Sections 6 - 8 below.

5.6 Public Access and Recreational Opportunities

5.6.1 Americans with Disabilities Act

When public facilities are developed on areas managed by FWC, every effort is made to comply with the Americans with Disabilities Act (ADA, 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 AWMA. To accomplish this, FWC has worked with recreational stakeholders and the general public to develop a Recreation Master Plan for AWMA that will 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 12.18).

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 AWMA can currently support 181 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 AWMA 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 development and implementation process.

5.6.4 Wildlife Viewing

AWMA affords a wide variety of native wildlife species, both resident and seasonally migratory, that are available for visitors' enjoyment for observation and photography. The quality and diversity of habitats found on AWMA attract an equally diverse suite of wildlife species including many waterfowl and wading bird species in the wetlands, passerine bird species in the uplands, and various mammalian, reptile and amphibian wildlife throughout AWMA.

5.6.5 Hunting

AWMA currently offers a muzzleloading gun, general gun, archery, small game, youth hunts, family hunts, wild hog-still, and spring turkey hunting seasons. Hunting opportunities on AWMA are evaluated by FWC staff and open for public comment throughout the year. FWC will investigate the feasibility of offering additional hunting seasons, possibly to include mobility impaired hunting season.

5.6.6 Fishing

The AWMA offers year-round bank fishing opportunities along the Suwannee River. Gamefish species feature largemouth bass, black crappie, pickerel, catfish, and various sunfish species.

5.6.7 Boating

Canoe and kayak launch access to the Suwannee River is available at two locations, which include day-use pavilion areas. Additionally, a boat and fishing dock facility is located at the southern launch location. The portions of AWMA that border the Suwannee River are designated as part of the Suwannee River Wilderness Trail managed by DEP's Division of Recreation and Parks.

5.6.8 Trails

Currently, there are 22.68 miles of trails on AWMA, including 7.45 miles of marked hiking trails. This system of trails has been designed as part of the Recreation Master Plan development and implementation process. FWC will continue to periodically reevaluate the potential for additional trail opportunities and monitor trails for user impacts to natural communities.

5.6.8.1 Hiking

The designated nature trails and unpaved roads can be explored by hikers and those interested in nature study. Not so long ago, six Florida champion trees - the very largest of their species in the state - grew in the surrounding forest. The persimmon, Florida maple, bluff oak, river birch, Florida basswood, and winged elm have since died of disease or old age, or yielded their titles to champions discovered elsewhere in the State. Some trails are named for these tree varieties and many large specimens still stand in the forest.

5.6.8.2 Bicycling

Cyclists may use trails or unnamed service roads. The roads and trails are in good condition and provide many scenic vistas and wildlife viewing opportunities.



5.6.8.3 Equestrian

Currently, there are no facilities to support the equestrian use of AWMA. However, the feasibility for providing adequate equestrian use support, including walk-in only access will be evaluated.

5.6.9 Camping

Camping is currently prohibited on AWMA. Due to the limited size of the area, and the lack of appropriate sites that would not interfere with other uses, it is not anticipated that camping opportunities will be provided in the future. However, special-use camping permit applications for special user group events will be evaluated on a case-by-case basis. Camping is offered in the nearby Fanning Springs and Manatee Springs State Parks.

5.6.10 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: <https://myfwc.com/license/public-land-use/geocaching/guidelines>.

5.6.11 Environmental Education

FWC will continue to make interpretive and educational programs available. Interpretive signage and area regulation information are provided within kiosks located at the public access point for AWMA. Other interpretive materials will be made available at kiosks located at the two day-use pavilions. Additional educational resources are offered through the MyFWC.com website.

To facilitate wildlife viewing recreational opportunities on the area, FWC has continued to establish and maintain hiking trails, kiosks, wildlife viewing blinds, and other facilities. During the previous 10-year planning period, FWC completed several public access, recreation, and facility improvements on AWMA, including a new boardwalk leading to the Suwannee River. 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 AWMA Recreation Master Plan upon its development and approval.

5.7 Hydrological Preservation and Restoration

FWC will cooperate with the SRWMD and DEP to implement appropriate surface and groundwater quality and quantity monitoring protocols for AWMA. In this capacity, FWC will primarily rely on the expertise and staff support of the SRWMD and DEP to conduct these monitoring activities.

The floodplain swamp adjacent to the Suwannee River will be monitored and conserved in cooperation with the SRWMD in order to maintain natural hydroperiods, assure normal floodwater retention, and to maintain surface water quality. The floodplain and associated wetlands affect the hydrodynamics of the river by storing water during periods of high rainfall and discharging this water after the rainfall has ceased. The intent of FWC management will be to protect and conserve the natural functioning of this system.

The placement of roadways, or other impediments to flow, will not occur within the floodplain except where necessary to maintain existing structures. Adequate culverts will be provided when necessary, and the existing culverts will be maintained and replaced as necessary. Vehicular access will be permitted only on the existing floodplain swamp roadway.

5.7.1 Hydrologic Assessment

A Hydrologic Assessment was completed for AWMA in October 2017 (Appendix 12.11). This assessment concluded that the natural hydrology of AWMA has not been significantly disturbed. No hydrological restoration activities are necessary.

5.8 Forest Resource Management

A Timber Assessment of the timber resources of AWMA has been conducted by the FFS (Appendix X). The management of timber resources will be considered in the context of the Timber Assessment and the overall land management goals and activities.

Timber resources include some pine plantations 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. Upland pine forest planted with off-site pines will be reforested with longleaf pine or other on-site species as appropriate. Degraded or disturbed bottomland hardwood sites will be encouraged to reforest naturally with native wetland oaks, hardwoods, and other appropriate native plant species.

Pursuant to OBVM management goals, FWC will continue to manage timber resources for wildlife benefits and natural community restoration. Management activities including the use of timber thinning and harvesting may be utilized. The primary management technique for encouraging reforestation is protection of young trees and seedlings on these sites from damage. However, where natural regeneration is lacking, artificial reforestation may be implemented. Planting trees on these selected sites is used to increase the rate of reforestation and to ensure diversity. Forested wetlands are managed for stands with old growth characteristics. Snags will be protected to benefit cavity-nesting species.

5.9 Historical Resources

Procedures outlined by the DHR will be followed to preserve the historical sites of AWMA. 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 AWMA.

To date, the DHR Master Site File indicates eight known historic sites, one historic structure, and one historic cemetery on AWMA. The FWC will submit subsequently located historic sites on AWMA to the DHR for inclusion in their Master Site File. FWC will also

continue to monitor the ten identified sites that are located on the area on a rotating, regular basis.

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 AWMA include a hunter check station, office, boat launches, fishing/boat dock, kiosks, wildlife viewing blind and platforms, and a boardwalk (Figure 11).

As described in Section 2.4.1 of this Management Plan, for any public facilities that are developed on areas managed by FWC, every effort is made to comply with the ADA (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 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 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 AWMA. 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. The OCPB for AWMA is shown in Figure 12.

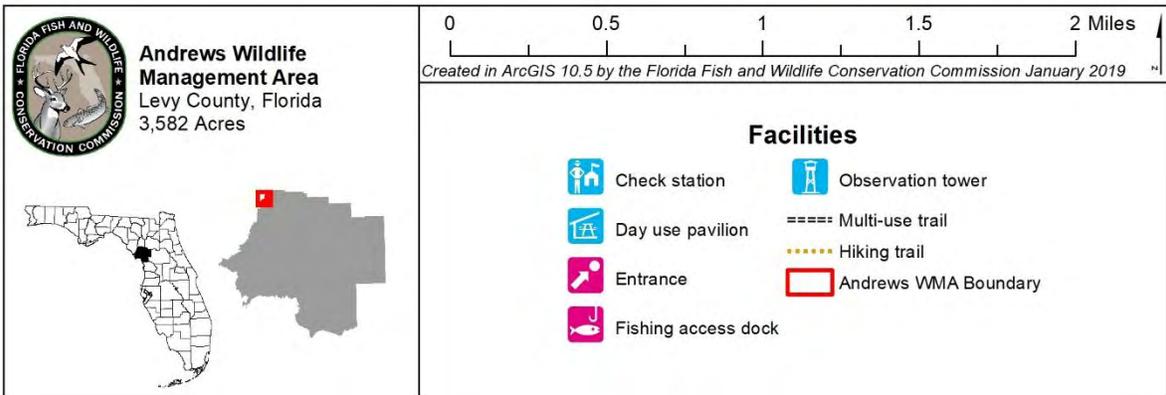
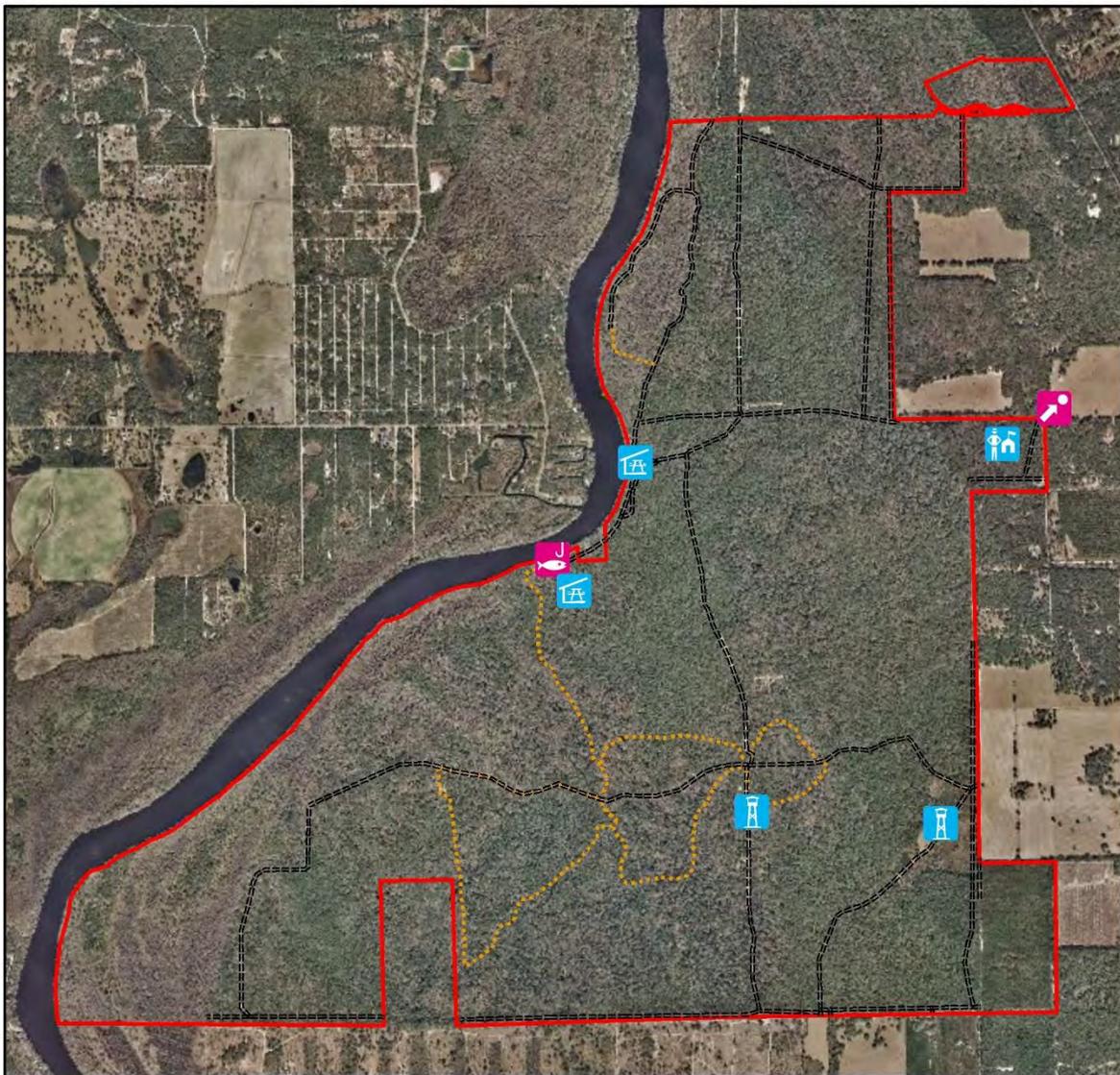


Figure 11: AWMA Facilities

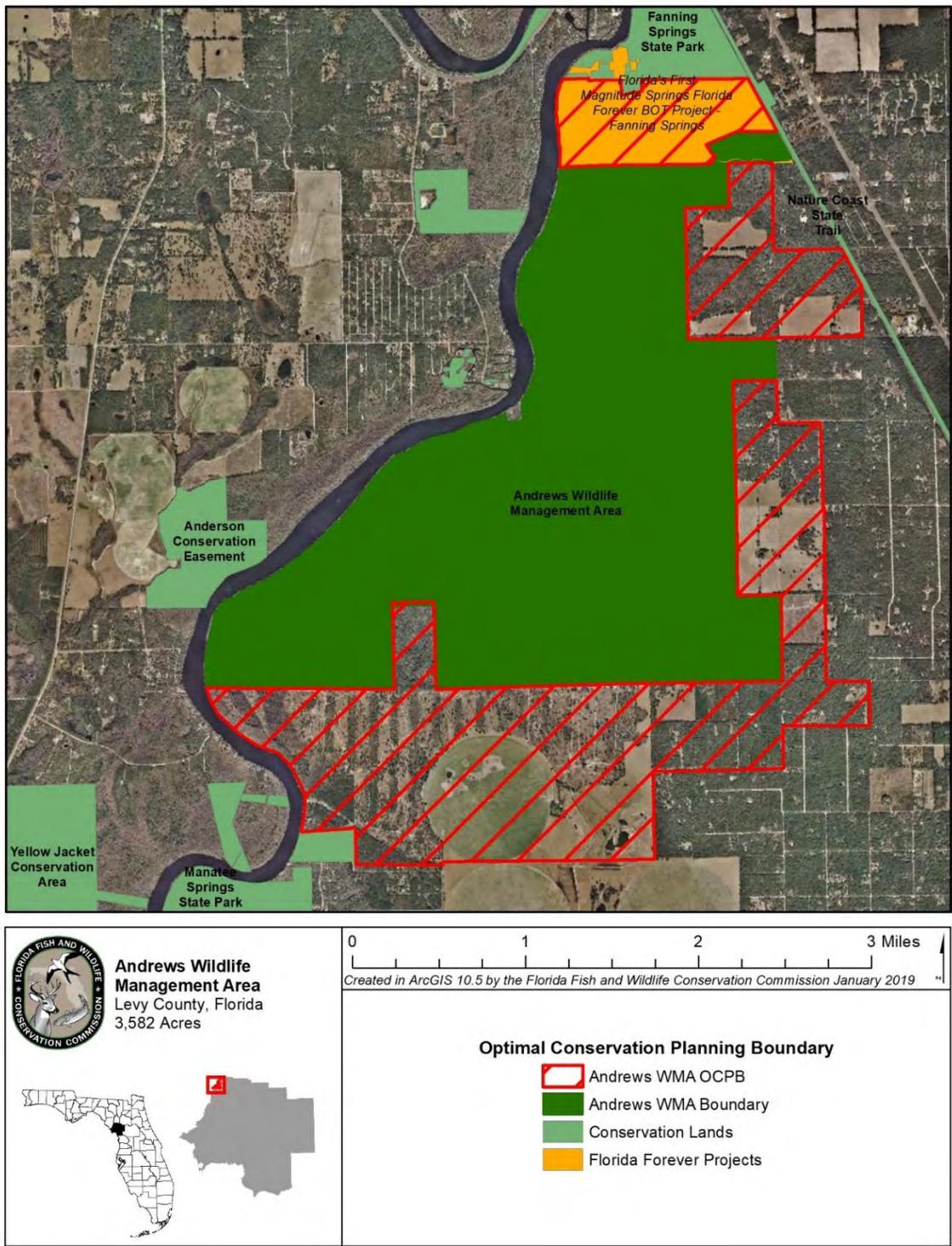


Figure 12: Optimal Conservation Planning Boundary

5.11.3 Conservation Action Strategy

The CAS is the third tier, and implements the results of the ORB and OCPB tiers. This element of the process incorporates the conservation planning recommendations into an action strategy that prioritizes conservation needs. The CAS is integral to the development of conservation stewardship partnerships and also implements the current approved process for establishing the FWC Florida Forever Inholdings and Additions acquisition list.

Primary components of the CAS may include:

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

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

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

5.11.4 FWC Florida Forever Additions and Inholdings Acquisition List

Currently, FWC has identified 1,875 acres of potential additions or privately held inholdings for AWMA. In addition, 364 acres of the Fanning Springs unit of the Florida's First Magnitude Springs 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.

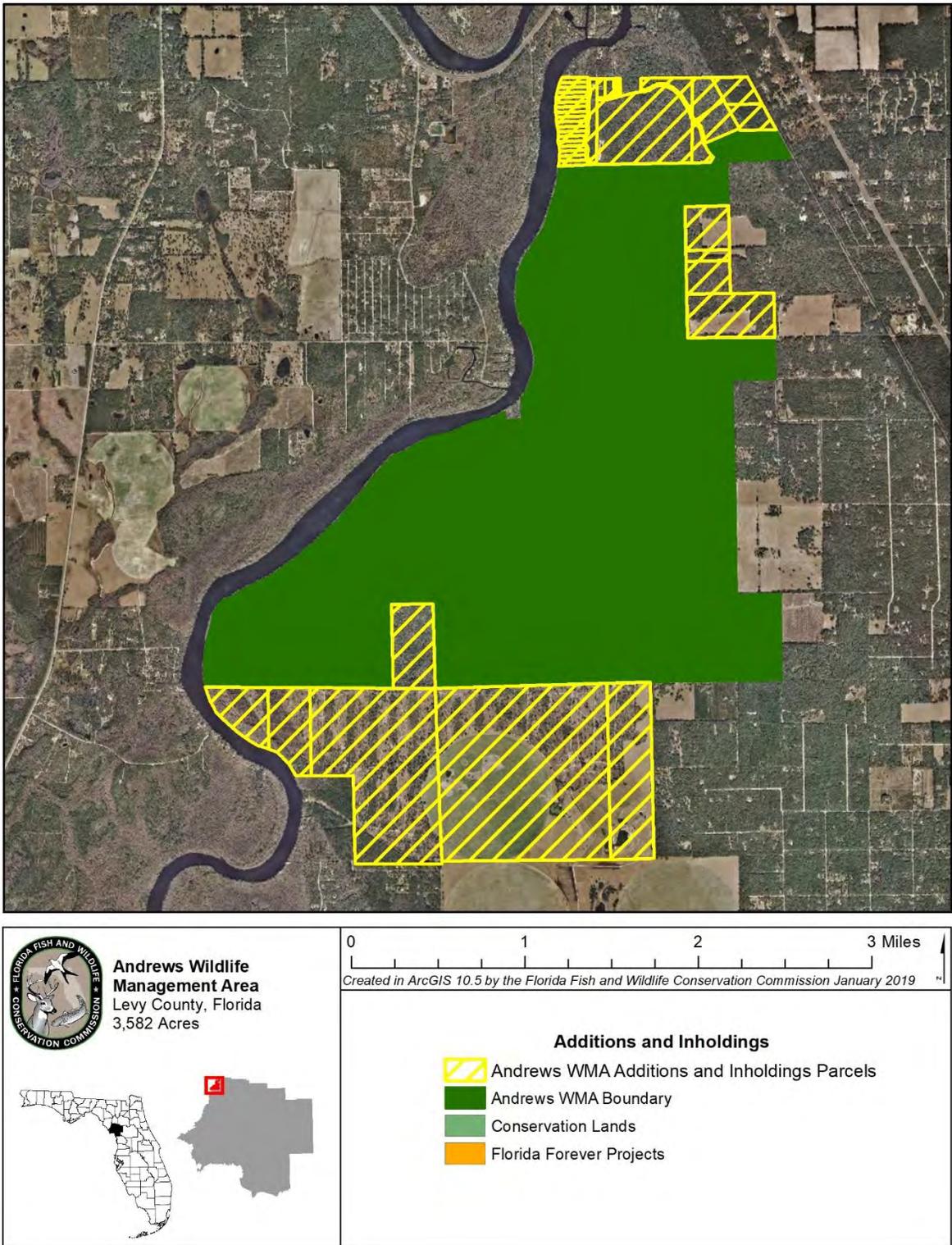


Figure 13: AWMA Additions and Inholdings

5.12 Research Opportunities

The FWC intends to cooperate with researchers, universities, and others as feasible and appropriate. For AWMA, 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 AWMA must have prior approval by FWC.

5.13 Cooperative Management and Special Uses

5.13.1 Cooperative Management

The FWC is responsible for the overall management and operation of AWMA as set forth in the lease agreement with the Board of Trustees and the cooperative management agreement with SRWMD. In keeping with these agreements, and in order to conduct its management operations in the most effective and efficient manner, the FWC cooperates with other agencies to achieve management goals and objectives described in this management plan. These include cooperating with DHR to ensure the requirements of the Management Procedures Guidelines - Management of Archaeological and Historical Resources document (Appendix 12.12) are followed with regard to any ground-disturbing activities. In addition, the FFS is a designated cooperating agency, and assists FWC by providing technical assistance on forest resource management. Also, FWC cooperates and consults with the SRWMD and DEP for the monitoring and management of both ground and surface water resources and the overall management of AWMA.

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 AWMA. 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 AWMA, 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 AWMA. 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 FWC to DSL and ARC for approval consideration prior to authorization.

5.13.3 Apiaries

Currently, there are no apiaries operating on AWMA. However, an apiary assessment that was completed for AWMA in October 2011 indicates one suitable site for an apiary on the area (Appendix 12.13.1). The use of apiaries is conditionally approved for AWMA, and is deemed to be consistent with purposes for acquisition, is in compliance with the Conceptual State Lands Management Plan, and is consistent with the FWC agency mission, goals, and objectives as expressed in the agency Strategic Plan and priorities document (Appendix

12.7). Location, management, and administration of apiaries on AWMA will be guided by the FWC Apiary Policy (Appendix 12.13.2)

5.14 Climate Change

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

The Intergovernmental Panel on Climate Change (IPCC), a multi-national scientific body, reports that climate change is likely proceeding at a rate where there will be unavoidable impacts to humans, wildlife, and habitat. Given current levels of heat-trapping greenhouse gas emissions, shifts in local, regional, and national climate patterns including changes in precipitation, temperature, increased frequency and intensity of extreme weather events, rising sea levels, tidal fluctuations, and ocean acidification are projected. The current trend of global temperature increase has appeared to accelerate in recent decades, and continued greenhouse gas emissions may result in projected global average increases of 2 –11.5° F by the end of the century.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, FWC has begun a process for currently developing climate change adaptation strategies for monitoring, evaluating, and determining what specific actions, if any, may be recommended to ameliorate the projected impacts of climate change on fish and wildlife resources, native vegetation, and the possible spread of exotic and invasive species. Currently, FWC is continuing its work on the development of these potential adaptation strategies. However, as noted above, the effects of climate change may become more frequent and severe within the time period covered by this Management Plan.

For these reasons, there is a continuing need for increased information and research to enable adaptive management to cope with potential long-term climate change impacts. The most immediate actions that FWC can take are to work with partners to gather the best scientific data possible for understanding natural processes in their current state, model possible impacts and subsequent changes from climate change, develop adaptive management strategies to enhance the resiliency of natural communities to adapt to climate change, and formulate criteria and monitoring for potential impacts when direct intervention may be necessary to protect a species. To this end, when appropriate, FWC will participate in organizations such as the Peninsular Florida Land Conservation Cooperative or similar organizations so that FWC continues to gain understanding and share knowledge of key issues related to potential climate change. In addition, FWC will consider the need for conducting vulnerability assessments to model the potential effects of climate change, especially sea level rise and storm events, on imperiled species and their habitats on FWC managed land.

Elements of climate change that may potentially affect AWMA include more frequent and more potent storm events, alteration of vegetation reproductive cycles, and changes in the fire regime. Florida's low-lying coastal habitats, such as salt marsh and hardwood swamp natural communities are projected to face the most direct and dramatic impacts of climate change, particularly from a projected rising sea level and from the projected increased frequency and intensity of coastal storms.^{12, 13, 14, 15} The effects of sea level rise in the recent past have been observed on the nearby Lower Suwannee National Wildlife Refuge; cabbage palms have been dying on coastal islands due to salinity increases. The potential loss of habitat may result in the loss of species using that habitat, including migrating and nesting birds. Storm events also cause considerable physical damage to native vegetation along vulnerable shorelines, impacting nesting habitat for sea life and shorebirds. The projected rise in sea levels may decrease the availability and abundance of prey for wading birds that forage in shallow waters on the expansive tidal flats of the Gulf Coast. Climate change may amplify and hasten these effects, potentially at rates that exceed the normal resiliency of plant communities to recover, shift or adapt accordingly.^{16, 17} Projected salt water intrusion into the subsurface freshwater lens from potential sea level rise and saltwater inundation

of surface freshwaters from storm surges may alter coastal ecosystems and freshwater marshes, possibly resulting in more salt-tolerant aquatic plant communities. Inland plant communities, such as those found at AWMA will also likely be forced to shift and adapt in response to the effects of climate change.

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

5.15 Soil and Water Conservation

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

6 Resource Management Goals and Objectives

The management goals described in this section are considered broad, enduring statements designed to guide the general direction of management actions to be conducted in order to achieve an overall desired future outcome for AWMA. 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 Update the AWMA prescribed burn plan.

Long-term

6.1.2 Continue to conduct prescribed burning on at least 120 acres of fire adapted communities per year.

6.1.3 Continue to maintain 603 acres of fire adapted communities (100%) per year within target fire return interval.

- 6.1.4 Contract for mapping of historic and current natural communities.
- 6.1.5 Utilize OBVM monitoring to evaluate actively managed natural communities and adjust management efforts to meet desired future conditions.
- 6.1.6 Continue to implement the AWMA prescribed burn plan.
- 6.1.7 Continue to conduct habitat/natural community restoration activities on 153.6 acres as detailed in the restoration plan for the area.
- 6.1.8 Continue to conduct timber harvest for the purposes of habitat restoration on 80 acres.

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 imperiled species.
- 6.2.2 Continue to collect and record opportunistic wildlife species occurrence data.
- 6.2.3 Update WCPR Strategy when necessary.
- 6.2.4 Evaluate need to conduct survey and mapping of imperiled plant species.

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 Continue to monitor locally important wildlife species, and survey other species, as identified in the WCPR strategy.
- 6.3.2 Continue to conduct annual track count surveys for white tailed deer.
- 6.3.3 Continue to collect biological harvest data at check station.
- 6.3.4 Continue to collect opportunistic wildlife occurrence data.
- 6.3.5 Continue to plant 25 acres of wildlife food plots in fall, winter, and spring to increase wildlife viewing opportunities and improve hunter satisfaction.

6.3.6 Continue to mow biannually 30 acres of roadside wildlife openings.

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 the area for FLEPPC Category I and Category II invasive exotic plant species and treat the observed species including Chinese tallow, cogon grass, Japanese climbing fern, tropical soda apple, mimosa, and air potato as needed.

6.4.2 Evaluate the need to repeat previous survey and mapping of invasive exotic plant species.

6.4.3 Continue to implement control measures on one exotic and nuisance animal species (feral hog).

6.5 Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities.

Long-term

6.5.1 Continue to implement Recreation Master Plan

6.5.2 Maintain public access and recreational opportunities resulting in a recreational carrying capacity of 181 visitors per day.

6.5.3 Continue to provide website, five kiosks, interpretive signage, recreation guide, and bird list for interpretation and education.

6.5.4 Continue to maintain 22.68 miles of trails including 7.45 miles of marked trails.

6.5.5 Monitor trails annually for visitor impacts.

6.5.6 Continue to provide hunting opportunities for deer, turkey, small game and feral hogs.

6.5.7 Continue to provide paddling opportunities on appropriate water bodies.

6.5.8 Continue to provide fishing opportunities on appropriate water bodies.

6.5.9 Cooperate with other agencies, Levy 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 maintain culverts as appropriate.
- 6.6.2** Continue to implement the best management practices recommended in the hydrologic assessment.
- 6.6.3** Continue to cooperate with the Suwannee River Water Management District and DEP 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** Complete a timber assessment at AWMA as needed.
- 6.7.2** 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** Ensure all known sites are recorded in the Florida Division of Historical Resources Master Site file.
- 6.8.2** Cooperate with DHR in designing site plans for development of infrastructure.
- 6.8.3** Cooperate with DHR to manage and maintain known existing historical resources.
- 6.8.4** Continue to monitor, protect, and preserve as necessary ten identified sites.
- 6.8.5** Coordinate with DHR for cultural resource management guideline staff training as needed.
- 6.8.6** 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** Continue to monitor infrastructure annually for visitor impacts.
- 6.9.2** Continue to maintain 10 facilities, including the entrance facilities, boat launches, fishing/boat dock, kiosks, wildlife viewing blind and platforms, and a boardwalk.
- 6.9.3** Continue to maintain roads for public access and management of AWMA.
- 6.9.4** Improve the entrance facility.

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 AWMA 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 CAS for AWMA 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 AWMA 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 AWMA.

Long-term

- 6.11.1** Coordinate with FWC-Fish and Wildlife Research Institute Climate Change Adaptation Initiative to identify potential impacts of projected climate change on fish and wildlife resources and operational management of AWMA.
- 6.11.2** As appropriate, update the AWMA 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 AWMA 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 for potential research and educational opportunities.
- 6.12.2** Continue to cooperate with SRWMD on overall management activities as appropriate.
- 6.12.3** 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 AWMA.

7 Resource Management Challenges and Strategies

The following section identifies and describes further management needs and challenges associated with AWMA 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: 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: A complete boundary survey of AWMA is lacking.

7.2.1 Strategy: Explore the feasibility of contracting for boundary survey.

7.3 Challenge: While currently at minimal levels, unauthorized access, illegal dumping, vandalism, poaching, and unauthorized off-road vehicle use may pose an increased threat in the future.

7.3.1 Strategy: Continue to provide area-wide security through FWC law enforcement patrols.

7.4 Challenge: Adjacent lands should be conserved to optimally manage AWMA, however, limited opportunities to acquire these lands are available.

7.4.1 Strategy: Continue to identify and pursue suitable funding sources for acquisition.

7.4.2 Strategy: Continue to contact and inform adjoining private landowners about the FWC Landowners Assistance Program.

7.5 Challenge: There is a high abundance of ticks on the area, and the number of identified tick-borne illnesses are increasing, posing a possible health risk to area visitors and FWC staff.

7.5.1 Strategy: Continue to review available research to identify and pursue proven, effective tick related repellants to decrease incidents of tick bites.

7.5.2 Strategy: Continue to document the number and frequency of tick bite occurrences in case of future tick-related illnesses.

7.5.3 Strategy: Provide educational resources to the public on preventing tick bites while visiting AWMA.

7.6 Challenge: The AWMA is not a well-known public outdoor recreation destination.

7.6.1 Strategy: Explore adding additional public access points to increase visibility and accessibility.

7.6.2 Strategy: Work with local and regional tourism organizations to promote AWMA.

7.6.3 Strategy: Cross-promote AWMA with other regional public conservation lands.

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

7.7.1 Strategy: Cooperate and work with Levy County to ensure land use and zoning designations adjacent to AWMA will continue to be compatible with the management of the area.

7.8 Challenge: There is an inholding within AWMA that can cause management challenges.

7.8.1 Strategy: Explore the feasibility of contracting for a boundary survey.

7.8.2 Strategy: Explore conservation strategies for the inholding, including, but not limited to, fee simple or less-than-fee acquisition to ensure long term conservation of the site.

7.8.3 Strategy: Ensure the inholding continues to be included within the OCPB.

7.8.4 Strategy: Coordinate with existing landowners regarding management of exotic plant species.

8 Cost Estimates and Funding Sources

The following represents the actual and unmet budgetary needs for managing the lands and resources of AWMA. This cost estimate was developed using data developed by FWC and other cooperating entities, and is based on actual costs for land management activities, equipment purchases and maintenance, and for development of fixed capital facilities. 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 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 AWMA. Cost estimate categories are those currently recognized by FWC and the Land Management Uniform Accounting Council. More information on these categories, as well as the Fiscal Year 2018-2019 operational plan showing detailed cost estimates by activity and categories of expenditures, may be found in Appendix 12.14.



Andrews WMA Management Plan Cost Estimate
Maximum expected one-year expenditure

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	Priority schedule:
Exotic Species Control	\$1,764	(1)	(1) Immediate (annual)
Prescribed Burning	\$13,706	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$902	(1)	(3) Other (5+ years)
Timber Management	\$1,764	(1)	
Hydrological Management	\$0	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$80,443	(1)	
Subtotal	\$98,580		
<u>Administration</u>			
General administration	\$11,477	(1)	
<u>Support</u>			
Land Management Planning	\$18,744	(1)	
Land Management Reviews	\$6,795	(3)	
Training/Staff Development	\$4,902	(1)	
Vehicle Purchase	\$37,570	(2)	
Vehicle Operation and Maintenance	\$9,026	(1)	
Other (Technical Reports, Data Management, etc.)	\$10,104	(1)	
Subtotal	\$87,139		
<u>Capital Improvements</u>			
New Facility Construction	\$116,441	(2)	
Facility Maintenance	\$39,169	(1)	
Subtotal	\$155,611		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$19,978	(1)	
<u>Law Enforcement</u>			
Resource protection	\$3,272	(1)	
<u>Total</u>	\$376,055	*	

*Based on the characteristics and requirements of this area, 2.5 FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.

Andrews WMA Management Plan Cost Estimate
Ten-year projection

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	<u>Priority schedule:</u>
Exotic Species Control	\$15,501	(1)	(1) Immediate (annual)
Prescribed Burning	\$120,423	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$7,925	(1)	(3) Other (5+ years)
Timber Management	\$15,501	(1)	
Hydrological Management	\$0	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$706,783	(1)	
Subtotal	\$866,134		
<u>Administration</u>			
General administration	\$100,834	(1)	
<u>Support</u>			
Land Management Planning	\$164,685	(1)	
Land Management Reviews	\$19,450	(3)	
Training/Staff Development	\$43,065	(1)	
Vehicle Purchase	\$132,210	(2)	
Vehicle Operation and Maintenance	\$79,301	(1)	
Other (Technical Reports, Data Management, etc.)	\$88,772	(1)	
Subtotal	\$527,483		
<u>Capital Improvements</u>			
New Facility Construction	\$336,339	(2)	
Facility Maintenance	\$344,145	(1)	
Subtotal	\$680,484		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$175,525	(1)	
<u>Law Enforcement</u>			
Resource protection	\$28,745	(1)	
<u>Total</u>	\$2,379,205	*	

*Based on the characteristics and requirements of this area, 2.5 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 FWC either does not have in-house expertise to accomplish or which can be done at less cost by an outside provider of services. Those items selected as “conditional” items are those that could be done either by an outside provider or by the agency at virtually the same cost or with the same level of competence. Items selected as “rejected” represent those for which FWC has in-house expertise and/or which the agency has found it can accomplish at less expense than through contracting with outside sources:

Approved Conditional Rejected

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

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 ADA. 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 AWMA 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, 379, 403, 870, 373, 375, 378, 487, and 597 FS.

The FWC has developed and utilizes an Arthropod Control Plan for AWMA in compliance with Chapter 388.4111 F.S. (Appendix 12.15). The Arthropod Control Plan was developed in cooperation with the local Levy County arthropod control agency. This management plan is also in conformance with the Local Government Comprehensive Plan as approved and adopted for Levy County, Florida, (Appendix 12.16).

11 Endnotes

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