FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

August 17, 2021

Mr. Keith Rowell
Florida Forest Service
Department of Agriculture and Consumer Services
3125 Conner Boulevard, Room 236
Tallahassee, Florida 32399-1650

RE: Charles H. Bronson State Forest – Lease No. 4580

Dear Mr. Rowell:

On **August 13, 2021**, the Acquisition and Restoration Council (ARC) recommended approval of the **Charles H. Bronson State Forest** management plan. Therefore, Division of State Lands, Office of Environmental Services (OES), acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **Charles H. Bronson State Forest** management plan. The next management plan update is due August 13, 2031.

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.

Conditional 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,

Deborah Burr Digitally signed by Deborah Burr Date: 2021.08.18 08:32:22 -04'00'

Deborah Burr
Office of Environmental Services
Division of State Lands

TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

CHARLES H. BRONSON STATE FOREST

SEMINOLE AND ORANGE COUNTIES

PREPARED BY THE
FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FLORIDA FOREST SERVICE

APPROVED ON

AUGUST 13, 2021

TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

CHARLES H. BRONSON STATE FOREST

Approved by:

Erin Albury, Director
Florida Forest Service

9/8/21
Date

James Roberts, Chief
Forest Management Bureau

9-7-20
Date

TEN-YEAR LAND MANAGEMENT PLAN
CHARLES H. BRONSON STATE FOREST
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TEN-YEAR LAND MANAGEMENT PLAN
CHARLES H. BRONSON STATE FOREST
EXHIBITS

LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS)
COMMON NAME: Charles H. Bronson State Forest (CHBSF)
LOCATION: Seminole County and Orange County
ACREAGE TOTAL: 11,246.24 acres

Historic Natural Communities	Approximate Acreage
Hydric Hammock	4,642
Mesic Flatwoods	2,687
Floodplain Marsh	1,735
Wet Flatwoods	809
Blackwater Stream	592
Basin Swamp	162
Basin Marsh	158

Historic Natural Communities	Approximate Acreage
Scrubby Flatwoods	134
Depression Marsh	92
Baygall	88
Sandhill	64
Scrub	37
Mesic Hammock	28
Dome Swamp	18

TIITF LEASE AGREEMENT NUMBERS: 4580
USE: Single ___ Multiple _X_

MANAGEMENT AGENCY	RESPONSIBILITY
FDACS, Florida Forest Service	General Forest Resource Management
Florida Fish and Wildlife Conservation Commission	Wildlife Resources & Laws
St. Johns River Water Management District	Water Resource Protection & Restoration
Department of State, Division of Historical Resources	Historical & Archaeological Resource Management

DESIGNATED LAND USE: Multiple-Use State Forest
SUBLEASES: None
ENCUMBRANCES: Seminole County, Orange County
TYPE of ACQUISITION: Florida Forever Funds (TIITF and WMD), Natural Resource Conservation Service Funds, Orange County Green Place Program Funds.
UNIQUE FEATURES: The St. Johns River, an American Heritage River, is the longest river in Florida at 310 miles long; four creeks flow through the forest: Turkey Creek, Joshua Creek, Buscombe Creek, and Christmas Creek
ARCHAEOLOGICAL / HISTORICAL: Fifteen (15) known sites
MANAGEMENT NEEDS: Continued restoration and maintenance of native ecosystems and protection of archaeological and historical sites
ACQUISITION NEEDS: Additional acreage located in the Optimal Management Boundary
SURPLUS ACREAGE: None
PUBLIC INVOLVEMENT: 2014 and 2018 Land Management Reviews, State Forest Liaison Committee, Management Plan Advisory Group and Public Hearing, Acquisition and Restoration Council, St. Johns River Water Management District Governing Board - - - - - -

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

ARC Approval Date: _____ TIITF Approval Date: _____

Comments: _____

_____

_____

I. Introduction

Charles H. Bronson State Forest (CHBSF) is located about 23 miles east of Orlando in southeastern Seminole County and northeastern Orange County, adjacent to and south of the Little Big Econ State Forest (LBESF). The CHBSF is operated out of the LBESF headquarters, which is in Geneva, Florida.

The forest was established on July 1, 2008 by legislative direction and is named after Charles H. Bronson, who served as the ninth Commissioner for the Florida Department of Agriculture and Consumer Services from 2001 to 2011. Most of the 11,246 acres within the forest boundaries was purchased by St Johns River Water Management District (SJRWMD), Board of Trustees Funds (Florida Forever), Orange County Funds and Natural Resource Conservation Service Funds.

In the past the forest was used for turpentine, agriculture, and cattle grazing. Today it is managed to restore and maintain native ecosystems, protect plants, animals, archaeological and historical sites, and support outdoor recreation. There are also three active cattle leases that are used to assist in the management of the forest. The forest provides a crucial source of protection for wetlands and associated natural communities within the floodplain of the St. Johns River. Other natural communities include floodplain marsh, pine flatwoods, sandhill, and cypress swamp.

A. General Mission and Management Plan Direction

The primary mission of the FFS is to "protect Florida and its people from the dangers of wildland fire and manage the forest resources through a stewardship ethic to assure they are available for future generations".

Management strategies for CHBSF center on the multiple-use concept, as defined in Sections 589.04(3) and 253.034(2)(a), Florida Statues (F.S.). Implementation of this concept will utilize and conserve State Forest resources in a harmonious and coordinated combination that will best serve the people of the State of Florida, and that is consistent with the purpose for which the Forest was acquired. Multiple-use management for CHBSF will be accomplished with the following strategies:

- Practice sustainable forest management for the efficient generation of revenue and in support of State Forest management objectives;
- Provide for resource-based outdoor recreation opportunities for multiple interests;
- Restore and manage healthy forests and native ecosystems ensuring the long-term viability of populations and species listed as endangered, threatened, or rare, and other components of biological diversity, including game and non-game wildlife, and plants;
- Protect known archaeological, historical, and cultural resources;
- Restore, maintain, and protect hydrological functions, related water resources, and the health of associated wetlands and aquatic communities; and
- Provide research and educational opportunities related to natural resource management.

This management plan is provided according to requirements of Sections 253.034, 259.032, and 373, F.S. and was prepared utilizing guidelines outlined in Section 18-2.021 of the Florida Administrative Code (F.A.C.). It is not an annual work plan or detailed operational plan but provides general guidance for the management of CHBSF for the next ten-year period and

outlines the major concepts that will guide management activities on the forest.

B. Past Accomplishments

Data regarding past management activities and public use on CHBSF have been compiled monthly and are available from the forest manager. A table has been prepared for this plan summarizing the accomplishments over the past ten years. See Exhibit A. The table does not attempt to account for all activities on the forest, but summarizes major activities, nor does it list the multitude of daily activities and public interactions involved in managing the forest. Among the most notable accomplishments have been the following:

- Conducted prescribed fire on 5,115 acres
- Sprayed 13.83 acres for non-native plants
- Roller chopped 1,090 acres to prepare burn blocks for prescribed fire
- Discovered and documented three new shell middens and documented a windmill with Florida Division of Historical Resources
- Restored the historic flow to Turkey Creek by reconnecting the two sections of the creek.
- SJRWMD and Natural Resource Conservation Service removed an old dike system from around the floodplain marsh on the Turkey Creek Tract to restore the natural hydrology
- Built the Joshua Creek trailhead
- Installed three primitive campsites
- Florida Trail Association (FTA) installed 19 miles of hiking trails
- Designated 9.5 miles of the hiking trail as part of the Trailwalker program.
- Installed 20 miles of horse trails
- Designated 4.7 miles of the horse trail as part of the Trailtrotter program
- Included the forest into the Florida Fish and Wildlife Conservation Commission's (FWC) Wildlife Management Area (WMA) system
- Conducted field trips on the Turkey Creek Tract for the Space Coast Birding and Wildlife Festival
- In 2017 the FFS acquired the Barker property, an inholding on the Joshua Creek Tract

C. Goals / Objectives for the Next Ten-Year Period

The following goals and objectives provide direction and focus of management resources for the next ten-year planning period. Funding, agency program priorities, and the potential for wildfire during the planning period will determine the degree to which these objectives can be met. Management activities on CHBSF during this management period must serve to conserve, protect, utilize, and enhance the natural and historical resources and manage resource-based public outdoor recreation, which is compatible with the conservation and protection of this forest. Most of the management operations will be conducted by the FFS, although some activities will be contracted to private sector vendors or completed with the cooperation of other agencies. All activities will enhance the property's natural resource or public recreational value.

The management activities listed below will be addressed within the ten-year management period and are defined as short-term goals, long-term goals, or ongoing goals. Short-term goals are goals that are achievable within a two-year planning period, and long-term goals are achievable within a ten-year planning period. Objectives are listed in priority order for each goal. Other activities will be completed with minimal overhead expense and existing staff.

- **<u>GOAL 1</u>: Sustainable Forest Management**

  Objective 1: Continue to update and implement the Five-Year Silviculture Action Plan including reforestation, timber harvesting, prescribed burning, understory restoration, and timber stand improvement activities and goals. (Ongoing objective)

  Performance Measures:
  - Annual updates of the Five-Year Silviculture Action Plan completed
  - Continued implementation of the Five-Year Silviculture Action Plan (acres treated)

  Objective 2: Continue to implement the FFS process for developing stand descriptions and conducting forest inventory, including maintaining a GIS database containing forest stands, roads, and other attributes (including but not limited to: rare, threatened, and endangered species, archaeological and historical resources, and non-native invasive species locations). (Ongoing objective)

  Performance Measures:
  - Updated GIS database and re-inventory of all attributes as required by FFS procedures
  - Number of acres inventoried

- **<u>GOAL 2</u>: Public Access and Recreational Opportunities**

  Objective 1: Maintain public access and recreational opportunities that are compatible with multiple-use management. (Ongoing objective)

  Performance Measure: Number of visitor opportunities per day

  Objective 2: Evaluate additional public access and recreational opportunities that are compatible with multiple-use management. (Short-term objective)

  Performance Measure: Number of additional visitor opportunities evaluated

  Objective 3: Continue to safely integrate human use into CHBSF, follow the Five-Year Outdoor Recreation Plan and update annually. (Ongoing objective)

  Performance Measures:
  - Continued implementation of the Five-Year Outdoor Recreation Plan
  - Annual updates of the Five-Year Outdoor Recreation Plan completed

  Objective 4: Continue to involve and meet with the Liaison Committee. The purpose of Liaison Committee meetings is to facilitate communication between the FFS and committee members (and the groups they represent) about state forest management and to obtain feedback from these entities. The Liaison Committee consists of local residents, community leaders, special interest group representatives (vendors, hunters and other recreational users, etc.), environmental group representatives, and other public / private entities. (Ongoing objective)

  Performance Measures:
  - Liaison Committee remains organized
  - Semi-annual meetings continue

  Objective 5: Maintain cooperation with Florida Fish and Wildlife Conservation Commission (FWC) to develop specific hunting season quotas and bag limits, and to address hunting issues

which are to be agreed upon at an annual cooperator meeting between FFS and FWC. (Ongoing objective)
Performance Measures:
- Annual letter on agreed-upon hunting issues
- Updated rules posted and WMA brochures available online at MyFWC.com

Objective 6: Recruit volunteers and volunteer organizations to assist with recreation and / or resource management. (Ongoing objective)
Performance Measures:
- Number of volunteers and organizations that assist with projects
- Number of hours provided by volunteers

- **GOAL 3: Habitat Restoration, Improvement, and Fire Management**

Objective 1: The CHBSF currently contains approximately 3,752 acres of fire-dependent communities. CHBSF staff will plan and conduct prescribed burns in a manner that benefits these fire-dependent natural communities within the forest. To achieve an average fire-return interval of three (3) to four (4) years for most fire-dependent communities, FFS will attempt to conduct prescribed burns on an average of approximately 938 to 1,250 acres per year. Currently FFS staff estimates 3,384 acres at CHBSF are within the desired fire-return interval. (Ongoing objective)
Performance Measures:
- Number of acres burned during dormant and growing seasons
- Number of acres burned within target fire-return interval

Objective 2: Continue to annually update and implement the Five-Year Prescribed Burning Management Plan and the prescribed burning goals. (Ongoing objective)
Performance Measures:
- Annual updates of the Five-Year Prescribed Burning Management Plan completed
- Continued implementation of the Five-Year Prescribed Burning Management Plan (acres treated)

Objective 3: Reduce the threat of wildfire within the wildland urban interface on CHBSF and the surrounding community through a comprehensive mitigation strategy that includes evaluating vegetative fuels near residential areas and identifying potential fuel reduction projects. (Ongoing objective)
Performance Measures:
- Evaluation complete
- Number of acres treated for fuel reduction, if necessary

Objective 4: Utilize prescribed fire to enhance restoration of native groundcover. Evaluate areas where native groundcover has been eliminated or heavily impacted from historical land use on a case by case basis for alternative methods to address reestablishment of native groundcover plants. Restore native groundcover where practical or heavily impacted from historical land use. (Long-term objective)
Performance Measure: Number of acres restored

- **<u>GOAL 4</u>: Listed and Rare Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

  Objective 1: In cooperation with FWC, develop a Wildlife Management Strategy addressing the wildlife species for CHBSF, with emphasis on imperiled species and associated management prescriptions for their habitats. (Ongoing objective)
  Performance Measures:
  - Imperiled species management strategy completed
  - Baseline listed and rare species list completed for CHBSF

  Objective 2: In consultation with FWC, implement survey and monitoring protocols, where feasible, for listed and rare species. (Ongoing objective)
  Performance Measure: Number of species for which monitoring is ongoing

- **<u>GOAL 5</u>: Non-Native Invasive Species Management and Control**

  Objective 1: Continue to follow and annually update the Five-Year Ecological Plan for CHBSF, to locate, identify, and control non-native invasive species. (Ongoing objective)
  Performance Measures:
  - Total number of acres identified and successfully treated
  - Annual updates of the Five-Year Ecological Plan completed
  - Continue to maintain CHBSF non-native invasive database information annually

- **<u>GOAL 6</u>: Cultural and Historical Resource Management**

  Objective 1: Ensure all known sites are recorded in the Department of State, Division of Historical Resources (DHR) Florida Master Site File. (Ongoing objective)
  Performance Measure: Number of recorded sites

  Objective 2: Monitor recorded sites and send updates to the DHR Florida Master Site File as needed. (Ongoing objective)
  Performance Measure: Number of sites monitored. Reports submitted to DHR

  Objective 3: Maintain at least one (1) qualified staff member as an Archaeological Resource Management (ARM) Monitor. (Ongoing objective)
  Performance Measure: Number of local staff trained as ARM monitors

- **<u>GOAL 7</u>: Hydrological Preservation and Restoration**

  Objective 1: Protect water resources during management activities through the implementation of Silviculture Best Management Practices (BMP) that are applicable to forest road maintenance and construction, construction of pre-suppression firelines, timber sales, timber stand improvement activities, sinkholes, etc. (Ongoing objective)
  Performance Measure: Percent compliance with Silviculture BMP

  Objective 2: Close, rehabilitate, or restore those roads, firelines, and trails that have evidence of erosion into surrounding water bodies causing alterations to the hydrology and / or water quality. (Ongoing objective)

  Performance Measures:
  - Number of roads, firelines, and trails closed, rehabilitated, and / or restored

- Number of culverts installed or maintained

Objective 3: Conduct or obtain a site assessment/study to identify potential hydrological restoration needs. (Short-term objective)
Performance Measure: Assessment conducted

- **GOAL 8: Capital Facilities and Infrastructure**

Objective 1: CHBSF staff, along with help from volunteers and / or user groups, will continue maintenance of three (3) primitive camping sites, one (1) trailhead, 39 miles of trails, and 40.5 miles of primary, secondary, and tertiary roads. (Ongoing objective)
Performance Measure: Number of existing facilities, miles of roads, and miles of trails maintained

Objective 2: Continue to follow the Five-Year Roads and Bridges Management Plan and update annually. (Ongoing objective)
Performance Measures:
- Continued implementation of the Five-Year Roads and Bridges Management Plan
- Annual updates of the Five-Year Roads and Bridges Management Plan completed

Objective 3: Continue to implement the Five-Year Boundary Survey and Maintenance Management Plan and update annually. Approximately 20% of the forest boundary will be evaluated and remarked annually as necessary which includes harrowing, reposting signage, and repainting boundary trees. (Ongoing objective)
Performance Measures:
- Continued implementation of the Five-Year Boundary Survey and Maintenance Management Plan
- Percentage of forest boundary maintained each year
- Annual updates of the Five-Year Boundary Survey and Maintenance Management Plan completed

II. Administration Section

A. Descriptive Information

1. Common Name of Property

The common name of the property is the Charles H. Bronson State Forest (CHBSF).

2. Legal Description and Acreage

The CHBSF is comprised of 11,246.24 acres, more or less.

CHBSF is in the southeastern portion of Seminole County and northeastern part of Orange County in central Florida. It is just east of the Chuluota Wilderness Area, a 625-acre natural area owned by Seminole County. The boundaries and major parcels of the forest are identified in Exhibit B. The property occupies Sections 15-17, 19-22, 27-30, 31-35 of Township 21 South, Range 33 East (Seminole County) and Sections 1 and 12 of Township 22 South, Range 32 East; and Sections 2 thru 11 of Township 22 South, Range 33 East (Orange County).

CHBSF is comprised of three tracts: the Joshua Creek Tract, Turkey Creek Tract and

Clonts Tract. The Joshua Creek Tract is located in Orange and Seminole Counties and it is approximately 14 miles southeast of the LBESF office and 10 miles southeast of Chuluota. There are three public lands located along the boundary of Joshua Creek. The Chuluota Wilderness Area is located along the northwest boundary, Seminole Ranch is located along the eastern boundary and the Orlando Wetlands Park is located along the Southeast boundary. The northern boundary of Joshua Creek adjoins the southern side of the Turkey Creek Tract. The Turkey Creek Tract is located in Seminole County. The eastern boundary is the St. Johns River and the southwest corner abuts the Chuluota Wilderness Area. The Clonts Tract is located in Seminole County along the northwestern section of the Turkey Creek Tract. Its eastern boundary is the St. Johns River. Along the western boundary is private property that belongs to the Clonts Family. The northern boundary is along the Yarborough Tract, which is part of the LBESF. See Exhibit E. Acreage acquired by funding source is identified in Table 1.

Table 1. CHBSF Acreage by Funding Source

Funding Source	Acres
Florida Forever	3,529.58
WMD* / NRCS**	2,892.50
Orange County	87.00
WMD*	1,920.57
WMD / Orange County	2,699.00
Donations	117.59

* Water Management District
** Natural Resources Conservation Service

A complete legal description of lands owned by the Board of Trustees of the Internal Improvement Trust Fund (TIITF) and the SJRWMD is on record at the CHBSF Forestry Station Office, Florida Department of Environmental Protection (DEP), and the FFS State Office in Tallahassee.

3. Proximity to Other Public Resources

Lands managed by state, federal, or local government for conservation of natural or cultural resources that are located within approximately 25 miles of the CHBSF are mapped in Exhibit F and listed in Table 2.

Table 2. Nearby Public Conservation Lands and Easements

Tract	Managing Agency	Distance
Little Big Econ State Forest	FFS	Adjacent N
Orlando Wetlands Park	City of Orlando	Adjacent S
Chuluota Wilderness Area	Seminole County	Adjacent W
Seminole Ranch Conservation Area	WMD	Adjacent S
Savage Christmas Creek Preserve	Orange County	2 miles SW
Brevard Coastal Scrub Ecosystem CARL Project	Brevard County	3 miles E
Mills Creek Tract	USFS	4 miles W
Buck Lake Conservation Area	WMD	5 miles SW
Pine Lily Preserve	Orange County	5 miles SW

Tract	Managing Agency	Distance
Econ River Wilderness Area	Seminole County	5 miles W
Sunflower Property	Orange County	6 miles SE
Evans Nunnally Property	Orange County	6 miles SW
Vienna Drive Property	Orange County	6 miles SW
Ken Bosserman Econlockhatchee River Preserve	Orange County	6 miles W
Lake Jesup Conservation Area	WMD	7 miles NW
Hal Scott Regional Preserve	WMD	8 miles S
Lake Proctor Wilderness Area	Seminole County	9 miles N
Geneva Wilderness Area	Seminole County	10 miles NW
Lake Jesup Wilderness Area	Seminole County	11 miles NW
Lake Monroe Conservation Area	WMD	11 miles NW
Spring Hammock Preserve	Seminole County	12 miles NW
Canaveral Marshes Conservation Area	WMD	12 miles SE
St. Johns National Wildlife Refuge	USFWS	14 miles SE
Tosohatchee Wildlife Management Area	FWC	14 miles SE
TM Econ Mitigation Bank	Orange County	15 miles SW
Crosby Island Marsh Preserve	Orange County	16 miles SW
Merritt Island National Wildlife Refuge	USFWS	17 miles E
Isle of Pine Preserve	Orange County	18 miles SW
Turnbull Hammock Conservation Area	WMD	19 miles NE
Eagles Roost Property	Orange County	19 miles SW
Split Oak Forest WEA	Orange County	19 miles SW
Canaveral National Seashore	NPS	20 miles NE
Lower Wekiva River State Preserve	DRP	20 miles NW
Arvida Plantation	DRP	20 miles NW
Rock Springs Run State Reserve	DRP	20 miles NW
Seminole State Forest	FFS	20 miles NW
Wekiva River Conservation Area	WMD	20 miles NW

DRP – Florida Department of Environmental Protection, Division of Recreation and Parks
FFS – Florida Forest Service
FWC – Florida Fish and Wildlife Conservation Commission
NPS – National Park Service
WMD – Water Management District
USFWS – United States Fish and Wildlife Service
USFS – United States Department of Agriculture, Forest Service

4. Property Acquisition and Land Use Considerations

The Turkey Creek Tract and Joshua Creek Tract of the CHBSF were identified for acquisition by the SJRWMD in order to protect important water resource and ecological functions; the acquisition is recognized as a shared project for the TIITF, Orange County, and Natural Resource Conservation Service (NRCS). See Table 3 and Exhibit R.

The following conceptual land management goals are established for the management units of the central region of the St. Johns River, of which CHBSF is a part:

(1) to preserve the natural floodplain for flood control and protection;
(2) to preserve and restore natural hydrology and native ecological communities, and to maintain or enhance species diversity for fish and wildlife; and
(3) to provide opportunities for public recreation where compatible with above goals.

Table 3. Parcel Acquisition

Parcel Name	Lease Date	Lease No.	County	Acres
Joshua Creek	12/3/2008	4580	Orange	1,909.00
Turkey Creek/Lee Ranch	10/7/2008	4580	Seminole	1,625.15
Turkey Creek/Lee Ranch	6/30/2008	WMD / NRCS	Seminole	2,892.50
Doddridge Shelby	4/2/2009	County	Orange	87.00
Joshua Creek	4/2/2009	WMD / County	Orange	2,699.00
Clonts	1/11/2010	WMD	Seminole	1,916.00
Turkey Creek/Lee Ranch Donation	5/15/2014	4580	Seminole	.41
Barker Donation	9/19/2017	4580	Orange	117.18

NRCS – Natural Resource Conservation Service
WMD – Water Management District

B. Management Authority, Purpose, and Constraints

1. Purpose for Acquisition / Management Prospectus

Acquisition of CHBSF was initially funded through the Econ-St. Johns Ecosystem project, intended to protect wetlands associated with the Econlockhatchee (a blackwater stream) and St. Johns Rivers, extensive hydric hammocks, and over nine miles of frontage on the St. Johns River. See Exhibit R.

2. Degree of Title Interest Held by the Board

The TIITF holds fee simple title to the north parcel of the Joshua Creek Tract and the northeast section of the Turkey Creek Tract. SJRWMD holds fee simple title to 50% of the south parcel on Joshua Creek and Orange County owns the other 50% of the parcel. Orange County also owns 100% of parcel 3 on Joshua Creek. NRCS holds fee simple title to the west section of the Turkey Creek Tract. The Clonts Tract is wholly owned by the SJRWMD. An "Intergovernmental Management Agreement" assigns management of the SJRWMD parcels to the FFS. Lease Agreement Number 4580, between the TIITF and the FFS, provides authority for the FFS to manage the TIITF portion of CHBSF.

3. Designated Single or Multiple-Use Management

CHBSF is managed under a multiple-use concept by the FFS, under the authority of Chapters 253 and 589, F.S. The FFS is the lead managing agency as stated in TIITF Management Lease Number 4580.

Multiple-use management is the harmonious and coordinated management of timber, recreation, conservation of fish and wildlife, forage, archaeological and historic sites, habitat and other biological resources, and water resources so they are utilized in the combination that will best serve the people of the state, making the most judicious use of the land for some or all these resources and considering the relative values of the various resources. Local demands, acquisition objectives, and other factors influence the array of uses that are compatible with and allowed on any specific area of the forest. This management approach is believed to provide for the greatest public benefit, by allowing compatible uses while protecting overall forest health, native ecosystems, and the functions and values associated with them.

4. **Revenue Producing Activities**

Numerous activities on CHBSF provide for multiple-use as well as generate revenue to offset management costs. Revenue producing activities will be considered when they have been determined to be financially feasible and will not adversely impact management of the forest. Current and potential revenue producing activities for the CHBSF include, but are not limited to:

- Recreation Fees – Fees are currently collected for day use activities, camping, annual passes, and vendor/special use permits
- Privately Sponsored Recreational Events – Currently no events have taken place
- Timber and Palm Tree Harvesting – Timber and palm tree harvesting on CHBSF will be conducted to improve forest health, promote wildlife habitat, restore plant communities, and provide additional benefits
- Cattle Grazing Leases – Currently there are two cattle leases on the Joshua Creek Tract, with a duration of 5 to 10 years, and one cattle lease on the Turkey Creek Tract
- Apiary Leases – There is one (1) apiary lease on CHBSF
- Firewood – CHBSF staff may consider issuance of fuel wood permits as requested

5. **Conformation to State Lands Management Plan**

Management of the forest under the multiple-use concept complies with the State Lands Management Plan and provides optimum balanced public utilization of the property. Specific authority for the FFS's management of public land is derived from Chapters 253, 259 and 589, F.S.

6. **Legislative or Executive Constraints**

There are no known legislative or executive constraints specifically directed toward CHBSF.

East Central Florida Mitigation Bank is in the Perpetual Management stage on 96 acres of CHBSF. In addition to prescribed fire, the mitigation contractor is required to control invasive plants and preserve the canal/ditch plugs. See Exhibit X.

The NRCS has a Wetlands Reserve Program easement on 2,843 acres of the Turkey Creek Tract on the CHBSF.

FFS makes every effort to comply with applicable statutes, rules, and ordinances when managing the forest. For example, when public facilities are developed on state forests, every effort is made to comply with Public Law 101-336, the Americans with Disabilities Act. As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions (e.g., where handicap access is structurally impractical or where providing such access would change the fundamental character of the facility being provided).

7. **Aquatic Preserve/Area of Critical State Concern**

This forest is not within an aquatic preserve or an area of critical state concern, nor is it in an area under study for such designation.

C. Capital Facilities and Infrastructure

1. Property Boundaries Establishment and Preservation

CHBSF boundary lines, 32.1 miles in total, are managed by state forest personnel in accordance with the guidelines of the State Forest Handbook. There are 75 gates throughout CHBSF that require periodic maintenance. The state forest boundary lines are to be maintained by periodic clearing, repainting and reposting of state forest boundary signs by FFS personnel.

2. Improvements

Buildings/Recreation infrastructure present on the CHBSF include:

- Vacant cabin owned by Orange County on the Joshua Creek Tract
- Pump house on the Joshua Creek Tract
- Three (3) campsites on the Joshua Creek Tract
- One (1) trailhead on the Joshua Creek Tract
- One (1) vehicular bridge on the Clonts Tract constructed by SJRWMD
- One (1) vehicular bridge on the Joshua Creek Tract constructed by SJRWMD
- Four (4) footbridges on the Florida National Scenic Trail constructed by the FTA
- Five (5) footbridges on the White Trail constructed by the FTA

3. On-Site Housing

There are no residences located on CHBSF.

FFS may establish on-site housing (mobile / manufactured home) on CHBSF if deemed necessary to alleviate security and management issues. The need and feasibility for the state forest will be evaluated and established if considered appropriate by the District Manager and approved by the FFS Director. Prior to the occurrence of any ground disturbing activity for establishing on-site housing, a notification will be sent to DHR and Florida Natural Areas Inventory (FNAI) for review and recommendations. This type of housing will not exceed three homes per location with the possibility of more than one on-site housing location occurring if considered necessary by the District Manager and approved by the Director.

4. Operations Infrastructure

a. Operations Budget

For Fiscal Year 2019-2020, the total annual budget for CHBSF was $22,553.00. This amount includes expenses and contractual services. A summary budget for CHBSF is contained in Exhibit V. Implementation of any of the activities within this management plan is contingent on availability of funding, other resources, and other statewide priorities.

b. Equipment

To carry out the mission of the FFS, equipment is utilized from the Little Big Econ State Forest (LBESF).

c. Staffing

The Forest is managed by the Forester stationed at Little Big Econ State Forest with

assistance provided by other LBESF and district personnel. The FFS will request additional career service positions for the CHBSF, as needed.

The Forester will work to achieve the goals outlined in this management plan. Recreation planning and management activities, as well as resource management and planning activities, such as trail flagging/identification, recreational facility placement, timber cruising, and sale administration, etc., are the responsibility of the Forester under the direction of the Forest Area Supervisor and District Manager. Forest operations, such as road maintenance, operations/recreational facility maintenance, prescribed burning, etc., are the responsibility of the Forest Area Supervisor under the direction of the District Manager.

To supplement the staff assigned to CHBSF, the Forest Area Supervisor is responsible for recruiting interested volunteers that can bring needed experience and skills to assist with the management of the forest recreation program as well as resource management activities. The Florida Trail Association has assisted with hiking trail maintenance.

Also, a state forest Liaison Committee of private citizens and representatives of forest user groups has been meeting semiannually to provide input on forest management activities and share their ideas with FFS staff to improve the state forest.

D. Additional Acquisitions and Land Use Considerations

1. Alternate Uses Considered

No alternate uses are being considered at this time. Alternate uses will be considered as requests are made and will be accommodated as appropriate if they are determined to be compatible with existing uses and with the management goals and objectives of the forest. Uses determined as incompatible include, but are not limited to: water resource development projects, water supply projects, storm-water management projects, sewage treatment facilities, linear facilities, off-highway vehicle use, communication towers and antennas, dumping, mining, and oil well stimulation (e.g. hydraulic fracturing/fracking), or as determined by law, regulation, or other incompatible uses as described elsewhere in the management plan. Deadhead logging is not compatible with nor considered appropriate use within or adjacent to the State Forest boundaries. Although no water resource projects are being considered at this time on SJRWMD-owned lands within CHBSF, they should not be precluded.

2. Additional Land Needs

There are six (6) parcels of land comprised of 432 acres adjacent to the property which should receive priority for acquisition, as they would benefit the management of the property. The FFS will work with these property owners, on a willing seller basis, to acquire these parcels.

The acquisition of additional land within the optimal management boundary would facilitate restoration, protection, maintenance, and management of the natural resources on CHBSF. The FFS will encourage the SJRWMD's acquisition staff to emphasize the purchase of specific parcels that will provide for ecosystem links and recreational trail connections. See Exhibit C.

3. **Surplus Land Assessment**

On conservation lands where FFS is the lead manager, FFS assesses and identifies areas for potential surplus land. This consists of an examination of resource and operational management needs, public access and recreational use, and GIS modeling and analysis.

The evaluation of CHBSF by FFS has determined that all portions of the forest are being managed and operated for the original purposes of acquisition, as well as, center on the multiple-use concept, as defined in sections 589.04(3) and 253.034(2)(a), F.S. Implementation of this concept will utilize and conserve state forest resources in a harmonious and coordinated combination that will best serve the people of the state of Florida. Therefore, no portion of CHBSF is recommended for potential surplus.

4. **Adjacent Conflicting Uses**

Adjacent residential areas south and west of the Joshua Creek Tract and adjoining county roads may hinder burning on this forest due to smoke management concerns.

FFS will cooperate with adjacent property owners, prospective owners, or prospective developers to discuss methods to minimize negative impacts on management, resources, facilities, roads, recreation, etc., and discuss ways to minimize encroachment onto the forest.

5. **Compliance with Comprehensive Plans**

This plan was submitted to the Boards of County Commissioners in Seminole County and Orange County for review and compliance with their local comprehensive plans. See Exhibit T.

6. **Utility Corridors and Easements**

FFS does not favor the fragmentation of natural communities with linear facilities. Consequently, easements for such uses will be discouraged to the greatest extent practical. Currently there is an electric power line that crosses the west section of the Joshua Creek Tract. The FFS does not consider CHBSF suitable for any new linear facilities.

When such encroachments are unavoidable, previously disturbed sites will be the preferred location. The objectives, when identifying possible locations for new linear facilities, will be to minimize damage to sensitive resources (e.g., listed species and archaeological sites), minimize habitat fragmentation, limit disruption of management activities, including prescribed burns, and limit disruption of resource-based multiple use activities such as recreation.

Collocation of new linear facilities with existing corridors will be considered but will be used only where expansion of existing corridors does not increase the level of habitat fragmentation and disruption of management and multiple-use activities. FFS will further encourage the use of underground cable where scenic considerations are desirable. Easements for such utilities are subject to the review and approval of the TIITF and the SJRWMD. Requests for linear facility uses will be handled according to the Governor and the Cabinet's linear facilities policy.

E. Agency & Public Involvement

1. Responsibilities of Managing Agencies

FFS is the lead managing agency, responsible for overall forest management and public recreation activities, as stated in TIITF Management Lease Number 4580. Pursuant to the management lease, the lead managing agency may enter into further agreements or to subleases on any part of the forest.

FFS will cooperate with the DHR regarding appropriate management practices on historical or archaeological sites on the property as stated in Section 267.061, F.S. DHR will be consulted prior to the initiation of any ground disturbing activities by the FFS or any other agency involved with the forest as required per DHR guidelines,

FWC assumes law enforcement responsibilities, enforces hunting regulations, cooperatively sets hunting season dates with FFS, and conducts other wildlife management activities with input from FFS.

The SJRWMD will be consulted and involved in matters relating to water resources and hydrological restoration as appropriate.

2. Law Enforcement

Primary law enforcement responsibilities will be handled by FWC law enforcement officers. Rules governing the use of CHBSF are stated in Chapter 5I-4, F.A.C. FWC will enforce fish and wildlife regulations and aid in enforcing state forest rules. FWC does not currently have an officer dedicated to patrolling and enforcement on CHBSF. This task is shared among multiple FWC officers who also patrol and enforce laws on properties and waterways outside of CHBSF.

The FDACS Office of Agricultural Law Enforcement (OALE) will assist with open burning and wildfire investigations as needed. The Seminole County Sheriff's Office provides additional assistance as needed.

Special rules under Chapter 5I-4, F.A.C. were promulgated for FDACS, FFS, to manage the use of state lands and better control traffic, and to oversee camping and other uses on CHBSF.

3. Wildland Fire

The FFS has the primary responsibility for prevention, detection, and suppression of wildfires wherever they may occur. The FFS shall provide leadership and direction in the evaluation, coordination, allocation of resources, and monitoring of wildfire management and protection (F.S. 590.01). The FFS also has the responsibility of authorizing prescribed burns (F.S. 590.02 [1][i]).

4. Public and Local Government Involvement

This plan has been prepared by and will be implemented by FFS. FFS responds to public involvement through Liaison Committees, management plan advisory groups, public hearings, and through ongoing direct contact with user groups. Land Management Review Teams, as coordinated by the Division of State Lands, have conducted reviews of

management plan implementation in 2013 and 2018. See Exhibit S. The review team's recommendations were addressed in this plan as appropriate.

The plan was developed with input from the CHBSF Management Plan Advisory Group and was reviewed at a public hearing on 3/29/2021, 2021. A summary of the advisory group's meetings and discussions, as well as written comments received on the plan, are included in Exhibit U. The Acquisition and Restoration Council (ARC) public hearing and meeting serve as an additional forum for public input and review of the plan.

5. Volunteers

Volunteers are important assets to CHBSF. Volunteer activities may occur as one-time events or in association with long-term recurring projects and routine maintenance. Additional volunteer recruitment will continue to assist furthering the FFS's mission.

6. Friends of Florida State Forest

Friends of Florida State Forests, Inc. (FFSF) is a Direct Support Organization (DSO) of the Florida Forest Service. FFSF supports management activities and projects on Florida's state forests. FFSF is established by Florida Statute, supports programs within Florida's state forests and is governed by a board of directors representing all areas of the state. Through community support, FFSF assists the FFS to expand opportunities for recreation, environmental education, fire prevention, and forest management within Florida's state forests.

The FFSF program is referenced in Chapter 589.012, F.S. For more information visit: www.floridastateforests.org.

III. Archaeological/Cultural Resources and Protection

A. Past Uses

Historical uses included turpentine, agriculture, cattle grazing, hunting, and timber harvest.

B. Archaeological and Historical Resources

A review of information contained in the Florida Department of State, DHR, Florida Master Site File has determined there are fourteen (14) recorded archaeological sites and (1) historical structure found within the designated area for CHBSF. None of the sites are listed in the National Register of Historic Places. See Table 4 and Exhibit G for a cultural resource roster.

Table 4. Historical Sites on CHBSF

Site ID	Site Name	Site Type
SE00022	Thicket Mound	Archaeological
SE00023	Heiffer Mound	Archaeological
SE00024	Saddle Mound	Archaeological
SE00029	Noah Mound	Archaeological
SE00030	Moccasin Mound	Archaeological
SE00032	Flying Turtle Mound	Archaeological
SE00090	Jacob's Mound	Archaeological
SE01091	Nelador Mound	Archaeological

Site ID	Site Name	Site Type
SE01092	Turkey Mound	Archaeological
SE01954	Grandma's Grove	Archaeological
SE02745	Orange Tree Mound	Archaeological
SE02795	Panther Tracks Shell Midden	Archaeological
SE02796	Stipkovits-DiCecco Mound	Archaeological
SE02825	Racoon Shell Midden	Archaeological
SE02827	Turkey Creek Windmill	Historical structure

C. Ground Disturbing Activities

Representatives of DHR and FNAI will be consulted prior to the initiation of proposed ground disturbing activity as required per DHR guidelines. FFS will make every effort to protect known archaeological and historical resources. FFS will follow the "Management Procedures for Archaeological and Historical Sites and Properties on State Owned or Controlled Lands" and will comply with all appropriate provisions of Section 267.061(2)(a,b) F.S. See Exhibit H. Any significant ground disturbing activity proposal will be submitted to DHR's Compliance and Review office for review prior to undertakings and allow the Division a reasonable opportunity to comment. Ground disturbing activities not specifically covered by this plan will be conducted under the parameters of the "List of ARC / Division of State Lands Approved Interim Management Activities".

D. Survey and Monitoring

Currently two (2) local district FFS staff are trained by DHR as ARM monitors. FFS will pursue opportunities for additional personnel to receive ARM Monitor training. FFS will consult with public lands archaeologists at DHR as necessary to determine an appropriate priority and frequency of monitoring at each of the listed sites, and any protection measures that might be required. Unless required on a more frequent basis, all archaeological and historical sites within the state forest will be monitored at least annually. FFS field staff will monitor the listed sites to note condition and any existing or potential threats.

Any known archaeological and historical sites will be identified on maps to aid State Forest personnel and if necessary, law enforcement personnel in patrolling and protecting sites. Applicable surveys will be conducted by ARM monitors or contracted archaeologists during the process of planning and implementing multiple-use management activities. FFS personnel will remain alert for any environmentally significant resources and protective actions will be taken as necessary. In addition, FFS will seek the advice and recommendations of DHR regarding any additional archaeological survey needs. Trained monitors may oversee limited types of ground disturbing activities in which DHR recommends monitoring. FFS will utilize the services of DHR Public Lands archaeologists, when available, to locate and evaluate unknown resources, and to make recommendations in the management of known resources.

In 2018 the Division of Historical Resources conducted an archaeological reconnaissance of the sites on the CHBSF. The report provides recommendations to maintain and protect cultural and historical sites.

IV. Natural Resources and Protection

The primary purpose for FFS management of CHBSF is protection of the St. Johns River Basin and the surrounding forest uplands through a stewardship ethic to assure these resources will be available for future generations. Management activities will be executed in a manner to minimize soil erosion and maintain and protect/enhance the hydrological resources on CHBSF. If problems arise, corrective action will be implemented by FFS staff under the direction of FFS's Forest Hydrology Section. Efforts will be made to monitor and protect CHBSF's waterbodies and their associated water quality and native plants and animals.

CHBSF falls within the jurisdiction of the SJRWMD. FFS will coordinate with SJRWMD and / or DEP, as necessary, on activities pertaining to water resource protection and management. Any activities requiring water management district permits will be handled accordingly. FFS will work with SJRWMD to ensure that levels and quality of ground and surface water resources are appropriately monitored.

A. Soils and Geologic Resources

1. Resources

Soil information for CHBSF was obtained from the United States Department of Agriculture Natural Resources Conservation Service (NRCS). The predominant soils listed by the NRCS include: Manatee, Floridana, Holopaw, Samsula, Hontoon, Basinger, and Smyrna. Detailed information on all soils present on the forest may be found in Exhibit I.

2. Soil Protection

Currently there are no major or significant soil erosion problems on CHBSF. Management activities will be executed in a manner to minimize soil erosion. As problems arise, corrective action will be implemented by FFS staff under the direction of the FFS Forest Hydrology Section in conjunction with recommendations as contained in the most current version of the Florida Silviculture BMP Manual.

B. Water Resources

The water resources on CHBSF perform essential roles in the protection of water quality, groundwater recharge, flood control, and aquatic habitat preservation. In the interest of maintaining these valuable resource functions, state forest management personnel will work with the FFS Hydrology Section to incorporate wetlands restoration into the overall resource management program as opportunities arise, particularly where wetlands systems have been impaired or negatively impacted by previous management activities or natural disasters. See Exhibit K for map of the water resources at CHBSF.

1. Resources

The St. Johns River borders the east boundary of the Clonts and Turkey Creek Tracts. Turkey Creek flows through the Turkey Creek Tract of the CHBSF. On the Joshua Creek Tract, there are three creeks that flow through the forest. The creeks are Christmas Creek, Buscombe Creek, and Joshua Creek.

2. Water Classification

The Florida Department of Environmental Protection, Standards Development

Section reports that there are no waters on or near the site listed as exceptions to Class III under subparagraph 62-302.400(17)(b)59 and 16, F.A.C.; therefore, all of the surface waters on or adjacent to the site are classified as Class III waters, which is the statewide default classification under Subsection 62-302.400(15), F.A.C. According to Subchapter 62-302.700(9), F.A.C., there are no Outstanding Florida Waters (OFW) on or adjacent to CHBSF. See Exhibit J.

3. Water Protection

An objective for the acquisition and management of this public land was to optimize ecological restoration, protect and manage existing natural resources, and facilitate sensible public use. Concern over a continuous usable source of fresh water requires emphasis on protecting this vital resource. Water resource protection measures, at a minimum, will be accomplished using BMP guidelines as described in the most current version of Silviculture BMP Manual.

4. Swamps, Marshes, and Other Wetlands

In addition to the waterways, CHBSF contains approximately 6,470 acres in seven (7) hydric communities: basin marsh, basin swamp, baygall, depression marsh, dome swamp, floodplain marsh, and hydric hammock. Maintenance of naturally occurring wetlands communities is a high priority and will be accomplished through appropriate management activities, including prescribed fire when necessary, and adherence to Silviculture BMP.

5. Wetlands Restoration

Wetlands restoration objectives on the state forest include erosion control, restoration of water levels and / or hydroperiods, and restoration of wetlands plant and animal communities. To achieve these objectives, restoration activities may involve road and soil stabilization, water level control structure removal or installation, non-native invasive species control, site preparation and re-vegetation with native wetlands species, and project monitoring. These activities may be conducted individually or concurrently; implemented by FFS personnel or by non-FFS personnel under mitigation or grant contractual agreements. Wetlands restoration projects should be conducted in conjunction with other restoration activities indicated elsewhere in this plan.

Where applicable, CHBSF, with the assistance from the FFS Forest Management Bureau, may pursue funding to develop and implement wetlands restoration projects. Additionally, cooperative research among FFS, other state agencies, and the federal government will provide valuable information in determining future management objectives of wetlands restoration.

Wetlands restoration will be coordinated with the SJRWMD. Any activities requiring permits from the water management district will be handled accordingly and will follow the latest edition of the FFS's Silviculture BMP Manual.

6. Florida Department of Environmental Protection Basin Management Action Plan

A Basin Management Action Plan (BMAP) is a "blueprint" for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a Total

Maximum Daily Load (TMDL). It represents a comprehensive set of strategies including, but not limited to: permit limits on wastewater facilities, urban and agricultural best management practices, conservation programs, financial assistance, and revenue generating activities, all designed to implement the pollutant reductions established by the TMDL. These broad-based plans are developed with local stakeholders, as they rely on local input and local commitment, and are adopted by Secretarial Order to be enforceable.

CHBSF resides in the Middle St. Johns River Basin Main Stem BMAP. It was developed as part of the DEP's TMDL Program and represents the collaborative efforts of stakeholders to identify current and planned management actions to achieve pollutant load reductions required by the TMDL.

The BMAP provides for phased implementation under Subparagraph 403.067(7)(a)1, F.S. The phased BMAP approach allows for the implementation of projects designed to achieve incremental reductions, while simultaneously monitoring and conducting studies to better understand the water quality dynamics (sources and response variables) in the watershed.

C. Floral and Faunal Resources

1. Rare, Endangered, and Threatened Species

The intent of FFS is to manage CHBSF in a manner that will minimize the potential for wildlife species to become imperiled. FFS employees continually monitor the forest for threatened or endangered species while conducting management activities. Specialized management techniques may be used, as necessary, to protect or increase protection of rare, threatened, and endangered species, as applicable for both plants and animals.

Table 5. Rare, Endangered, and Threatened Species Documented on CHBSF

Scientific Name	Common Name	FNAI Global Rank*	FNAI State Rank*	Federal Status*	State Status*
Lilium catesbaei	Catesby's lily	G4	S4	N	ST
Carex chapmannii	Chapman's sedge	G3	S3	N	T
Lechea cernua	Nodding pinweed	G3	S3	N	T
Centrosema arenicola	Sand butterfly pea	G2Q	S2	N	E
Nemastylis floridana	Celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	ST
Pecluma plumula	Plume polypody	G5	S2	N	E
Myrcianthes fragrans	Simpson's stopper	G4	S4	N	ST
Sarracenia minor	Hooded pitcher plant	G4	S4	N	ST
Encyclia tampensis	Butterfly orchid	G4	SU	N	CE
Serenoa repens	Saw palmetto	G4	S4	N	CE
Tillandsia utriculata	Giant airplant	G5	S3	N	LE
Euphyes dukesi calhouni	Calhoun's skipper	G3T1	S1	N	N
Lithobates capito	Gopher frog	G3	S3	N	N
Alligator mississippiensis	American alligator	G5	S4	SAT	FT(S/A)

Scientific Name	Common Name	FNAI Global Rank*	FNAI State Rank*	Federal Status*	State Status*
Crotalus adamanteus	Eastern diamondback rattlesnake	G4	S3	N	N
Drymarchon couperi	Eastern indigo snake	G3	S3	T	FT
Gopherus polyphemus	Gopher tortoise	G3	S3	C	ST
Antigone canadensis pratensis	Florida sandhill crane	G5T2	S2	N	ST
Aramus guarauna	Limpkin	G5	S3	N	N
Caracara cheriway	Crested caracara	G5	S2	T	FT
Egretta caerulea	Little blue heron	G5	S4	N	ST
Egretta thula	Snowy egret	G5	S3	N	N
Eudocimus albus	White ibis	G5	S4	N	N
Falco columbarius	Merlin	G5	S2	N	N
Falco peregrinus	Peregrine falcon	G4	S2	N	N
Falco sparverius paulus	Southeastern American kestrel	G5T4	S3	N	ST
Haliaeetus leucocephalus	Bald eagle	G5	S3	N	N
Hydroprogne caspia	Caspian tern	G5	S2	N	N
Mycteria americana	Wood stork	G4	S2	T	FT
Nyctanassa violacea	Yellow-crowned night-heron	G5	S3	N	N
Nycticorax nycticorax	Black-crowned night-heron	G5	S3	N	N
Pandion haliaetus	Osprey	G5	S3S4	N	N
Peucaea aestivalis	Bachman's sparrow	G3	S3	N	N
Platalea ajaja	Roseate spoonbill	G5	S2	N	ST
Plegadis falcinellus	Glossy ibis	G5	S3	N	N
Rynchops niger	Black skimmer	G5	S3	N	ST
Setophaga ruticilla	American redstart	G5	S2	N	N
Sternula antillarum	Least tern	G4	S3	N	ST
Podomys floridanus	Florida mouse	G3	S3	N	N
Puma concolor coryi	Florida panther	G5T1	S1	E	FE
Sciurus niger	Southeastern fox squirrel	G5T5	S3	N	N
Ursus americanus floridanus	Florida black bear	G5T4	S4	N	N

*** STATUS/RANK KEY**

Federal Status (USFWS): LE= Listed Endangered, LT= Listed Threatened, N= Not currently listed, C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened. SAT, T(S/A) = threatened due to similarity of appearance. A species that is threatened due to similarity of appearance with another listed species and is listed for its protection. Species listed as T(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation

State Status (FWC): Animals: FE = Listed as Endangered Species at the Federal level by the USFWS, FT = Listed as Threatened Species at the Federal level by the USFWS, F(XN) = Federal listed as an experimental population in Florida, FT(S/A) = Federal Threatened due to similarity of appearance, ST = State population listed as Threatened by the FWC, SSC = Listed as Species of Special Concern by the FWC, N = Not currently listed, nor currently being considered for listing.

Plants: LE = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act; LT = Threatened: species native to the state that are in

rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered; CE = Commercially Exploited; N = Not currently listed, nor currently being considered for listing.
FNAI Global Rank: G1= Critically Imperiled, G2 = Imperiled, G3= Very Rare, G4= Apparently Secure, G5= Demonstrably Secure, SU= Not under review in Florida, GNR = Element not yet ranked (temporary), G#? = Tentative rank, T#= Taxonomic Subgroup; numbers have same definition as G#'s.
FNAI State Rank: S1= Critically Imperiled, S2= Imperiled, S3= Very Rare, S4= Apparently Secure, S5 = Demonstrably secure in Florida, S#?= Tentative Rank.

2. Florida Natural Areas Inventory

The Florida Natural Areas Inventory (FNAI) is the single most comprehensive source of information available on the locations of rare species and significant ecological resources throughout Florida. See Exhibit L. FNAI has reported the following:

a. Element Occurrences

Based on information available, the site appears to be located on or near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare species within a small area.

FNAI reports several documented Element Occurrences mapped in the vicinity of the property. Documented rare or endangered species on the site are listed in Table 5.

Documented habitat includes hydric hammock, mesic flatwoods, floodplain marsh, blackwater stream, wet flatwoods, basin marsh, basin swamp, scrubby flatwoods, depression marsh, baygall, sandhill, scrub, mesic hammock, and dome swamp.

b. Likely and Potential Rare Species

In addition to documented occurrences, other likely or potential rare species are identified on or near CHBSF.

c. Managed Areas

Portions of this site are adjacent to the Orlando Wetlands Park, the Chuluota Wilderness area, Seminole Ranch Conservation Area, Clonts Conservation Easement, and the Little Big Econ State Forest.

FNAI recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species before expansions or alterations are made to any facilities.

3. Florida Fish and Wildlife Conservation Commission

The FWC Fish and Wildlife Research Institute (FWRI) reports numerous records of listed species occurrences or critical habitats within the confines of the property. This includes state and federally listed endangered or threatened species.

Other findings by the FWC include:

a. The property is located adjacent to and within multiple Strategic Habitat Conservation Areas for Cooper's hawk (*Accipiter cooperii*), swallow-tailed kite (*Elanoides forficatus*), and short-tailed hawk (*Buteo brachyurus*).

b. CHBSF is located within an area of low Species Richness which is the number of species within a given sample, community, or area.

c. Multiple Priority Wetlands are located on and in close proximity to CHBSF.

d. FWC's response includes a map indicating multiple species locations.

These data represent only those occurrences recorded by FWC staff and other affiliated researchers. The database does not necessarily contain records of all listed species that may occur in a given area. Also, data on certain species are not entered into the database on a site-specific basis. Therefore, one should not assume that an absence of occurrences in their database indicates that species of significance do not occur in the area. See Exhibit M.

The FWC recommends the review of management guidelines in the published FWC Gopher Tortoise Species Management Plan to guide management actions for the gopher tortoise (*Gopherus polyphemus*) on the forest. The FWC Gopher Tortoise Species Management Plan provides beneficial resource guidelines for habitat management and monitoring of the gopher tortoise. For reference, the FWC Gopher Tortoise Species Management Plan can be accessed at MyFWC.com.

The FWC further recommends the review of management guidelines in FWC's published Species Action Plans for the management of imperiled, rare, and focal bird species. The FWC Species Action Plans provide beneficial resource guidelines for habitat management and monitoring of the respective species. For reference, the FWC Species Action Plans can be accessed at MyFWC.com.

4. <u>Game Species and Other Wildlife</u>

Wildlife management plays an important role in the management of resources on CHBSF. FWC provides cooperative technical assistance in managing the wildlife and fish populations, setting hunting seasons, establishing bag and season limits, and overall wildlife and fish law enforcement on the forest.

CHBSF is an FWC WMA known as the CHBSF Wildlife Management Area (CHBSFWMA). Management of this area will be directed to the production of biological diversity and species composition consistent with existing natural community types. Such communities will be restored and/or maintained through habitat management. All biological resources will be managed to maintain diversity.

Game species on the WMA include white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), wild hog (*Sus scrofa*), gray squirrel (*Sciurus carolinensis*), eastern cottontail rabbit (*Sylvilagus floridanu*), and northern bobwhite quail (*Colinus virginianus*).

Other notable wildlife species found on CHBSF include alligator (*Alligator mississippiensis*), Florida panther (*Puma concolor coryi*), gopher tortoise (*Gopherus polyphemus*), eastern indigo snake (*Drymarchon couperi*), Southeastern fox squirrel (*Sciurus niger*), swallow-tailed kite (*Elanoides forficatus*), Florida sandhill crane

(*Antigone canadensis pratensis*), bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria americana*), roseate spoonbill (*Platalea ajaja*), and limpkin (*Aramus guarauna*).

Non-game species will be managed and protected through the restoration and maintenance of native ecosystems found on the forest. The current State Forest Handbook gives additional details for such topics as snag management and retention.

5. Survey and Monitoring

FFS will implement species-specific management plans developed by FWC and other agencies as applicable. FFS will cooperate with FWC and other agencies in the development of new wildlife management plans and monitoring protocols, as necessary. Such plans will be consistent with rule and statute promulgated for the management of such species.

a. Gopher Tortoises

Surveys for gopher tortoise burrows have been conducted by FFS and FWC staff intermittently, as needed. All surveys are done in cooperation with FWC.

b. Florida Black Bear

FFS will continue to cooperate with FWC to implement FWC's state-wide Florida Black Bear Management Plan, with an emphasis on maintaining sustainable black bear populations in suitable habitats throughout Florida for the benefit of the species and people.

c. Listed Plant Species

All known locations of listed or rare flora are GIS-mapped and location data are shared with FNAI.

d. Other Rare Biota Surveys

Surveys are done as time and staffing allow. High quality plant communities continue to incur ad hoc surveys for both listed plants and animals.

Most of the isolated CHBSF wetlands have received a cursory biological survey, with rare and significant plant and animal species observed and documented. Assistance will be offered to FWC for gopher tortoise burrow commensals monitoring, as well as monitoring for other rare species, as appropriate.

During routine management activities, incidental sightings of rare animals and plants are GIS-mapped by FFS staff. All rare species data are collected and sent to FNAI annually.

Surveys conducted by university researchers and students and knowledgeable naturalists on CHBSF augment information provided by formal surveys conducted by FWC and other cooperating agencies. The FFS will seek assistance from citizen observations, colleges, universities and other agencies to gather data on plant and animal species.

D. Sustainable Forest Resources

FFS practices sustainable multiple-use forestry to meet the forest resource needs and values of the present without compromising the similar capability of the future. Sustainable forestry involves practicing a land stewardship ethic that integrates the reforestation, managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, wildlife and fish habitat, and aesthetics. This is accomplished by maintaining and updating accurate estimates of standing timber in order to assure that the timber resources retain their sustainability. Forest inventories will be updated on a continual basis according to guidelines established by the FFS Forest Management Bureau.

E. Beaches and Dune Resources

No beaches or dunes occur on the CHBSF.

F. Mineral Resources

No mineral resources of commercial value are known to exist on the property.

G. Unique Natural Features and Outstanding Native Landscapes

The primary natural feature on the forest is the St. Johns River, which makes up part of the forest's eastern boundary. It is designated as an American Heritage River and, at 310 miles, is the longest river in Florida. Scenic creeks wind through the property on their way to the St. Johns River.

H. Research Projects / Specimen Collection

Research projects may be performed on the forest on a temporary or permanent basis for the purpose of obtaining information that furthers the knowledge of forestry and related fields. FFS cooperates with other governmental agencies, non-profit organizations, and educational institutions, whenever feasible, on this type of research. FFS will consider assisting with research projects when funds and manpower are available.

All research to be conducted on CHBSF must be considered in accordance with the guidelines stated in the State Forest Handbook. Any requests for research shall be submitted in writing to the appropriate field staff to be forwarded to the Forest Management Bureau for approval. Requests must include: a letter outlining the purpose, scope, methodology, and location of the proposed research. Requests are subject to review by FFS foresters, biologists, the Forest Health Section, and the Forest Hydrology Section, as appropriate. Authorization to conduct research will require that the investigator provide copies of any reports or studies generated from any research to the FFS and the CHBSF staff. Other special conditions may be applicable, and the authorization may be terminated at any point if the study is not in compliance.

Research projects / specimen collections that have been initiated on the property include:

- FWC. 2017. Research on the status, distribution and reproductive success of the gopher frog.
- University of North Carolina, Chapel Hill (Weakley/Schoonover). 2017. Genetic and morphological analyses, species distribution and evolutionary trends on multiple state forests of *Trichostema* populations in the southeastern United States.
- FWRI/FWC (Dellinger). 2017. Survivorship and productivity of Florida sandhill cranes on conservation lands and suburban areas.

- Rollins College Central Florida Archaeological Field School. 2018. Archeological research.
- Rollins College Central Florida Archaeological Field School. 2019. Archeological research.

I. Ground Disturbing Activities

Although the FFS's approach to handling ground disturbing activities is identified in other sections of this plan, the FFS's overall approach to this issue is summarized here. FFS recognizes the importance of managing and protecting sensitive resources and will take steps to ensure that such resources are not adversely impacted by ground disturbing activities. Sensitive resources include areas such as known sensitive species locations; archaeological, fossil, and historical sites; ecotones, wetlands, and water resources. The process for evaluating and obtaining approval for ground disturbing activities is outlined in Appendix 2.A.6. of the State Forest Handbook.

When new pre-suppression firelines, recreational trails, or other low-impact recreational site enhancements are necessary, their placement will be reviewed by state forest field staff to avoid sensitive areas. For ground disturbing activities such as construction of buildings, parking lots, and new roads, the FFS will consult with FNAI, DHR, SJRWMD, and the Acquisition and Restoration Council (ARC), as appropriate.

V. Public Access and Recreation

The primary recreation objective is to provide the public with dispersed outdoor recreational activities that are dependent on the natural environment. FFS will continue to promote and encourage public access and recreational use by the public while protecting resources and practicing multiple-use management.

Periodic evaluations will be conducted by FFS staff to monitor recreational impacts on resources. Modifications to recreational uses will be implemented should significant negative impacts be identified. New recreation opportunities and facilities, which are compatible with the primary goals and responsibilities of the FFS, will be considered only after FFS determines their compatibility with other forest uses and forest resources. Assessment of visitor impacts, outdoor recreation opportunities and facilities, and proposed changes will all be addressed in the Five-Year Outdoor Recreation Plan updates.

A. Existing Recreational Opportunities

A variety of recreational opportunities are available on the forest. Recreation activities include picnicking, horseback riding, hiking, camping, fishing, hunting, and wildlife viewing. CHBSF is part of the Florida National Scenic Trail, the FFS Trailwalker Program, and the FFS Trailtrotter Program. See Exhibit D for a map of the Recreation, Facilities, and Improvements.

- Recreational Trails – CHBSF has 19 miles of hiking trails of which 7.5 miles are the Florida National Scenic Trail, and 20 miles of horse trail that can be accessed from the Joshua Creek trailhead on Phillips Road. The CHBSF shares Seminole County's Chuluota Wilderness Area trailhead which connects to our hiking and horse trails.
- Hunting and Fishing – CHBSF is managed cooperatively with FWC as the Charles H. Bronson WMA. Wildlife hunted on the forest includes deer, ducks, hogs, rabbits,

squirrels, and turkeys. Fishing is popular along the St. Johns River, where largemouth bass, catfish, crappie, bluegill, and other fish are frequently caught.

- Camping – The forest offers primitive campsites located on the Joshua Creek Tract and can be accessed from the Joshua Creek Trailhead at the end of Phillips Road.

B. Planned Recreational Activities

The FFS will continue to assess plans for additional recreational opportunities based on demand, carrying capacity, demographics, and impact to the resources on the forest. All planned improvements may be completed as staff and funding permits. Both terrestrial and aquatic resources, as well as related activities will be evaluated. Any plans will be incorporated into the Five-Year Outdoor Recreational Plan on file at CHBSF.

1. Public Access and Parking

Current parking and forest access points will continually be evaluated for improvements.

During this ten-year planning period, FFS will assess the feasibility of installing a water well with an electric pump and a water trough for horses at the Joshua Creek trailhead. This will provide drinking water for horses at our horse trail.

During this ten-year planning period, FFS will assess the feasibility of installing a vaulted toilet at the Joshua Creek trailhead for our visitors. A water well that will be installed to provide water for horses would also be used for the maintenance of the restroom.

During this ten-year planning period, FFS will assess the feasibility of installing a multi-use trailhead along Curryville Road.

2. Recreational Trails

Within this ten-year planning cycle, FFS will coordinate with the U.S. Forest Service to reroute a portion of the Florida National Scenic Trail through the CHBSF. The majority of the current White Trail will become the Florida National Scenic Trail.

During this ten-year planning period, FFS will assess the feasibility of adding a bike trail on CHBSF.

3. Environmental Education

Currently environmental education programs are done by request.

During this ten-year planning period we will be installing a new kiosk with informative information at the Joshua Creek trailhead. This includes information on forest management, prescribed fire, wildlife and plants.

4. Bird Watching

During this ten-year planning period we will assess the feasibility of adding CHBSF to FWC's Great Florida Birding and Wildlife Trail.

5. Equestrian, Hunter, and Hiker Education

FFS will continue communicating our needs and concerns with our user groups,

cooperators, and our visitors.

6. **Camping**
   During this ten-year planning period we will assess the feasibility of adding more primitive campsites based upon the reroute of the Florida National Scenic Trail. Campsites would be placed at strategic locations to support multi-day hikes. At a minimum each campsite will have a picnic table and ground grill.

The Florida Forest Service will handle permitting requests for recreational activities.

C. Hunter Access

CHBSF is open to regulated hunting. The FWC manages hunting on CHBSF. Hunting season dates, limits, and methods are established annually by FWC, in cooperation with FFS. CHBSFWMA regulations are updated annually and are identified in the current WMA brochure provided by FWC at MyFWC.com.

Non-hunting recreation users are encouraged to check the WMA regulations and season dates before visiting CHBSF.

D. Education

FFS may create partnerships with local K-12 schools and/or universities for the development and implementation of educational opportunities on CHBSF. Once developed, the Five-Year Outdoor Recreation Plan may lend more insight to management activities as they pertain to future educational opportunities CHBSF may provide to the public.

VI. Forest Management Practices

A. Prescribed Fire

Forest management practices on CHBSF are important in the restoration and maintenance of forest ecosystems and provide a variety of socio-economic benefits to Floridians. Management practices on CHBSF include a prescribed fire program which is an effective tool in controlling the encroachment of shrubs and off-site hardwoods, stimulating the recovery of native herbaceous groundcover, and promoting the regeneration of native pines.

FFS utilizes a fire management program on state forests that includes wildfire prevention, detection and suppression, and prescribed burning. This program is the responsibility of FFS's Orlando District and is detailed in the Five-Year Prescribed Burning Management Plan. Emphasis will be placed on prescribed burning, wildfire prevention, and education to help reduce wildfire occurrence on the forest.

A fire history graph detailing the recent history of prescribed burns and wildfires at CHBSF is available in Exhibit N.

FFS has one (1) fire tower and two (2) tractor-plow units located in Seminole County and four (4) tractor-plow units located in Orange County. Additional support is available from neighboring counties. Personnel and equipment stationed in Seminole and Orange Counties will be used for pre-suppression practices, establishment of firebreaks, rehabilitation of

existing firelines, construction of new firelines, maintenance of perimeter firebreaks, and prescribed burning.

The annual forest prescribed burning program produces multiple benefits. The purposes of prescribed burning on CHBSF are to facilitate forest management operations; enhance wildlife and listed species habitat; decrease fuel loading; enhance public safety; and restore, maintain, and protect all native ecosystems, ecotones, and their ecological processes. FFS personnel are responsible for planning and implementing the annual prescribed burn program for CHBSF, which will consist of dormant and growing season burns. An update to the Five-Year Prescribed Burning Management Plan is developed each year by FFS staff. All burns conducted on CHBSF are executed by Florida Certified Prescribed Burn Managers in accordance with Chapters 590.125, F.S. and 5I-2 F.A.C.

According to FNAI, historic, fire-dependent natural communities on CHBSF are estimated to have occupied approximately 5,984 acres and to have burned at approximately 2 to 10-year intervals. Current fire-dependent communities encompass 3,752 acres. Some historically fire-dependent communities have been altered through past land use practices which inhibits the ability to meet objectives with prescribed fire alone. Based on current conditions and management objectives, CHBSF will plan for 938 to 1,250 acres to be prescribed burned annually. Priority ranking of burn units is used to keep fire return intervals maintained while slowly adding additional acreage. Meeting prescribed fire goals will be largely dependent on weather conditions, available personnel, and statewide emergency situations such as wildfires, hurricanes, and other natural disaster response and relief. Currently it is estimated that approximately 3,384 acres of CHBSF are within the desired fire return interval.

1. **Fire Management**
   The fire management plan will serve as a working tool and an informational document for CHBSF. The plan will provide guidelines regarding wildfire suppression and prescribed fire management. It will specify burn units, burn unit prescriptions, appropriate fire return intervals, and fire suppression planning. The plan may be reviewed and amended as necessary.

   The use of prescribed fire in the management of timber, wildlife, and ecological resources on CHBSF is necessary if the FFS is to fulfill the goals and objectives stated in this plan including: enhancing and restoring native plant communities, managing protected species, managing timber, recreation, historical, and other resource values. The fire management plan and its objectives shall reflect and incorporate these multiple-resource objectives.

   a. **Prescribed Fire:** Prescribed fire is the most important land management tool, both ecologically and economically, for managing vegetation and natural communities and perpetuating existing wildlife populations in Florida. Forest operation records and staff experience should be combined with the FNAI inventory and assessment (2016) to identify areas that may require mechanical or chemical treatments in conjunction with prescribed fire to restore a more natural vegetative structure.

   b. **Burn Unit Plans:** Each prescribed fire will be conducted in accordance with FFS regulations and state law (Chapter 5I-2 F.A.C., Chapter 590 F.S.) and have a burn unit

plan (or prescription). Each prescription will contain, at a minimum, the information, as required by Section 590.125(3), F.S., needed to complete the FFS Prescribed Burn Plan Form FDACS 11461.

Aerial ignition may be considered for large burn units where this tactic can be cost effective for larger acreages. Consideration should be given to rotating burn units between dormant and growing season burns over time. Fire return intervals for a burn unit are recommended to fall within the natural, historic range for the dominant natural community or communities within a given burn unit.

Based upon available species survey data, burn units within a prescription that have listed wildlife species shall explicitly state their presence and any restrictions or requirements relative to prescribed burning in proximity to these species or habitats. These may include time of year, pre-burn preparation, fire return intervals, and other burn parameters.

B. Wildfires, Prevention, Fire / Prescribed Fire Strategies

The FFS utilizes a comprehensive wildfire management approach on state forests that includes an ongoing program of wildfire prevention, detection and suppression, and prescribed burning. Implementation of this program is the responsibility of FFS's Orlando District. Emphasis will be placed on consistent accomplishment of prescribed burning goals and community outreach to increase public understanding of wildfire prevention and the benefits of prescribed fire.

The FFS has three (3) paramount considerations regarding wildfires and are established in priority order:

1) Protection of human lives
2) Protection of improvements
3) Protection of natural resources

All procedures regarding wildfire will follow the State Forest Handbook and the CHBSF Fire Management Plan.

1. Suppression Strategies

If a wildfire occurs on CHBSF there are two (2) alternative suppression strategies as defined below:

a. Contain and Control is defined as a suppression strategy where a fire is restricted to a certain area by using existing natural or constructed barriers that stop the fire's spread under the prevailing and forecasted weather until it is out. This strategy allows the use of environmentally sensitive tactics based on fuels, fire behavior, and weather conditions that keep a wildfire from burning a large area or for a long duration.

b. Direct Suppression is defined as a suppression strategy where aggressive suppression tactics are used to establish firelines around a fire to halt its spread and to extinguish all hotspots. This alternative is used whenever there is a threat to human life, property, private lands, and/or critical natural or cultural resources. This strategy should also be used when the total district fire load dictates that crews not be involved with individual fires for any longer than absolutely necessary.

Appropriate suppression action will be that which provides for the most reasonable probability of minimizing fire suppression cost and critical resource damage, consistent with probable fire behavior, total fire load, potential resource and environmental impacts, safety, and smoke management considerations. The Incident Command System (ICS) will be used for all suppression actions.

2. **Smoke Management**

Caution will be exercised to prevent a public safety or health hazard from the smoke of any prescribed burn or wildfire. Prescribed burns must pass the smoke screening procedure and be conducted by a certified burner. If smoke threatens to cause a safety hazard, then direct, immediate suppression action will be taken.

3. **Fire Breaks and Firelines**

A system of permanent fire breaks will be developed and maintained around and within the boundaries of CHBSF to guard against fires escaping from and entering the forest. Such fire breaks will consist of natural barriers, roads, trails, permanent grass strips and where appropriate, well maintained harrowed lines. All pre-suppression fire breaks will meet the established Silvicultural BMP criteria.

During wildfire suppression, the use of water and foam, permanent fire breaks, natural barriers, and existing roads and trails for firelines can be used when human life safety, property, and resource considerations allow. Plowed and / or bladed lines will be used for initial installation of firelines in heavy fuels and in cases where it's considered necessary to protect life, property, or resources and / or to minimize threats to firefighters. Plowed and bladed lines will be rehabilitated and meet BMP compliance as soon as practical after the fire is suppressed.

4. **Sensitive Areas**

CHBSF retains on file in the state forest headquarters an Environmentally Sensitive Area Map that identifies protected sites such as critical wetlands and archaeological and historical sites known to occur on the state forest. FFS personnel are aware of these areas in the event of a wildfire. Special precautions will be followed when prescribed burning in sensitive areas on CHBSF. When possible, fire staff will avoid line construction in wetlands ecotones throughout the forest.

5. **Firewise Communities**

FFS has implemented a Firewise community approach for prevention statewide. Specifically, in the area adjacent to or nearby CHBSF, efforts in this regard will continue to identify communities at risk and to make contact with their representatives.

6. **Adjacent Neighbor Contacts**

The staff at CHBSF maintains a list of neighbors that have requested they be notified in advance of prescribed burns. These families are contacted by telephone or email with potential sites and dates of anticipated prescribed burns.

7. **Post-Burn Evaluations**

A post-burn evaluation is required for each prescribed burn on the State Forest to assess

impacts on timber and habitat. Based on the evaluations, decisions will be made on the effectiveness of the prescribed burn and improvements that can be made in the future. A historical fire record for all significant fires and prescribed burns will be maintained. This will be accomplished using completed burn plans and through the maintenance of GIS data. These records are intended to provide data for future management decisions.

8. Firefighter Training

A training area for firefighters will be installed within the CHBSF. Areas with a high degree of disturbance will be given highest priority for the location of this training area. Activities conducted within the training areas will range from fireline construction to "live fire" suppression exercises. These activities are critical to maintain the highest levels of preparedness for FFS firefighting crews.

C. Sustainable Forestry & Silviculture

Timber is a valuable economic and ecological resource, and timber harvesting for the purposes of generating revenue, improving stand viability, forest health, wildlife, and ecological restoration and maintenance is critical to the silvicultural objectives on the state forest.

1. Strategies

The following silvicultural strategies will apply to silvicultural practices on CHBSF:

- **a.** To restore and maintain forest health and vigor through timber harvesting, prescribed burning, and reforestation, both naturally and artificially, with species native to the site.
- **b.** To create, through natural or artificial regeneration, uneven-aged, and even-aged management, a forest with both young and old growth components that yields sustainable economic, ecological, and social benefits.

2. Silvicultural Operations

Silvicultural operations on CHBSF will be directed toward improving forest health, wildlife habitat, ecological and economical sustainability, and recovery from past management practices that are not in accordance with the objectives of this plan. Stands of off-site species with merchantable volume will be scheduled for harvest, followed by reforestation with the appropriate tree species. Herbicide applications may be necessary to control woody competition and to re-establish desired natural species of both overstory and groundcover. Site preparation methods may include prescribed fire, mechanical vegetation control, and / or herbicide applications. Herbicides used will be registered for forestry use by the U.S. Environmental Protection Agency (EPA) and will not adversely affect water resources.

Prescribed fire is the most desirable method of vegetation control in fire-dependent ecosystems. However, due to the existence of areas where fuel loads have reached dangerous levels or urban interface dictates prescribed fire is not suitable, mechanical or chemical vegetation control may be used. Mechanical and / or chemical vegetation control will be utilized where appropriate as determined by FFS staff for wildlife enhancement, fuel mitigation, and reforestation.

Maintenance and restoration of timber stands and natural communities through timber harvesting will include thinning for maintenance, regeneration harvests applicable to the

species present, and clear-cutting to remove off-site species.

All silvicultural activities, including timber harvesting and reforestation, will meet or exceed the standards in FFS's Silviculture BMP and the State Forest Handbook, and will follow the Five-Year Silviculture Action Plan.

3. Forest Inventory

The purpose of a forest inventory is to provide FFS resource managers with information and tools for short and long-range resource management and planning. Ten percent (10%) of CHBSF forest will be re-inventoried annually to provide an accurate estimation of the standing timber and to ensure that stands will be managed sustainably.

Commercial forest resources available on the property include longleaf pine, slash pine, and small pockets of sand pine. In addition, there are mixed hardwoods found throughout the forest.

4. Timber Sales

Timber sales are generally advertised for competitive bids and sold on a per unit or lump sum basis. All timber sales are conducted according to guidelines specified in the State Forest Handbook and in accordance with FFS Policies and Procedures.

5. Cattle Grazing

Cattle grazing activities assist in maintaining pastures and controlling non-native plants, support the maintenance of fences and gates, and provide a source of income to the CHBSF.

Currently there are three (3) cattle leases on CHBSF. The two cattle leases on the Joshua Creek Tract are managed by the FFS and have a duration of five (5) to ten (10) years. The cattle lease on the Turkey Creek Tract is managed by the SJRWMD. This lease has a duration of ten (10) years.

D. Non-Native Invasive Species Control

FFS employees continually monitor the forest for non-native invasive species while conducting management activities. FFS will locate, identify, and apply control measures with the intent to eradicate or control non-native invasive species. Table 6 lists the general treatment strategy, acres impacted, and population stability trend for non-native invasive plant species occurring on CHBSF. Also see Exhibit O.

On-going maintenance and monitoring strategies are outlined in the Five-Year Ecological Management Plan which is developed to locate, identify, and control non-native invasive plant species. Occurrences of non-native invasive species are recorded in the CHBSF GIS database and are monitored and treated annually as funding permits. The GIS database is updated as new infestations are discovered.

Adjacent landowners who are known to have these species on their property will be approached to cooperate on control measures. FFS works to control the spread of non-native

invasive species by decontaminating agency equipment and equipment used by private contractors according to the State Forest Handbook.

FFS will enlist support from FWC in efforts to control non-native invasive animals. Feral hogs (*Sus scrofa*) are present on CHBSF but are not believed to occur in significant numbers at this time. FWC has issued a feral hog control permit to FFS for all state forests and FFS will allow for feral hog removal on CHBSF through trapping and hunting as necessary. Training in the identification and control of invasive species will be scheduled for personnel as time and resources permit. Training concerning non-native invasive plants will be coordinated with the Forest Management Bureau's Forest Health Section. Control of non-native invasive species will be target specific and use a variety of methods including appropriately labeled and efficacious herbicides.

Table 6. Non-Native Invasive Plant Species Occurring on CHBSF

Scientific Name	Common Name	Treatment Strategy	Acres Impacted	Increasing /Decreasing
Schinus terebinthifolia	Brazilian pepper	Spot Treatment with herbicide	Scattered plants	Increasing
Urena lobata	Caesar weed	Spot Treatment with herbicide	Scattered plants	Increasing
Sapium sebiferum	Chinese tallow tree	Spot Treatment with herbicide	Scattered plants	Stable
Imperata cylindrica	Cogon grass	Spot Treatment with herbicide	Scattered plants	Stable
Lygodium japonicum	Japanese climbing fern	Spot Treatment with herbicide	Scattered plants	Decreasing
Dioscorea bulbifera	Air potato	Spot Treatment with herbicide	Scattered plants	Stable
Cinnamomum camphora	Camphor tree	Spot Treatment with herbicide	Scattered plants	Stable
Ardisia crenata	Coral ardisia	Spot Treatment with herbicide	Scattered plants	Stable
Psidium guajava	Guava	Spot Treatment with herbicide	Scattered plants	Stable
Lantana camara	Lantana	Spot Treatment with herbicide	Scattered plants	Decreasing
Lygodium microphyllum	Old World climbing fern	Spot Treatment with herbicide	Scattered plants	Decreasing
Urochloa mutica	Para grass	Spot Treatment with herbicide	Scattered plants	Decreasing
Nephrolepis cordifolia	Sword fern	Spot Treatment with herbicide	Scattered plants	Stable
Solanum viarum	Tropical soda apple	Spot Treatment with herbicide	Scattered plants	Stable
Colocasia esculenta	Wild taro	Spot Treatment with herbicide	Scattered plants	Stable
Panicum repens	Torpedo grass	Not treated at this time.	Scattered plants	Stable
Alternanthera philoxeroides	Alligator weed	Spot Treatment with herbicide	Scattered plants	Stable
Melia azederach	Chinaberry	Spot Treatment with herbicide	Scattered plants	Decreasing

Scientific Name	Common Name	Treatment Strategy	Acres Impacted	Increasing /Decreasing
Rhynchelytrum repens	Natal grass	Spot Treatment with herbicide	Scattered plants	Decreasing
Sesbania punicea	Purple sesbania	Spot Treatment with herbicide	Scattered plants	Decreasing
Pistia stratiotes	Water lettuce	Not treated at this time.	Scattered plants	Increasing
Eichhornia crassipes	Water hyacinth	Not treated at this time.	Scattered plants	Increasing
Pteris vittata	Chinese brake fern	Spot Treatment with herbicide	Scattered plants	Decreasing
Albizia julibrissin	Mimosa	Spot Treatment with herbicide	Scattered plants	Decreasing
Pteris tripartita	Giant brake fern	Spot Treatment with herbicide	Scattered plants	Increasing
Clerodendrum indicum	Turk's turban	Spot Treatment with herbicide	Scattered plants	Increasing

E. Insects, Disease, and Forest Health

Currently there are no significant insect or disease problems on CHBSF. State forest staff monitor for incidental outbreaks of pine bark beetles (*Ips* spp.) throughout the forest. These outbreaks typically affect no more than a couple of acres. Aerial surveys are conducted every June for southern pine beetle (*Dendroctonus frontalis*) outbreaks. In the event of an outbreak of any disease or insects, consultation with the Forest Management Bureau's Forest Health Section will be sought to formulate an appropriate and effective response.

In compliance with Section 388.4111, F.S. and in Section 5E-13.042, F.A.C., all lands have been evaluated and subsequently designated as environmentally sensitive and biologically highly productive. Such designation is appropriate and consistent with the previously documented natural resources and ecosystem values and affords the appropriate protection for these resources from arthropod control practices that would impose a potential hazard to fish, wildlife, and other natural resources existing on this property. The local arthropod control agencies in Seminole and Orange Counties will be notified of the approval of this plan, documenting this designation.

As a result, prior to conducting any arthropod control activities on CHBSF, the local agency must prepare a public lands control plan that addresses all concerns that FFS may have for protecting the natural resources and ecosystem values on the state forest. In this regard, FFS will provide the local agency details on the management objectives for CHBSF. This public lands control plan must be in compliance with FDACS guidelines and using the appropriate FDACS form. The plan must then be approved and mutually adopted by the county, FFS, and FDACS, prior to initiation of any mosquito control work. Should the local mosquito control districts not propose any mosquito control operations on the property, no arthropod control plan is required. See Exhibit W.

F. Use of Private Lands Contractors

The forest manager makes ongoing evaluations of the use of private contractors and consultants to facilitate the total resource management activities of this state forest. The

opportunities for outsourcing land management work include, or are anticipated to include:

1. Herbicide applications
2. Restoration activities
3. Mechanical site preparation
4. Reforestation
5. Timber harvesting
6. Biological assessments and mapping
7. Fixed capital and infrastructure improvements

VII. Proposed Management Activities for Natural Communities

In 2016, FNAI completed an inventory and natural community mapping project on CHBSF. Current and historic natural community cover types can be found in Exhibits P and Q, and Table 7. This inventory included managed and altered community types which are habitats that have been impacted by humans and do not fit into FNAI's Natural Community Classification. See Tables 8 and 9.

Table 7. Natural Community Types

Community Type	Historic Acres*	Current Acres*
Basin marsh	158	148
Basin swamp**	162	155
Baygall	88	89
Blackwater stream**	592	580
Depression marsh	92	79
Dome swamp	18	21
Floodplain marsh	1,735	1,668
Hydric hammock**	4,642	4,427
Mesic flatwoods	2,687	884
Mesic hammock	28	60
Sandhill	64	51
Scrub	37	34
Scrubby flatwoods	134	37
Wet flatwoods	809	984
Managed and Altered landcover types***	0	2,029
TOTAL	**11,246**	**11,246**

* Note rounding errors exist
** Inclusions of bottomland forest and mesic hammock
*** See Tables 8 and 9

Table 8. Managed Community Types

Community Type*	Current Acres**
Abandoned pasture	1
Pasture – Improved	1,680
Pasture – Semi-improved	198
TOTAL	**1,879**

* Protocol as described in Appendix 2 of FNAI's "Guide to the Natural Communities of Florida", 2010 Edition.
** Note rounding errors exist.

Table 9. Altered Landcover Types

Landcover Type*	Current Acres**
Artificial pond	3
Canal/ditch	29
Developed	1
Road	117
TOTAL	**150**

* Protocol as described in Appendix 2 of FNAI's "Guide to the Natural Communities of Florida", 2010 Edition
** Note rounding errors exist

For the purposes of this management plan, restoration is defined as the process of returning ecosystems to the appropriate structure and species composition, based on soil type. Management during this ten-year period will begin with a forest-wide assessment of the fuel loading, timber densities, reforestation needs, and groundcover in order to develop a five-year comprehensive operational plan for prescribed burning and other management activities across the forest. Strategies may include thinning pine plantations, mowing or chopping in areas of heavy fuel buildup, application of both dormant and growing season fires, and / or the use of herbicides to control hardwoods and/or hardwood regeneration. Site preparation and reforestation may be required to increase pine stocking in stands with very poor stocking or in restoration efforts. Fire return intervals are included as a guide and may vary depending upon specific conditions and are intended to attain desired forest and resource management goals. See Table 10.

Table 10. Prescribed Fire Interval Guide on CHBSF

Habitat Type	Historic Fire Return Interval**	CHBSF Fire Frequency Goal (Local)	Comments
Basin Marsh	Varies	3 – 4	Fire intervals are highly variable, with natural fires more possible at the end of the dry season. Frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas.
Basin Swamp	Varies	3 – 4	Fire intervals are highly variable. Ecotones often burn in conjunction with the adjacent uplands, and these may burn as frequently as every 3 to 4 years.
Baygall	Varies	3 – 4	Ecotones burned per frequency of adjacent upland habitat type.
Blackwater Stream	N/A	N/A	Not a fire dependent community.
Depression Marsh	1 - 10	3 - 4	Ecotones burned per frequency of adjacent upland habitat type. Interior portions of this community type will have longer return intervals.
Dome Swamp	3 - 5	3 - 4	Ecotones burned per frequency of adjacent upland habitat type. Interior portions of this community type will have longer return intervals (100-150 years).
Floodplain Marsh*	1 - 5	2 – 3	The natural fire return interval in floodplain marshes may vary widely from one situation to the next, but fire

Habitat Type	Historic Fire Return Interval**	CHBSF Fire Frequency Goal (Local)	Comments
			has been shown to be a useful tool for improving wildlife habitat and reducing fuel loads.
Hydric Hammock	N/A	N/A	Hydric hammocks rarely burn. However, prescribed fires should be allowed to burn up to the edge of these communities to discourage shrubby encroachment into the ecotone with pyrogenic communities
Mesic Flatwoods	2 - 4	3 - 4	Depends on pine species, density, age, and fuel conditions
Mesic Hammock*	N/A	N/A	Not a fire dependent community.
Pasture – Improved*	N/A	N/A	Not a fire dependent community.
Pasture – Semi-improved*	N/A	2 – 3	Return intervals in general will match surrounding community types.
Sandhill	1 - 3	1 - 3	Frequent low intensity fire preferably within the growing season to reduce hardwood competition and perpetuate pines and grasses.
Scrub	6 - 19	3 - 15	Return intervals in general will match surrounding community types. Fire is important in maintaining ecotones.
Scrubby Flatwoods	3 - 15	3 – 15	Return intervals in general will match surrounding community types. Fire is important in maintaining ecotones. Most of the scrubby flatwoods are surrounded by mesic flatwoods.
Wet Flatwoods*	3 - 10	3 - 4	Depends on pine species, density, age, and fuel conditions.

* Includes restoration community acreage
** As determined by FNAI

The following community descriptions, existing condition descriptions, and management recommendations are taken from a 2016 FNAI mapping project report and the Guide to the Natural Communities of Florida (FNAI 2010), as well as from the knowledge and experience gained by FFS during forest inventory efforts and routine field work on CHBSF.

To achieve the objectives outlined in this plan, the following management activities will be performed in the natural and managed communities at CHBSF during the next ten-year planning period. Goals, desired conditions, standards, and guidelines provide management area direction. These goals and desired conditions may take many planning cycles to attain.

A. Basin Marsh

Description:

Basin marshes are depressional, non-forested wetlands that are typically large and/or embedded in a non-pyrogenic community and thus are not heavily influenced by frequent fires in the surrounding landscape. This type of marsh usually develops in large solution depressions that were formerly shallow lakes. The soils are generally acidic, nutrient-poor peats overlying an impervious soil layer. This community type is dominated by herbs or occasionally shrubs that can withstand inundation for most or all of the year. Grasses and sedges such as soft rush (*Juncus effusus* subsp. *solutus*), needle rush (*Juncus roemerianus*),

maidencane (*Panicum hemitomon*), narrowfruit horned beaksedge (*Rhynchospora inundata*), and sand cordgrass (*Spartina bakeri*) dominate the vegetative cover in all but the deepest areas of marsh where sawgrass (*Cladium jamaicense*), or pickerelweed (*Pontederia cordata*) may be present. In basin marshes situated within flatwoods, woody components around the edge are minimal due to fires that burn into this community.

Basin marshes appear on the 1940 aerial photographs as smooth gray or black patches.

Current Conditions:
A large number of basin marshes at CHBSF occur as isolated depressions within extensive hydric hammock communities along the St. Johns river floodplain. Several of these smaller marshes within hydric hammock have formed a canopy and sub-canopy layer from encroaching hammock species such as red maple (*Acer rubrum*), dahoon (*Ilex cassine*), sweetgum (*Liquidambar styraciflua*), and swamp tupelo (*Nyssa sylvatica* var. *biflora*), and cabbage palm (*Sabal palmetto*). Within the Turkey Creek Tract, larger basin marshes occur within improved pasture, which was historically mesic flatwoods or wet flatwoods. These marshes tend to contain weedier herbaceous species due to the surrounding pastures. A few basin marshes in the Joshua Creek tract are located within intact mesic, scrubby, and wet flatwoods.

The shrub layer of basin marshes at CHBSF may contain scattered cabbage palm, coastalplain willow (*Salix caroliniana*), groundsel tree (*Baccharis halimifolia*), and wax myrtle (*Myrica cerifera*). In the herbaceous layer, dominant grasses and sedges include sawgrass, spikerush (*Eleocharis* spp.), maidencane, narrowfruit horned beaksedge, and sand cordgrass. Other occasional herbs include swamp milkweed (*Asclepias incarnata*), bandana-of-the-Everglades (*Canna flaccida*), spadeleaf (*Centella asiatica*), fireweed (*Erechtites hieraciifolius*), dogfennel (*Eupatorium capillifolium*), manyflower marshpennywort (*Hydrocotyle umbellata*), sweetscent (*Pluchea odorata*), smartweed (*Polygonum* spp.) pickerelweed, water spangles (*Salvinia minima*), lizard's tail (*Saururus cernuus*), climbing aster (*Symphyotrichum carolinianum*), and Virginia chain fern (*Woodwardia virginica*). A few small historical basin marshes on the Turkey Creek Tract and Clonts Tract have been partially or fully converted to pasture or roads.

Fire Regimes:
Fire intervals in basin marshes are highly variable, with natural fires more possible at the end of the dry season. Dense sawgrass and maidencane marshes will burn even when there is standing water. Frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas.

Management Needs:
Prescribed fire should be used in basin marshes within pyrogenic communities to reduce woody plant encroachment and restore dominant herbaceous species cover. Shortened hydroperiods from activities such as the digging of ditches and canals permits the invasion of mesophytic species. The removal or plugging of ditches and canals, where possible, is recommended to restore natural hydroperiods and sheet flow over the landscape.

B. Basin Swamp

Description:

Basin swamps are forested depressions that are typically large and/or embedded in a non-pyrogenic community and thus are not heavily influenced by frequent fires in the surrounding landscape. The soils are generally acidic, nutrient-poor peats overlying an impervious soil layer. This community type is dominated by hydrophytic trees and shrubs that can withstand inundation for most or all of the year. The canopy is mostly pond cypress (*Taxodium ascendens*) or swamp tupelo. Elevated areas within the swamp may have diamond-leaved oak, American elm (*Ulmus americana*) and red maple. The subcanopy may include red maple, dahoon, swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), and loblolly bay (*Gordonia lasianthus*). Shrubs are typically sparse and concentrated around the perimeter. Typical shrubs include common buttonbush (*Cephalanthus occidentalis*), dahoon, fetterbush (*Lyonia lucida*), and wax myrtle. Herbaceous cover is variable and includes toothed midsorus fern (*Blechnum serrulatum*), false nettle (*Boehmeria cylindrica*), royal fern (*Osmunda regalis* var. *spectabilis*), pickerelweed, beaksedges (*Rhynchospora* spp.), arrowheads (*Sagittaria* spp.), lizard's tail, netted chain fern (*Woodwardia areolata*), and Virginia chain fern. Sphagnum moss (*Sphagnum* spp.) is common in saturated areas. Vines may be present and include greenbriers (*Smilax* spp.), eastern poison ivy (*Toxicodendron radicans*), and muscadine (*Vitis rotundifolia*). Epiphytes are common and include resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*), Spanish moss (*Tillandsia usneoides*), and airplants (*Tillandsia* spp.).

In the 1940 aerial photographs, basin swamps appear as medium to dark gray patches, similar to baygall and hammock communities.

Current Conditions:

Basin swamps at CHBSF are present on the Joshua Creek and Turkey Creek Tracts. Most of these swamps are large and irregularly shaped, though some smaller basin swamps are embedded in hydric hammocks and pasture. Most of these larger swamps are in good condition and are partially surrounded by a variety of communities including wet flatwoods, hydric hammock, and baygall. The basin swamps surrounded by improved pasture on the Turkey Creek Tract contain a weedier herbaceous layer and tend to have exotic species invading at the edges. Basin swamps also are present as inclusions within large swaths of hydric hammock throughout the state forest. These swamp inclusions form a complex mosaic with hammocks, and species composition tends to be highly variable in these areas.

The open to moderately dense canopy is dominated by swamp tupelo and pond cypress, but also includes red maple, sweetgum, swamp tupelo, swamp laurel oak, pond cypress, and American elm. The understory contains many canopy species along with dahoon, sweetbay, and cabbage palm. Shrubs are usually sparse and are often growing amongst or on cypress knees where peat has built up. The shrub layer includes common buttonbush, common persimmon (*Diospyros virginiana*), dahoon, fetterbush, wax myrtle, swamp azalea (*Rhododendron viscosum*), cabbage palm, highbush blueberry (*Vaccinium corymbosum*), and Walter's viburnum (*Viburnum obovatum*). In some areas where basin swamp is bordered by flatwoods, saw palmetto (*Serenoa repens*) is present at some basin swamp edges that border flatwoods where fire has been excluded.

The herbaceous layer is usually sparse. Common herbs include toothed midsorus fern, false nettle, longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), witchgrass (*Dichanthelium* spp.), Florida Keys hempvine (*Mikania cordifolia*), cinnamon fern (*Osmunda cinnamomea*), royal fern, pickerelweed, narrowfruit horned beaksedge, lizard's tail, alligator flag (*Thalia geniculata*), netted chain fern, and Virginia chain fern. Occasional vines include bristly greenbrier (*Smilax tamnoides*), eastern poison ivy, and muscadine. Epiphytes are frequent and include Bartram's air-plant (*Tillandsia bartramii*), common wild-pine (*Tillandsia fasciculata*), southern needleleaf (*Tillandsia setacea*), Florida air-plant (*Tillandsia simulata*), and Spanish moss.

Fire Regimes:
Fire intervals in basin swamps are highly variable. The lowest portions of basin swamps rarely, if ever, burn. Graminoid-dominated ecotones often burn in conjunction with the adjacent uplands, and these may burn as frequently as every 2 to 5 years.

Fire is more frequent in cypress dominated swamps and may be absent or rare in hardwood swamps. Slash pine, pond pine, and cypress can establish in these areas immediately after a fire, benefiting from ample sunlight and available bare mineral soils; they are also tolerant of moderate fires once past a certain size, thus systems dominated by these three species may have been subjected to fires, every 10 to 20 years.

Management Needs:
Restoring historic hydrological regimes and applying fire to the uplands, allowing it to burn into the basin swamps and extinguish naturally, should help the recovery of the graminoid edges and reduce heavy fuel loads that facilitate catastrophic wildfire during drier years. Occasional fires into the basin swamps are necessary to maintain the cypress and pine components while swamp tupelo and hardwood-dominated basin swamps burn less often. If hydrology has been altered (i.e. ditches/canals), normal hydroperiod should be restored if possible, since shortened hydroperiods can also allow devastating fire to enter, potentially altering the community. Use of heavy equipment, if necessary, should be limited to dry seasons to avoid rutting which alters the micro-hydrology of the ecotone.

C. Baygall

Description:
Baygall is an evergreen forested wetland, typically occurring at the base of slopes and in depressions, where water seepage maintains a saturated peat substrate. This community may form an ecotone between uplands and swamps, or it may develop as a larger bay swamp in isolated basins or broad areas of seepage. Baygall is dominated by a tall canopy of loblolly bay, sweetbay, and slash pine (*Pinus elliottii*), with swamp bay and fetterbush common in the understory. In deep swamps dominated by cypress and swamp tupelo, baygall can develop when leaf litter accumulation raises the soil level and creates a shallower depression, allowing bay species that require a shorter hydroperiod to become established. These wetter baygalls may contain swamp tupelo and/or pond cypress. Herbs are infrequent, and mostly include ferns such as cinnamon fern, netted chain fern, and Virginia chain fern. Sphagnum mosses are common. Vines may be common and may include greenbriers, eastern poison ivy, and muscadine.

Current Conditions:
At CHBSF, baygall is mostly present in the Joshua Creek Tract. Most occur as small depressions or form a border around basin swamps. Baygall also occurs as inclusions within wet flatwoods, where pines still dominate the canopy, but loblolly bay has become abundant in the subcanopy due to fire exclusion. Some basin swamps and basin/depression marshes contain inclusions of baygall, where leaf litter accumulation has elevated the soil level. Most of the baygall on the state forest has a closed canopy with a variable mixture of red maple, loblolly bay, sweetgum, sweetbay, and swamp tupelo. Slash pine is a common canopy species in baygall inclusions within wet flatwoods. Pond cypress is occasional in the canopy where baygall borders or forms inclusions within cypress swamps. Shrubs are typically frequent to dense with wax myrtle, fetterbush, highbush blueberry, common buttonbush, and swamp azalea. The herbaceous layer is sparse and includes toothed midsorus fern, cinnamon fern, bracken fern (*Pteridium aquilinum*), *Sphagnum* spp., netted chain fern, and Virginia chain fern. Vines are infrequent to common and include laurel greenbrier (*Smilax laurifolia*), bristly greenbrier, and eastern poison ivy.

Fire Regimes:
Baygall should burn infrequently, perhaps only a few times each century in the deepest baygalls. Although the saturated soils and humid conditions within baygalls typically inhibit fire, droughts may create conditions that allow them to burn catastrophically. These fires not only destroy the canopy, but also may ignite the deep peat layers that can smolder for weeks, or even months.

Management Needs:
If it can be done safely, prescribed fires in adjacent uplands should be allowed to burn into baygall edges to maintain grassy ecotones and to kill bay shrubs encroaching into the uplands. Plowed firebreaks and ditches should be restored, and hydrology should be returned to its natural state where possible.

D. <u>Blackwater Streams</u>
Description:
Blackwater streams are perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. Emergent and floating aquatic vegetation may occur along shallower and slower moving sections, but their presence is often reduced because of typically steep banks and considerable seasonal fluctuations in water level. Typical plants include smartweeds, sedges (*Cyperus* spp.), and grasses (*Poaceae*).

Current Conditions:
The St. Johns River extends along the eastern border of CHBSF. The western boundary of this blackwater stream grades into floodplain marsh, where sand cordgrass dominates the herbaceous later. Existing conditions are similar to desired future conditions. Water hyacinth (*Eichhornia crassipes*) was noted in standing water in some transitional areas between blackwater stream and floodplain marsh. Due to changes in the river course, the current river flow does not always align with the latest photographs.

Fire Regimes:
Blackwater streams are not fire-adapted natural communities.

Management Needs:
Periodic monitoring and treatment of non-native invasive plants is recommended.

E. Depression Marsh

Description:
Depression marshes are isolated, non-forested wetlands basins that are imbedded in a pyrogenic matrix community such as pine flatwoods or sandhill. These marshes typically have concentric zones of vegetation related to the length of hydroperiod and depth of flooding. Depression marshes are distinguished from basin marshes principally by their landscape position which subjects them to more frequent fires. The deepest zones are dominated by maidencane, pickerelweed, bulltongue arrowhead (*Sagittaria lancifolia*), or sawgrass and may have a peat substrate and a continuous layer of sphagnum moss, while shallower zones are dominated by peelbark St. John's wort (*Hypericum fasciculatum*) and have a sandy substrate. Shrub cover is typically very low, and trees are found only on edges.

On the 1940 aerial photographs, depression marshes appear as darker smooth circular patches set into the flatwoods and prairies which are a lighter gray.

Current Conditions:
Most depression marshes on the Joshua Creek Tract that are embedded in mesic, shrubby, or wet flatwoods are in good condition. Some marshes that are bordered by pasture have experienced hydrological alteration and hardwoods are forming a canopy layer. Most depression marshes on the Turkey Creek Tract are within improved pasture and have varying degrees of woody encroachment. Some historical depression marshes have been converted to pasture or artificial ponds. If present, the canopy may include red maple, loblolly bay, sweetbay, swamp tupelo, pond pine (*Pinus serotina*), and pond cypress. Peelbark St. John's wort is a common shrub in shallower areas. Other shrubs are infrequent and include American beautyberry (*Callicarpa americana*), common persimmon, fetterbush, wax myrtle, and cabbage palm.

Herbaceous coverage includes big carpetgrass (*Axonopus furcatus*), sawgrass, pipeworts (*Eriocaulon* spp.), manyflower marshpennywort, rush (*Juncus* spp.), Carolina redroot (*Lachnanthes caroliana*), big floatingheart (*Nymphoides aquatica*), maidencane, smartweeds, pickerelweed, meadowbeauty (*Rhexia* spp.), narrowfruit horned beaksedge, lizard's tail, sand cordgrass, Virginia chain fern, and yellow-eyed grasses (*Xyris* spp.).

Fire Regimes:
Fire is an important factor in maintaining a depression marsh. Without fire, shrubs and trees can encroach and peat can accumulate. Fire frequency is generally greater around the edges of the marsh and least toward the center of the marsh. Depression marshes likely burned irregularly every 1 to 10 years depending on water levels in the marsh and when neighboring communities burned. Fires generally occurred early (April-June) in the lightning season when water was low and surrounding communities were dry.

Management Needs:
Fires in surrounding communities should be allowed to burn into depression marshes and extinguish naturally or burn through them. Early growing season burns are recommended to control shrub encroachment. Physical disturbance from vehicles should be avoided as it can cause serious damage by destroying native species and churning the soil which is often then colonized by weedy species and/or invasive exotic plants. Artificial drainage of marshes can allow pasture grasses to invade depression marshes, especially where the surrounding community has been converted to pasture and cattle trampling may occur within the marsh. Natural hydrology should be restored, if possible, by blocking or filling canals/ditches and redesigning trails or roads to avoid altering the hydrology.

F. Dome Swamp

Description:
Dome swamps are isolated, shallow, forested wetlands basins that are imbedded in a pyrogenic matrix community such as pine flatwoods. These swamps often have domed profiles resulting from smaller trees growing around the edges and larger trees growing in the interior. Dome swamps have peat soils that are thickest toward the center and are generally underlain with acidic soils. Dome swamps are distinguished from basin swamps principally by their often more circular shape, smaller size, and higher historical fire frequency due to landscape position. Species composition and hydroperiods are similar to basin swamps, but generally with fewer shrubs and greater herbaceous cover and diversity. Pond cypress often dominates, but swamp tupelo, may also form pure stands or occur as a co-dominant. Other canopy or subcanopy species may include red maple, loblolly bay, dahoon, sweetbay, swamp bay, and slash pine. Shrubs are typically scattered and include common buttonbush, dahoon, fetterbush, and wax myrtle.

The herbaceous layer is sparse in the interior and denser on the edges and dominated by various hydrophytic herbs such as toothed midsorus fern, tenangle pipewort (*Eriocaulon decangulare*), manyflower marshpennywort, royal fern, cinnamon fern, lizard's tail, and Virginia chain fern. Vines can be common and include greenbriers and eastern poison ivy. Spanish moss is typically a common epiphyte throughout dome swamps.

Current Conditions:
A few dome swamps occur at CHBSF on the Joshua Creek and Turkey Creek Tracts. Most dome swamps are imbedded in mesic flatwoods and wet flatwoods, while others are partially or fully surrounded by pasture. The canopy is dominated by pond cypress and swamp tupelo with occasional red maple, sweetgum, sweetbay, and pond pine. The subcanopy/tall shrub layer contains loblolly bay, dahoon, fetterbush, wax myrtle, swamp bay, and cabbage palm. The herbaceous layer is usually sparse with midsorus fern, cinnamon fern, maidencane, lizard's tail, netted chain fern, and Virginia chain fern. Epiphytes are relatively common with Spanish moss frequent on cypress trees.

Fire Regimes:
Fire is essential for the maintenance of dome swamps, limiting hardwood encroachment and peat buildup while encouraging herbaceous growth. The fire frequency is greatest at the periphery of the dome swamp where a normal fire cycle might be as short as 3 to 5 years. The interior of large dome swamps may burn less frequently as a result of standing water or soil

saturation.

Management Needs:
Prescribed fires from neighboring flatwoods should be allowed to burn into dome swamps and extinguish naturally at the ecotone or burn through the swamp, as conditions permit. Fires maintain diverse ecotone and interior herbaceous cover. Unnecessary fire breaks in or around dome swamps should be rehabilitated, if possible, so that fires can carry across them.

If hydrology has been altered (i.e. ditches/canals), normal hydroperiods should be restored if possible. This can be accomplished by blocking or filling ditches/canals and redesigning trails to avoid altering the hydrology. Change in hydrology can promote invasion of mesic species, which can eventually allow hardwoods to replace cypress and swamp tupelo.

G. Floodplain Marsh

Description:
Floodplain marshes are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains. These marshes are flooded with flowing water for a portion of the year. Floodplain marshes in this area of the St. Johns River are influenced by groundwater that is mildly saline, and a few tidal marsh plants may be found growing in these conditions. Cabbage palm is a common tree and shrub scattered in the marsh, however, these become less frequent in the deeper marsh nearer to the river. Shrubs such as groundsel tree, common buttonbush, and coastalplain willow also may be present. The highest part of the marsh is often a drier, wet prairie-like zone with a large diversity of graminoids and forbs. While the progression from high to low marsh occurs generally from the upland edge to the river edge, these vegetation patches may also be scattered throughout the marsh. Sand cordgrass, sawgrass, and maidencane are common dominants, but various other herbs may be found distributed along a hydrologic gradient. Other herbs may include saltwort (*Batis maritima*), spadeleaf, turkey tangle frogfruit (*Phyla nodiflora*), pickerelweed, bulltongue arrowhead, and perennial glasswort (*Sarcocornia perennis*).

Floodplain marshes appear in the 1940 aerial photographs as smooth expanses of light gray in the St. Johns River floodplain.

Current Conditions:
Floodplain marshes at CHBSF occur along the St. Johns River. Some western portions of the floodplain marsh, especially on the Clonts Tract, are experiencing encroachment from adjacent hydric hammock communities, likely due to hydrological alterations from past ditching and draining. Many acres of historical floodplain marsh are now utilized for cattle grazing. As a result, most of the floodplain marshes contain pasture inclusions, where bahiagrass (*Paspalum notatum*), Bermudagrass (*Cynodon dactylon*), and other non-native grasses are dominant herbs. These pastures are difficult to distinguish from floodplain marsh on aerial photography. Higher quality floodplain marshes were observed on the Turkey Creek Tract, closer to the St. Johns River and distanced from cattle grazing. Cabbage palm is a frequent tree in shallower portions of the marsh and occasional in deeper areas. Wax myrtle and coastalplain willow are occasional in the subcanopy and shrub layer throughout the marsh. Groundsel tree is an occasional to frequent shrub, sometimes becoming dominant in shallower areas. The herbaceous layer is primarily composed of sand cordgrass and soft rush, with other

occasional herbs including blue mistflower (*Conoclinium coelestinum*), flatsedges, witchgrasses, spikerush, slender flattop goldenrod (*Euthamia caroliniana*), swamp rosemallow (*Hibiscus grandiflorus*), manyflower marshpennywort, Virginia saltmarsh mallow (*Kosteletzkya virginica*), turkey tangle fogfruit, rosy camphorweed (*Pluchea baccharis*), yellow milkwort (*Polygala rugelii*), smartweeds, and narrowfruit horned beaksedge.

Fire Regimes:

The natural fire return interval in floodplain marshes may vary widely from one situation to the next, but fire has been shown to be a useful tool for improving wildlife habitat and reducing fuel loads. Floodplain marshes may burn as frequently as every 1 to 5 years.

Management Needs:

Prescribed fire along with restoration and management of natural hydroperiods in floodplain marshes will prevent woody encroachment and loss of plant diversity. Road development and spoil areas should be reduced when possible to avoid impeding water flow and invasion of non-native invasive plants.

H. Hydric Hammock

Description:

Hydric hammock is a well-developed hardwood and cabbage palm forest with a variable understory often dominated by palms and ferns. This community occurs on low, flat, wet sites where limestone may be near the surface or where shell content in the soil is high. Soil moisture is kept high mainly by rainfall accumulation on poorly drained soils.

Species composition is mainly influenced by flooding patterns. The canopy typically contains a mixture of red maple, red cedar (*Juniperus virginiana*), sweetgum, sweetbay, diamond-leaved oak, live oak (*Quercus virginiana*), cabbage palm, and American elm. In saturated and frequently flooded environments, hydrophytic trees such as swamp tupelo become more abundant. The subcanopy and tall shrub layer often contains cabbage palm and other canopy species, with occasional smallflower pawpaw (*Asimina parviflora*), yaupon (*Ilex vomitoria*), swamp dogwood (*Cornus foemina*), small-leaf viburnum, common persimmon, swamp bay, and wax myrtle. Short shrubs are usually infrequent and include American beautyberry, common buttonbush, common persimmon, and wax myrtle. Herbaceous coverage is sparse to moderate and includes sedges (*Carex* spp.), spadeleaf, longleaf woodoats, maiden ferns (*Thelypteris* spp.), cinnamon fern, royal fern, toothed midsorus fern, netted chain fern, and Virginia chain fern. Vines are occasional to frequent and include peppervine (*Ampelopsis arborea*), yellow jessamine (*Gelsemium sempervirens*), greenbriers, eastern poison ivy, summer grape (*Vitis aestivalis*), and muscadine. Oaks and palms often support a diversity of epiphytes including green fly orchid (*Epidendrum conopseum*), golden polypody (*Phlebodium aureum*), resurrection fern, air-plants, and shoestring fern (*Vittaria lineata).*

Hydric hammocks are impossible to distinguish from mesic hammocks and basin swamp on the 1940 aerial photographs, as all of these appear as dark forested signatures.

Current Conditions:

Most hydric hammocks on CHBSF are in good to excellent condition. Hydric hammocks form an extensive community on all tracts throughout the state forest. These large hammocks

often occur as a mosaic of several communities, with elevated areas containing mesic hammock and wet flatwoods inclusions and lower areas containing basin swamp inclusions. Some eastern portions of these larger hammocks, especially on the Clonts Tract, have been encroaching into and replacing the adjacent floodplain marshes, likely due to altered hydrology from past ditching and draining.

The canopy and subcanopy layers contain a diverse mixture of red maple, water hickory (*Carya aquatica*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), red cedar, sweetgum, sweetbay, swamp tupelo, slash pine, swamp laurel oak, live oak, cabbage palm, pond cypress, and American elm. Shrubs can be occasional to moderate and include silverling (*Baccharis glomeruliflora*), American beautyberry, common buttonbush, common persimmon, St. Andrew's cross (*Hypericum hypericoides*), gallberry (*Ilex glabra*), Simpson's stopper (*Myrcianthes fragrans*), wax myrtle, wild coffee (*Psychotria nervosa*), myrsine (*Rapanea punctata*), saw palmetto, and deerberry (*Vaccinium stamineum).*

The herbaceous layer is highly diverse and variable in density due to several community inclusions. Herbs include giant leather fern (*Acrostichum danaeifolium*), bluestem (*Andropogon* spp.), jack-in-the-pulpit (*Arisaema triphyllum*), toothed midsorus fern, false nettle, Carolina sedge (*Carex caroliniana*), longleaf woodoats, sawgrass, blue mistflower, witchgrasses, fireweed, slender flattop goldenrod, Virginia saltmarsh mallow, Carolina redroot, partridgeberry (*Mitchella repens*), wild Boston fern (*Nephrolepis exaltata*), cinnamon fern, sour paspalum (*Paspalum conjugatum),* rosy camphorweed, stinking camphorweed (*Pluchea foetida*), pickerelweed, bracken fern, beaksedges, Carolina wild petunia (*Ruellia caroliniensis*), ciliate wild petunia (*Ruellia ciliosa*), lizard's tail, and Virginia chain fern.

Vines are common and diverse, including peppervine, trumpet creeper (*Campsis radicans*), yellow jessamine, Virginia creeper (*Parthenocissus quinquefolia*), earleaf greenbrier (*Smilax auriculata*), cat greenbrier (*Smilax glauca*), bristly greenbrier, eastern poison ivy, graybark grape (*Vitis cinerea*), and muscadine. Epiphytes are frequent on oaks and palms and include golden polypody, Bartram's air-plant, southern needleleaf, Florida air-plant, Spanish moss, spreading air-plant (*Tillandsia utriculata*), and shoestring fern.

Several species of non-native invasive plants were found in hydric hammock communities throughout the state forest. Small trees including camphor tree (*Cinnamomum camphora*), Chinese tallow (*Sapium sebiferum*), and Brazilian pepper (*Schinus terebinthifolius*) occur along edges and extending into the hammock in some areas. Caesar's weed (*Urena lobata*) is very common along hammock edges, especially where the hammock borders pasture. Caesar's weed also occurs within hammocks, especially along cattle trails and unnatural openings.

Fire Regimes:
Fire is not considered an important component of hydric hammock dynamics; however, they do burn occasionally. Prescribed fires should be allowed to burn up to the edge of these communities to discourage shrubby encroachment into the ecotone with pyrogenic communities.

Management Needs:
Hydric hammocks are stable communities dependent on maintenance of natural hydrological regime to maintain species composition. If hydrology has been altered (i.e. ditches/canals), normal hydroperiods should be restored if possible. A lowering of the water table will result in succession to mesic hammock, while more frequent inundation will result in the transition to a more swamp-like habitat. Any activity that requires the use of heavy machinery should be limited to dry periods when the soil is not saturated, thereby reducing rutting which can cause unnatural water channelization. Control of non-native invasive plants should be implemented where possible. Any activities that cause soil disturbance and canopy openings should be avoided if possible, to reduce the spread of non-native invasive plants.

I. Mesic Flatwoods

Description:
Mesic flatwoods are southern pine forests often containing longleaf pine (*Pinus palustris*) and slash pine as the dominant species, with slash pine more frequently present in transitions to adjacent wetlands. There is little or no sub-canopy other than pine recruitment and very few tall shrubs. A moderate to dense cover of short shrubs is often present. Characteristic shrubs include saw palmetto, gallberry, coastalplain staggerbush (*Lyonia fruticosa*), fetterbush, and wax myrtle. Other occasional shrubs include tarflower (*Bejaria racemosa*), St. Andrew's cross, rusty staggerbush (*Lyonia ferruginea*), winged sumac (*Rhus copallinum*), netted pawpaw (*Asimina reticulata*), Atlantic St. John's wort (*Hypericum reductum*), fourpetal St. John's wort (*Hypericum tetrapetalum*), and Piedmont staggerbush (*Lyonia mariana*). Rhizomatous dwarf shrubs, usually less than two feet tall, are common and include dwarf live oak (*Quercus minima*), runner oak (*Quercus pumila*), shiny blueberry (*Vaccinium myrsinites*), Darrow's blueberry (*Vaccinium darrowii*), and dwarf huckleberry (*Gaylussacia dumosa*). Herb cover is also moderately dense and dominated by grasses, especially wiregrass (*Aristida stricta* var. *beyrichiana*), which help maintain community structure by fueling growing-season fires. Other typical herbs include broomsedge (*Andropogon virginicus*), arrowfeather threeawn (*Aristida purpurascens*), bottlebrush threeawn (*Aristida spiciformis*), chaffhead (*Carphephorus corymbosus*), witchgrasses, dogfennel, roundleaf thoroughwort (*Eupatorium rotundifolium*), Elliott's milkpea (*Galactia elliottii*), rough hedgehyssop (*Gratiola hispida*), Piedmont pinweed (*Lechea torreyi*), beaked panicum (*Panicum anceps*), bracken fern, blackroot (*Pterocaulon pycnostachyum*), beaksedges, sweet goldenrod (*Solidago odora*), lopsided indiangrass (*Sorghastrum secundum*), and dropseeds (*Sporobolus* spp.). Vines are usually sparse and include yellow jessamine, laurel greenbrier, and muscadine. Other notable plant species include hooded pitcher plant (*Sarracenia minor*), Osceola's plume (*Stenanthium densum*), pine lily (*Lilium catebaei*), glade lobelia (*Lobelia glandulosa*), and orange milkwort (*Polygala lutea*).

These flatwoods appear on the 1940 aerial photographs as a light to medium gray, mostly smooth signature with darker trees dotted across the landscape. It appears that the mesic flatwoods had already been logged before 1940, as there are very few mature trees visible in large portions of the uplands.

Current Conditions:
All intact mesic flatwoods at CHBSF occur on the Joshua Creek Tract. Most of these communities are in good condition. These areas are subject to prescribed burning and

maintain an intact groundcover that includes wiregrass. The majority of these flatwoods have a low shrub layer, although a few are more fire excluded with taller shrubs and more vines. On the Turkey Creek Tract, the extensive historical mesic flatwoods have been converted to pasture.

The canopy of mesic flatwoods on the Joshua Creek Tract is dominated by slash pine and longleaf pine, with occasional red cedar, pond pine, and live oak. Wetter areas that are infrequently burned have a subcanopy of loblolly bay, sweetgum, water oak (*Quercus nigra*), and cabbage palm. Drier, fire-suppressed areas tend to have mesic hammock inclusions where live oak dominates the subcanopy and pines become infrequent. Shrubs are fairly diverse and may be moderate to dense (depending on recent wild and prescribed fires). The tall shrub layer includes gallberry, fetterbush, wax myrtle, winged sumac, cabbage palm, and deerberry. Short shrubs include netted pawpaw, tarflower, American beautyberry, common persimmon, dwarf huckleberry, blue huckleberry (*Gaylussacia frondosa* var. *tomentosa*), roundpod St. John's wort (*Hypericum cistifolium*), Atlantic St. John's wort (*Hypericum tenuifolium*), fourpetal St. John's wort, gallberry, gopher apple (*Licania michauxii*), coastalplain staggerbush, fetterbush, sand live oak (*Quercus geminata*), dwarf live oak, runner oak, cabbage palm, saw palmetto, and shiny blueberry.

The herbaceous layer is fairly dense with a large variety of species including yellow colic-root (*Aletris lutea*), purple bluestem (*Andropogon glomeratus* var. *glaucopsis*), broomsedge bluestem, wiregrass, savannah milkweed (*Asclepias pedicellata*), vanillaleaf (*Carphephorus odoratissimus*), partridge pea (*Chamaecrista fasciculata*), longleaf woodoats, whitetassels (*Dalea carnea*), witchgrasses, tall elephantsfoot (*Elephantopus elatus*), pipeworts, button rattlesnakemaster (*Eryngium yuccifolium*), Mohr's thoroughwort (*Eupatorium mohrii*), roundleaf thoroughwort, slender flattop goldenrod, Elliott's milkpea, whitehead bogbutton (*Lachnocaulon anceps*), Piedmont pinweed, sensitive briar (*Mimosa quadrivalvis*), whitetop aster (*Oclemena reticulata*), pricklypear (*Opuntia humifusa*), narrowleaf silkgrass (*Pityopsis graminifolia*), yellow milkwort, bracken fern, blackroot, savannah meadowbeauty (*Rhexia alifanus*), Nuttall's meadowbeauty (*Rhexia nuttallii*), beaksedges, lopsided indiangrass, queen's delight (*Stillingia sylvatica*), Walter's aster (*Symphyotrichum walteri*), yellow hatpins (*Syngonanthus flavidulus*), noseburn (*Tragia* spp.), and yellow-eyed grasses. Vines are infrequent except in fire suppressed areas. Common vines include yellow jessamine, earleaf greenbrier, saw greenbrier (*Smilax bona-nox*), cat greenbrier, bristly greenbrier, and muscadine.

Fire Regimes:
Mesic flatwoods require continued application of prescribed fire on a 2 to 4-year cycle to remain in good condition. Early lightning season (April-June) fires are more effective at controlling shrubs and hardwood encroachment and stimulating seeding of native herbaceous species.

Management Needs:
Prescribed burning priority should be given to areas of higher quality groundcover by using frequent growing-season fires to encourage herbaceous species, especially wiregrass, to reproduce naturally.

Widespread mechanical disturbances such as roller chopping should be avoided in areas that support wiregrass and other native non-weedy groundcover species. Roller chopping increases weedy species and reduces natural groundcover including the wiregrass.

A regular fire regime of every 2 to 4 years during the early thunderstorm season (April - June) is recommended, though maintaining frequency should be prioritized over seasonality. These growing season burns will have the greatest effect on hardwood encroachment and encourage seed set of herbaceous species.

J. Mesic Hammock

Description:

Mesic hammock is a well-developed evergreen hardwood and/or palm forest on soils that are rarely inundated. They occur on moderately poorly drained soils in areas that receive infrequent fire. The canopy is typically closed and dominated by live oak, with cabbage palm generally common in the canopy and subcanopy. Other occasional canopy and subcanopy species include pignut hickory (*Carya glabra*), red cedar, sweetgum, southern magnolia (*Magnolia grandiflora*), slash pine, diamond-leaved oak, and water oak. The understory may be dense or open, tall or short, and is typically composed of a mix of American beautyberry, persimmon, St. Andrew's cross, gallberry, common yaupon, wax myrtle, wild coffee, and saw palmetto. The herb layer is often sparse or patchy. Common herbs include longleaf woodoats, partridgeberry, bracken fern, netted chain fern, and Virginia chain fern. Vines are occasional to moderate and include yellow jessamine, greenbriers and muscadine. Epiphytes are abundant on oaks and cabbage palms and include Florida butterfly orchid (*Encyclia tampensis*), green fly orchid, golden polypody, resurrection fern, air-plants, and shoestring fern.

Mesic hammock is impossible to distinguish from hydric hammock and basin swamp on the 1940 aerial photographs, as all of these appear as dark forested signatures.

Current Conditions:

Most mesic hammocks on CHBSF occur on the Joshua Creek Tract. Some of these hammocks were historically mesic flatwoods. These areas were likely shielded from fire for several years, allowing oaks and palms to invade and leading to the establishment of other hammock species. Mesic hammocks on the eastern edge of the Joshua Tract are embedded in a large expanse of hydric hammock. A few mesic hammocks occur on the Turkey Creek Tract as transition areas between depression/basin marshes and pastures. These hammocks are often weedy with bahiagrass and Caesar's weed. Mesic hammocks also occur as elevated inclusions throughout the expansive hydric hammocks that run through the state forest.

The canopy layer is dominated by live oak, and cabbage palm. Red cedar and sweetgum are frequent in the canopy and subcanopy. Occasional canopy and subcanopy species include southern magnolia, swamp bay, slash pine, longleaf pine, swamp laurel oak, water oak, and American elm. The shrub layer is fairly open to moderately dense. The dominant shrubs include American beautyberry and saw palmetto with occasional netted pawpaw, common persimmon, St. Andrew's cross, wax myrtle, and wild coffee.

Herbs may be sparse to dense and include wiregrass, longleaf woodoats, witchgrasses,

fireweed, partridgeberry, wild Boston fern, bracken fern, blackroot, whip nutrush (*Scleria triglomerata*), netted chain fern, and Virginia chain fern.

Vines are occasional to frequent and include yellow jessamine, Virginia creeper, earleaf greenbrier, saw greenbrier, eastern poison ivy, and muscadine. Epiphytes are frequent on oaks and cabbage palms and include Florida butterfly orchid, green fly orchid, golden polypody, resurrection fern, Bartram's air-plant, common wild-pine, ballmoss (*Tillandsia recurvata*), southern needleleaf, Florida air-plant, Spanish moss, spreading air-plant, and shoestring fern.

Fire Regimes:
Mesic hammocks are not fire adapted communities. Intense fires can destroy hammocks, particularly where surrounding uplands have been fire-excluded in the past.

Management Needs:
Because mesic hammocks are often associated with hydric communities or as a transition to uplands, hammocks are sensitive to hydrologic alteration in the landscape. An increase in flooding frequency and/or duration can kill most characteristic mesic hammock tree species. Lowered water tables can result in a shift in vegetation to more xeric species or allow intense fires to burn and destroy the hammock. Placement of firebreaks around hammocks can disrupt the natural ecotones with surrounding pyrogenic communities. Ecological management and protection of mesic hammock habitats should include limitations on development and grazing, restoration of natural fire regimes and hydrology in the overall landscape, and control of invasive species.

K. Sandhill

Description:
Sandhills are well-drained, open pinelands, characterized by longleaf pine with a sparse midstory of turkey oak (*Quercus laevis*) and a moderate to dense groundcover of mostly grasses and herbs, sometimes with scattered patches of low shrubs. The low shrub layer, if present, includes saw palmetto, dwarf huckleberry, pricklypear, and gopher apple. The diverse herbaceous layer is typically dominated by wiregrass (*Aristida stricta*). Sandhills occur on crests and slopes of rolling hills and ridges with steep or gentle topography. Soils are deep, marine-deposited, often yellowish sands that are well-drained and relatively infertile.

Sandhill appears in the 1940 aerial photographs as a mottled white and gray area with inclusions of smooth darker gray flatwoods.

Current Conditions:
A small sandhill is mapped on the Joshua Creek Tract, just north of the Phillips Road entrance. This sandhill contains several inclusions of scrubby flatwoods, which are visible as smooth dark gray signatures on the 1940 aerial photographs. About 20% of the historic sandhill is currently mapped as semi-improved pasture. The open canopy consists of scattered longleaf pine with an understory of sparse turkey oak and occasional cabbage palm. The short shrub layer includes netted pawpaw, dwarf huckleberry, gopher apple, coastalplain staggerbush, saw palmetto, and shiny blueberry. Herbs include bluestem, wiregrass, coastalplain chaffhead,

tall elephantsfoot, slender flattop goldenrod, rough hedgehyssop, bahiagrass, whitetop aster (*Sericocarpus tortifolius*), lopsided indiangrass, queen's delight, and coastalplain dawnflower (*Stylisma patens*). Other notable plant species include sandhill milkweed (*Asclepias humistrata*), Florida bear grass (*Nolina atopocarpa*), pineywoods dropseed (*Sporobolus junceus*), Florida speargrass (*Piptochaetium avenaciodes*), Florida greeneyes (*Berlandiera subacaulis*), ciliate ruellia (*Ruellia ciliosa*), rabbitbells (*Crotalaria roundifolia*), pineland daisy (*Chaptalia tomentosa*), and butterfly milkweed (*Asclepias tuberosa*).

Fire Regimes:
Sandhills depend on frequent, low-intensity fires to maintain a diverse herbaceous layer and to reduce hardwood invasion. Sandhills naturally burn every 1 to 3 three years, ignited by lightning in late spring and early summer. These fires reduce hardwood encroachment and stimulate regeneration of longleaf pines and seed germination of herbs. Without frequent fires, sandhills will succeed to xeric hammock.

Management Needs:
Management of sandhill should focus on the use of frequent prescribed fire and the maintenance of wiregrass to carry the fire. Existing longleaf pine should be retained to allow for natural regeneration and needle cast that will help carry fire. Roller chopping, or other mechanical site preparation is not recommended due to the fragility of groundcover vegetation under xeric conditions. Frequent, low-intensity fires maintain a diverse herbaceous layer and provide mineral soils for longleaf pine regeneration. Prescribed fires should be initiated as soon as fuel levels allow, every 1 to 3 years.

L. Scrub

Description:
Scrub is a community composed of evergreen shrubs, with or without a canopy of sand pine (*Pinus clausa*), and is found on dry, infertile, sandy ridges. The tall and short shrub layers are moderate to dense and dominated by scrub oaks: sand live oak, Chapman's oak (*Quercus chapmanii*), and myrtle oak (*Quercus myrtifolia*). Other shrubs such as rusty staggerbush and saw palmetto may be common. The herbaceous layer is sparse with sandyfield beaksedge (*Rhynchospora megalocarpa*) and lichens (*Cladina* spp.).

Scrub appears in the 1940 aerial photographs as a rough textured, medium to light gray area dappled with white in areas of open sand.

Current Conditions:
A small amount of scrub occurs in the southwestern portion of the Joshua Creek Tract. Most of this scrub remains intact. About 8% of the historic scrub is currently mapped as improved pasture. The open canopy contains occasional sand pine. The tall and short shrub layer is moderate to dense with rusty staggerbush, fetterbush, Chapman's oak, sand live oak, and myrtle oak. Other occasional shrubs include gopher apple and saw palmetto. The herbaceous layer is sparse with sandyfield beaksedge, Piedmont blacksenna (*Seymeria pectinata*), and lichens. The scrub on this state forest is transitional to scrubby flatwoods and some areas may have a variable amount of wiregrass. Occasional epiphytes include ballmoss and Spanish moss.

Fire Regimes:
Scrub fire regimes are highly variable, depending on landscape settings and dominant vegetation. Current scientific research suggests oak-dominated scrub would have naturally burned every 6 to 19 years. Scrub fires are often high intensity and require careful application.

Management Needs:
A mosaic of scrub of varying shrub heights would be desirable. Encourage fires from adjacent mesic flatwoods and scrubby flatwoods to burn into the scrub. A fire prescription targeting the scrub should be used if shrub height or density, or bare soil percentage are outside of desired ranges. Mechanical treatments should be used only if necessary, to burn safely or achieve desired conditions. Although chopping may reduce shrub cover in problem areas, it also reduces native groundcover and increases weedy species.

M. Scrubby Flatwoods

Description:
Scrubby flatwoods are characterized by a canopy of pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of open white sand. Canopy species typically consist of longleaf pine and slash pine. The shrub layer consists of one or more of the four scrub oaks: sand live oak, myrtle oak, Chapman's oak, and scrub oak (*Quercus inopina*). Other typical shrubs include tarflower, blue huckleberry, dwarf huckleberry, Atlantic St. John's wort, fourpetal St. John's wort, rusty staggerbush, fetterbush, running oak (*Quercus elliottii*), dwarf live oak, winged sumac, saw palmetto, and shiny blueberry. The herbaceous groundcover is patchy and usually includes some wiregrass. Other herbs include broomsedge bluestem, bottlebrush threeawn, coastalplain chaffhead, witchgrasses, dogfennel, Elliott's milkpea, rough hedgehyssop, pinebarren frostweed (*Helianthemum corymbosum*), Piedmont pinweed, narrowleaf silkgrass, rustweed (*Polypremum procumbens*), bracken fern, blackroot, beaksedges, sweet goldenrod, and lopsided indiangrass. Vines are occasionally present, including greenbriers and muscadine.

Scrubby flatwoods appear in the 1940 aerial photographs as a smooth medium to light gray area with a small amount of texture and more open white sand than in adjacent mesic flatwoods.

Current Conditions:
Several areas of intact scrubby flatwoods occur on the Joshua Creek Tract. These communities are quite variable in species density and composition, due to different areas having scrub or xeric hammock inclusions. Scrub inclusions typically lack wiregrass and have a nearly continuous cover of scrub oaks. Xeric hammock inclusions have a closed or nearly closed canopy of sand live oak. Some large areas of historical scrubby flatwoods on the western portion of the Joshua Creek Tract have been converted to pasture.

The open canopy typically consists of sand pine and longleaf pine. Areas with more fire suppression tend to have a sparse to moderate subcanopy of sand live oak. Tall shrubs are present in some areas and include rusty staggerbush, fetterbush, wild olive (*Osmanthus americanus*), Chapman's oak, sand live oak, and myrtle oak. In addition to the tall shrub

species, the short shrub layer includes netted pawpaw, tarflower, dwarf huckleberry, gallberry, gopher apple, wax myrtle, saw palmetto, and deerberry.

The herbaceous layer is usually sparse and includes wiregrass, coastalplain chaffhead, fragrant eryngo (*Eryngium aromaticum*), lesser Florida spurge (*Euphorbia polyphylla*), rough hedgehyssop, whitehead bogbutton, Piedmont pinweed, skyblue lupine (*Lupinus diffusus*), rose rush (*Lygodesmia aphylla*), beargrasses (*Nolina* spp.), narrowleaf silkgrass, bracken fern, sandyfield beaksedge, whitetop aster, Piedmont blacksenna, sweet goldenrod, queen's delight, and Adam's needle (*Yucca filamentosa*). Vines are sparse and include bristly greenbrier. Occasional epiphytes include ballmoss and Spanish moss.

Fire Regimes:
Scrubby flatwoods natural fire regime ranges from 3 to 15 years, and prescribed fire regimes generally range from 3 to 8 years. Historically scrubby flatwoods likely burned along with the adjacent mesic flatwoods. Sparse groundcover and incombustible scrub oak leaf litter may reduce the occurrence of fires leading to a slightly longer average fire return interval than is the case for mesic flatwoods.

Management Needs:
Fire from adjacent mesic flatwoods should be allowed to burn into the scrubby flatwoods. A fire prescription targeting the scrubby flatwoods should be considered if this natural community does not burn after repeated fires in the adjacent mesic flatwoods. If the scrubby flatwoods are invaded by undesirable hardwoods a hot summer burn would be best.

N. Wet Flatwoods

Description:
Wet flatwoods are relatively open-canopy forests of pine trees with a thick shrubby understory and very sparse ground cover, or a fire maintained, sparse understory and dense ground cover of hydrophytic herbs. This community often occurs in the ecotones between mesic flatwoods and wet prairies, dome swamps, or strand swamps. Wet flatwoods also occur in broad, low flatlands, often in a mosaic with these communities. Many wet flatwoods in the St. Johns River floodplain are the “cabbage palm” variant with frequent cabbage palms under a canopy of slash pine with a sparse herbaceous layer.

Wet flatwoods occur on relatively flat, poorly drained land with soils that are generally 1 to 3 feet of acidic sands overlying an organic hardpan or clay layer. The hardpan substantially reduces the percolation of water below and above its surface and therefore the wet flatwoods can be inundated for one or more months per year.

The pine canopy typically consists of one or a combination of longleaf pine, slash pine, and pond pine. The subcanopy contains scattered sweetbay, swamp bay, loblolly bay, cabbage palm, pond cypress, dahoon, and/or wax myrtle. In addition to subcanopy species, the moderate shrub layer includes gallberry, fetterbush, and saw palmetto. Some typical herbs include wiregrass, blue maidencane (*Amphicarpum muhlenbergianum*), and/or hydrophytic species such as coastalplain yellow-eyed grass (*Xyris ambigua*), Carolina redroot, and beaksedges (*Rhynchospora chapmanii, R. latifolia, R. compressa*). Other notable plant species include hooded pitcher plant (*Sarracenia minor*), Osceola’s plume (*Stenanthium*

densum), pine lily (*Lilium catebaei*), glade lobelia (*Lobelia glandulosa*), and orange milkwort (*Polygala lutea*).

Current Conditions:
Wet flatwoods occur on the Joshua Creek and Turkey Creek Tracts throughout the state forest. Most of the surveyed flatwoods are in fair to good condition. In wetter areas with fire exclusion, baygall species tend to invade, especially loblolly bay in the subcanopy. Inclusions of various communities are common in wet flatwoods throughout the state forest. Basin swamp, depression marsh, and wet prairie inclusions are common in larger areas of wet flatwoods. The wet prairie inclusions are typically treeless plains with a moderate to dense groundcover of big carpetgrass and sand cordgrass. Wet flatwoods often grade into mesic flatwoods in several areas on the Joshua Creek Tract. Some portions of the extensive hydric hammock on the Turkey Creek Tract contain large elevated areas of wet flatwoods. Most of the historical wet flatwoods on CHBSF remain intact, though some areas have been converted to pasture.

Wet flatwoods canopies are mostly open with slash pine, longleaf pine, and pond pine. The subcanopy may be sparse to dense with red maple, common persimmon, loblolly bay, sweetgum, sweetbay, wax myrtle, swamp tupelo, swamp bay, swamp laurel oak, water oak, live oak, cabbage palm, pond cypress, and American elm. The shrub layer is frequently dense with wax myrtle. Other common shrubs include silverling, American beautyberry, common persimmon, blue huckleberry, roundpod St. John's wort, St. Andrew's cross, Atlantic St. John's wort, fourpetal St. John's wort, gallberry, fetterbush, sawtooth blackberry (*Rubus pensilvanicus*), saw palmetto, and deerberry.

The herbaceous layer is highly variable in density and composition, depending on hydrology, fire history, and inclusions present. In addition to wiregrass, other common herbs include blue maidencane, bluestems, big carpetgrass, bracken fern, beaksedges, and Virginia chain fern. Other occasional herbs include toothed midsorus fern, longleaf woodoats, flattened pipewort (*Eriocaulon compressum*), Mohr's thoroughwort, roundleaf thoroughwort, slender flattop goldenrod, southern umbrellasedge (*Fuirena scirpoidea*), Elliott's milkpea, manyflower marshpennywort, Carolina redroot, whitetop aster, cinnamon fern, rosy camphorweed, stinking camphorweed, yellow milkwort, blackroot, water dawnflower (*Stylisma aquatica*), yellow hatpins, maiden fern, and netted chain fern.

Vines are frequent with yellow jessamine, Virginia creeper, earleaf greenbrier, bristly greenbrier, eastern poison ivy, and muscadine. Occasional epiphytes include golden polypody, Bartram's air-plant, southern needleleaf, and Spanish moss.

Fire Regimes:
Historically, the fire return interval in wet flatwoods is 3 to 10 years. For management purposes, prescribed fires may be more advisable on a 2 to 4-year cycle. This reduces woody encroachment, sustains herbaceous species, and aids in preventing heavy fuel loads that can lead to catastrophic wildfires.

Management Needs:
Prescribed burns of the surrounding mesic flatwoods should be allowed to burn across these

areas every 2 to 4 years. Use of heavy equipment should be avoided as this can eliminate herbaceous groundcover and alter hydrology. Wet flatwoods that have been converted to pasture would require groundcover restoration if the goal is to return these to a natural state.

O. Managed Communities

Pine plantations and pastures represent vegetative communities that the FFS manages as integral components of the agency's multi-use management approach. These managed communities provide both ecological benefits, such as wildlife habitat and ground and surface water filtration, as well as opportunities for generating revenue that can be used to help offset management costs. Management of plantations and pastures within the state forests is conducted to further ensure compatibility with other management goals and objectives.

1. Pasture - Improved

Description:

Improved pastures are dominated by planted non-native or domesticated native forage species and evidence of current or recent pasture activity and/or cultural treatments (mowing, grazing, burning, fertilizing). Improved pastures have been cleared of their native vegetation. Most improved pastures in Florida are planted with bahiagrass and to a lesser extent with Bermudagrass or pangolagrass (*Digitaria eriantha*). Weedy native species are often common in improved pastures in Florida and include dogfennel, many species of flatsedge, carpetgrasses (*Axonopus* spp.), crabgrasses (*Digitaria* spp.), and rustweed, among many others.

Current Conditions:

Improved pastures occur throughout the forest with extensive portions replacing historical mesic flatwoods and floodplain marsh on the Turkey Creek and Joshua Creek Tracts. Bahiagrass dominates the herbaceous layer. Other weedy herbs are present such as bushy bluestem, purple bluestem, broomsedge bluestem, big carpetgrass, Mexican tea (*Chenopodium ambrosioides*), dogfennel, slender flattop goldenrod, rustweed, and blackroot. Depending on recent management and time elapsed since the area was last grazed, shrubs may be scattered including sand blackberry (*Rubus cuneifolius*), groundsel tree, common persimmon, and wax myrtle.

Fire Regimes:

Not a fire dependent community.

Management Needs:

Improved pastures have undergone enormous alteration from the natural state. Intensive groundcover restoration would be needed if the goal is to return these to mesic flatwoods or floodplain marsh communities. Currently the improved pastures are part of the cattle leases on the forest and are maintained by cattle grazing, mowing, and non-native plant control.

2. Pasture – Semi-improved

Description:

Semi-improved pastures are dominated by a mix of planted non-native or domesticated native forage species and native groundcover, due to an incomplete conversion to pasture,

not regeneration. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted in non-native or domesticated native forage species, but still retain scattered patches of native vegetation with natural species composition and structure (most often small areas of mesic flatwoods) among the pastured areas. The planted areas are usually dominated by bahiagrass and can resemble improved pastures. Seeding of bahiagrass can also occur within areas of native groundcover.

Current Conditions:
A few areas of semi-improved pasture occur on the state forest, mostly in historical pine flatwoods. These areas typically have a high coverage of bahiagrass, mixed with small areas of native groundcover. Canopy and subcanopy species are very scattered and include red cedar, slash pine, longleaf pine, pond pine, sand live oak, and cabbage palm. Shrubs are scattered and include netted pawpaw, groundsel tree, American beautyberry, common persimmon, St. Andrew's cross, fourpetal St. John's wort, fetterbush, wax myrtle, winged sumac, sawtooth blackberry, saw palmetto, and shiny blueberry.

In addition to bahiagrass, less frequent herbs include blue maidencane, bluestem, broomsedge bluestem, wiregrass, big carpetgrass, blue mistflower, Colombian waxweed (*Cuphea carthagenensis*), Bermudagrass, tall elephantsfoot, dogfennel, roundleaf thoroughwort, slender flattop goldenrod, southern umbrellasedge, Elliott's milkpea, soft rush, Carolina redroot, frog's bit (*Limnobium spongia*), sensitive briar, pricklypear, turkey tangle fogfruit, rosy camphorweed, yellow milkwort, bracken fern, blackroot, beaksedges, licoriceweed (*Scoparia dulcis*), knotroot foxtail (*Setaria parviflora*), sand cordgrass, St. Augustine grass (*Stenotaphrum secundatum*), queen's delight, yellow hatpins, and Canadian germander (*Teucrium canadense).*

Fire Regimes:
See pine flatwoods natural community descriptions.

Management Needs:
Currently the semi-improved pastures are managed with the same fire regime as required by the historic community, to maintain the existing native species.

P. Other Altered Landcover Types

Current Conditions:
At CHBSF, ruderal areas include abandoned pasture, artificial ponds, developed areas, ditches/canals, and roads. Non-native invasive plants, especially Caesar's weed, are common in all of these areas, especially along fence lines and cattle trails.

Abandoned pasture – An abandoned pasture is located on the Joshua Creek Tract within mesic flatwoods. Bahiagrass is the dominant herb, with occasional weedy species including spadeleaf, tread softly (*Cnidoscolus stimulosus*), and slender flattop goldenrod.

Artificial pond – Artificial ponds are present on the Joshua Creek and Turkey Creek Tracts in historical depression marsh and basin swamp.

Developed – The parking area at the Phillips Road entrance on the Joshua Creek Tract is

mapped as a developed area.

Ditch/canal – Several ditches and canals have been dug within the state forest in the past for road development and creek channelization. Many of the ditches and canals create artificial transitions between communities, especially between hydric hammock and floodplain marsh. Water hyacinth is often present in the canals separating hydric hammock and floodplain marsh.
Road - All forest roads and some service roads (> 5m wide) are mapped. Additional vehicle trails are located throughout the forest.

Fire Regimes:
Not a fire dependent community.

Management Needs:
It may not be practical or desirable to restore some of the ruderal habitats (e.g., artificial ponds, roads) to the historical natural community. Native trees and shrubs should be used in landscaping, and these areas should be monitored for non-native invasive plants.

VIII. References

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IX. Glossary of Abbreviations

ARC .....Acquisition and Restoration Council
ARM .....Archaeological Resource Management
BMAP .....Basin Management Action Plan
BMP .....Best Management Practices
CARL.....Conservation and Recreation Lands
CHBSF.....Charles H. Bronson State Forest
CHBSFWMA.....Charles H. Bronson State Forest Wildlife Management Area
DEP.....Department of Environmental Protection
DHR.....Division of Historical Resources

DRP.....Division of Recreation and Parks
F.A.C.....Florida Administrative Code
FDACS.....Florida Department of Agriculture and Consumer Services
FFS.....Florida Forest Service
FNAI .....Florida Natural Areas Inventory
F.S. .....Florida Statute
FTA.....Florida Trail Association
FWC.....Florida Fish and Wildlife Conservation Commission
LBESF.....Little Big Econ State Forest
NPS .....National Park Service
NRCS .....Natural Resources Conservation Service
SJRWMD .....St. Johns River Water Management District
OALE.....DACS Office of Agricultural Law Enforcement
OFW.....Outstanding Florida Waters
TIITF.....Board of Trustees of the Internal Improvement Trust Fund
USFS .....United States Forest Service
USFWS .....United States Fish and Wildlife Service
WMA .....Wildlife Management Area
WMD .....Water Management District

CHARLES H. BRONSON STATE FOREST
2021 LAND MANGEMENT PLAN

EXHIBITS

Exhibit A

Ten-Year Management Accomplishment Summary

Charles H. Bronson State Forest

10-Year Accomplishments

Timber Stand Improvement	Chopping	Acres	690

Timber Inventory	Inventory Update	Acres	10,362
	Plots	No.	92

Invasive Control	Caesar Weed	Acres	7
	Chinese Tallow	Acres	3
	Cogon Grass	Acres	2
	Brazilian Pepper	Acres	1
	China Berry	Acres	1
	Japanese Climbing Fern	Acres	<1
	Air Potato	Acres	<1
	Tropical Soda Apple	Acres	<1
	Old World Climbing Fern	Acres	<1
	Wild Taro	Acres	<1

Fire	Wildfire	No.	2
		Acres	1,810
	Prescribed Burning	Acres	5,896

Recreation	Day Use Estimated Forest Visitors	No.	54,861
	Overnight Camping	No.	160
	Annual Entrance Pass	No.	1

Roadwork	Roads Graded	Miles	4
	Roads Rebuilt	Miles	1
	Bridge Built	No.	2
	Bridge Repaired	No.	2
	Culverts Installed	No.	43
	Low Water Crossing	No.	5

Boundary Maintenance	Maintenance/Marking	Miles	49

I&E Activities	Programs/Tours	No.	14
	Education/Research	No.	1

Other Activities	Field Mowed	Acres	1,534
	Pasture Mowed	Acres	76
	Fence line Mowed	Miles	5
	Firelines Disked	Miles	16
	Road Mowed	Miles	37
	Horse Trail marked	Miles	33
	Trees trimmed	No.	2
	Signs Installed/Repaired	No.	2
	Archaeological Sites Recorded	No.	4
	Archaeological Sites Monitored	No.	11
	Hogs Trapped	No.	736
	Turkey Creek Wetlands Restoration	Acres	2,892
	Threatened Pine Lily Inventory	No.	93
	Cattle lease area clean-up (plastic removed from site)	Tons	19
	DOT Bridge Inspection	No.	2

Exhibit B

Boundary and Road Maps

Florida Forest Service

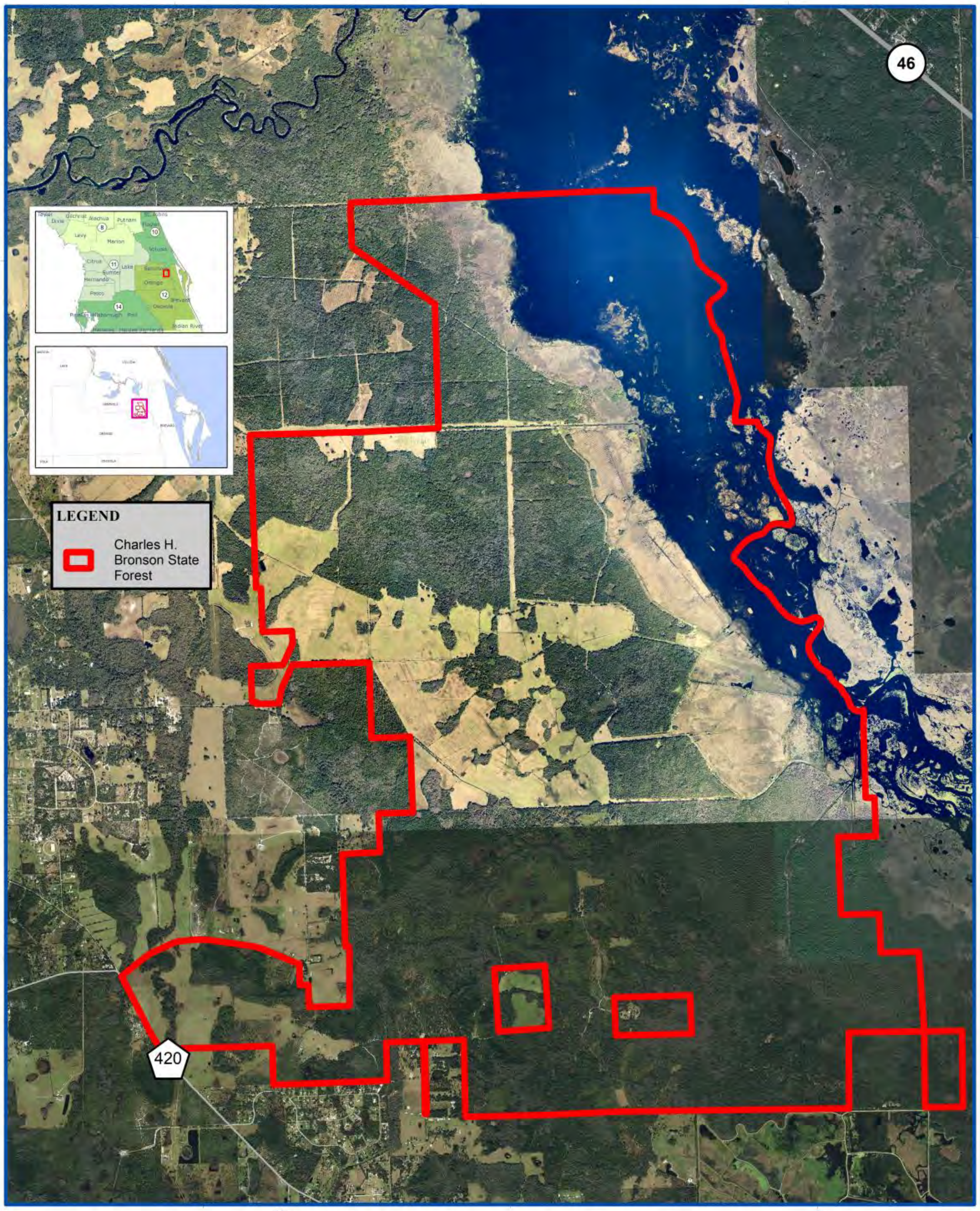
Charles H. Bronson State Forest

Boundary Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

DISCLAIMER:

Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers



0.5 0.25 0 0.5 Miles

N W E S

1,000 500 0 1,000 2,000 Yards

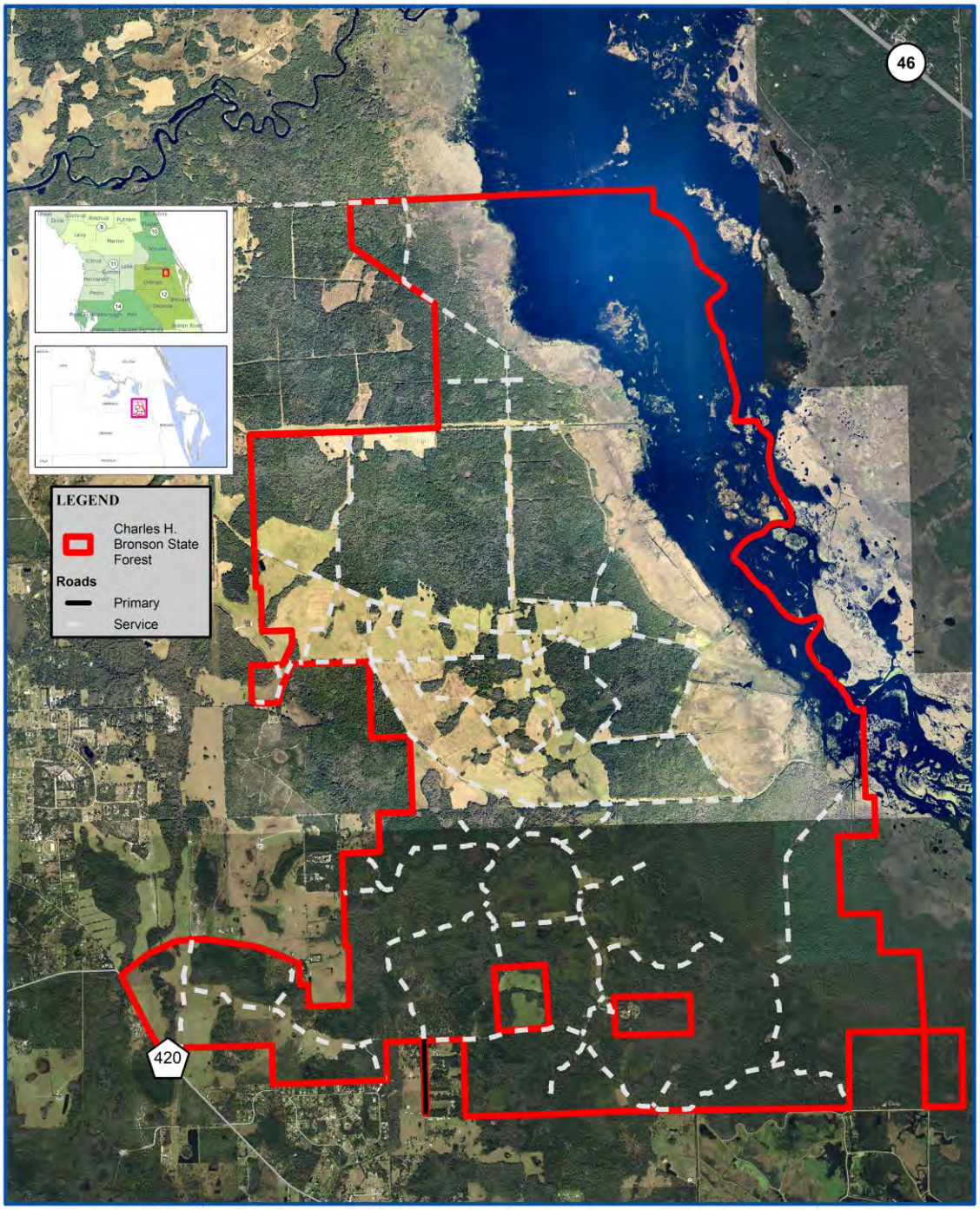
Map Month/Year: August 2019

Florida Forest Service

Charles H. Bronson State Forest

Road Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum



Map Month/Year: August 2019

Exhibit C

Optimal Management Boundary Map

Florida Forest Service

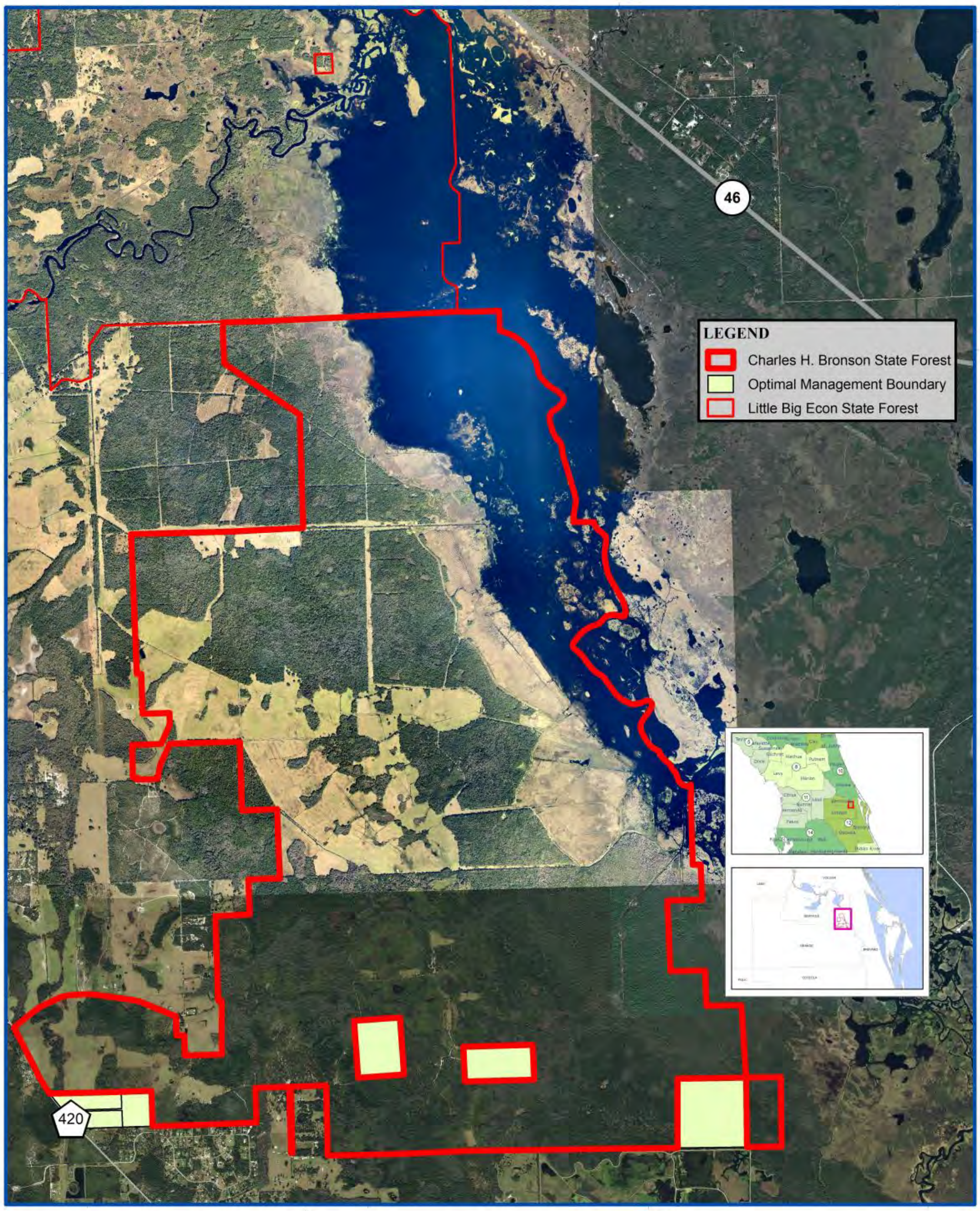
Charles H. Bronson State Forest

Optimal Management Boundary Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

DISCLAIMER:
This map was created by the Florida Forest Service (FFS) Geographic Information System (GIS) staff using data from multiple sources. Maps created by FFS are designed for division use and for use by related public agencies; these products are not legal descriptions or documents.
The Florida Forest Service reserves the right to correct, update, modify, or replace GIS products without notification.
The Florida Forest Service makes no warranty, either written or implied as to the accuracy or completeness of the information in this map.

Managed Area boundaries courtesy of the Florida Natural Areas Inventory
Formally USed Defense Sites [FUDS] from the US Army Corps of Engineers



0.5 0.25 0 0.5 Miles

N W E S

Map Month/Year: August 2019

1,000 500 0 1,000 2,000 Yards

Exhibit D

Facilities, Recreation, and Improvements Map

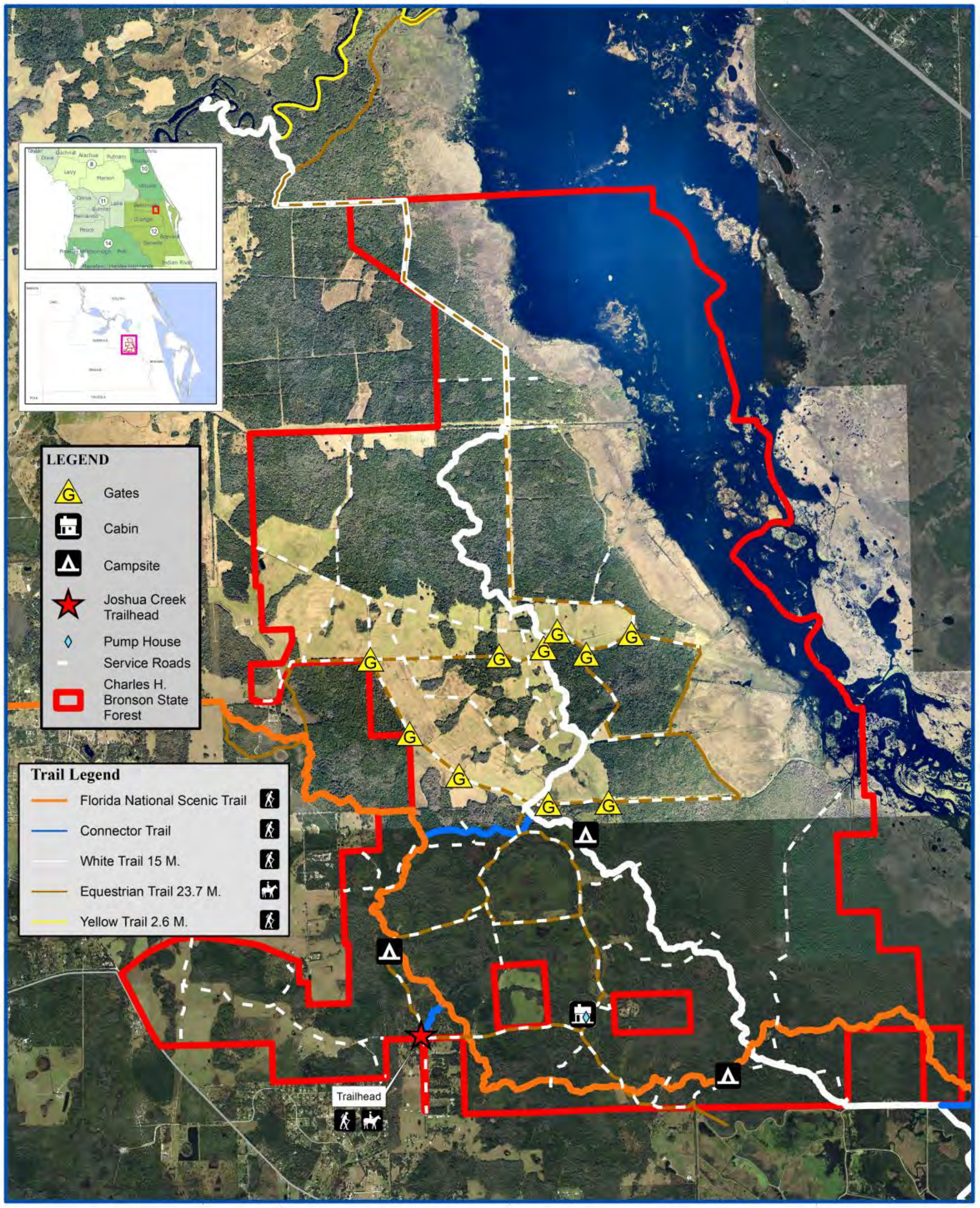
Florida Forest Service

Charles H. Bronson State Forest

Facilities, Recreation and Improvements Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

Managed Area boundaries courtesy of the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS) from the US Army Corps of Engineers



0.5 0.25 0 0.5 Miles

N W E S

Map Month/Year: April 2021

1,000 500 0 1,000 2,000 Yards

Exhibit E

Tract Map

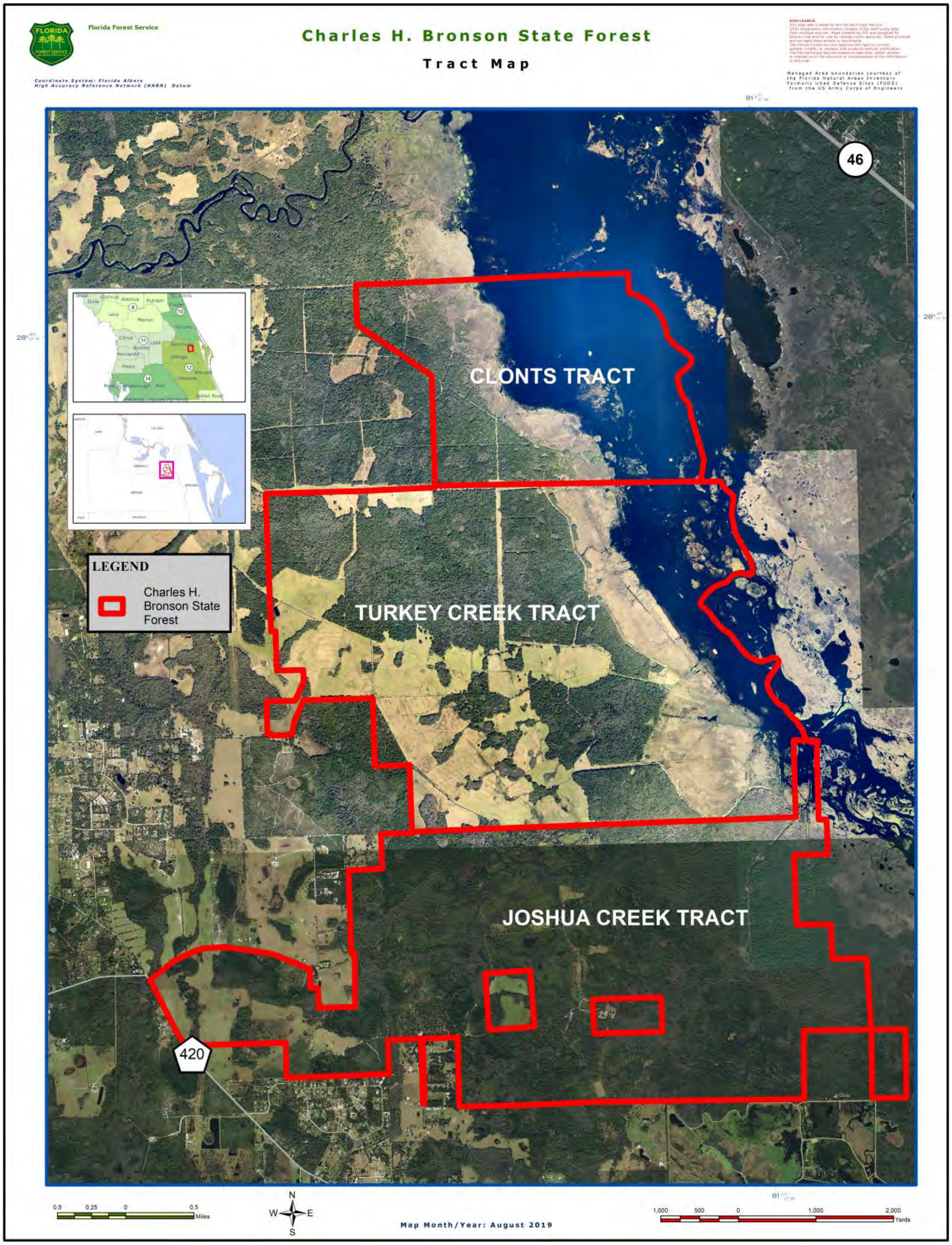

Florida Forest Service
Charles H. Bronson State Forest
Tract Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area boundaries courtesy of the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS) from the US Army Corps of Engineers
46
CLONTS TRACT
TURKEY CREEK TRACT
JOSHUA CREEK TRACT
420
LEGEND
Charles H. Bronson State Forest
0.5 0.25 0 0.5 Miles
N W E S
Map Month/Year: August 2019
1,000 500 0 1,000 2,000 Yards

Exhibit F

Proximity to Significant Managed Lands

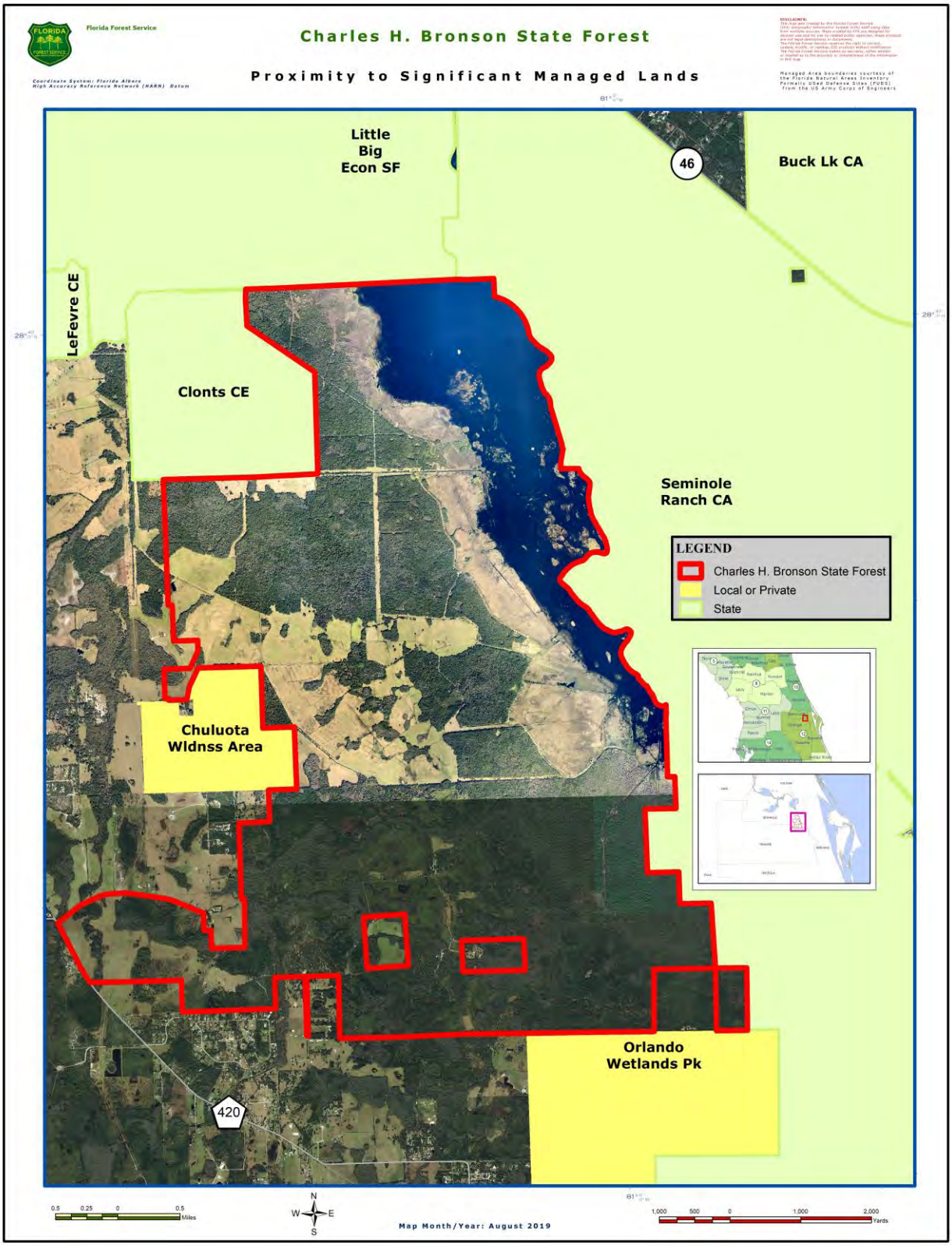

Florida Forest Service
Charles H. Bronson State Forest
Proximity to Significant Managed Lands
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Little
Big
Econ SF
46
Buck Lk CA
LeFevre CE
Clonts CE
Seminole
Ranch CA
LEGEND
Charles H. Bronson State Forest
Local or Private
State
Chuluota
Wldnss Area
Orlando
Wetlands Pk
420
N
W
E
S
0.5 0.25 0 0.5 Miles
1,000 500 0 1,000 2,000 Yards
Map Month/Year: August 2019

Exhibit G

Department of State Report on Archaeological and Historical Sites

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

January 14, 2019

Patti Anderson
Land Management Plan Coordinator
Florida Forest Service
Florida Department of Agriculture and Consumer Services
Phone: (850) 681-5889
Patricia.Anderson@FreshFromFlorida.com

Re: Charles H. Bronson State Forest

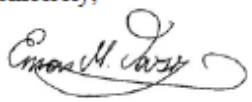
In response to your inquiry of January 14, 2019, the Florida Master Site File lists 14 archeological sites, and one standing structure recorded at the designated area for Charles H. Bronson State Forest, Seminole County, Florida.

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

- **This search area may contain *unrecorded* archaeological sites, historical structures or other resources even if previously surveyed for cultural resources.**
- **Because vandalism and looting are common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.**
- **While many of our records document historically significant resources, the documentation of a resource at the Florida Master Site File does not necessarily mean the resource is historically significant.**
- **Federal, state and local laws require formal environmental review for most projects. This search DOES NOT constitute such a review. If your project falls under these laws, you should contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333.**

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

Sincerely,



Eman M. Vovsi, Ph.D.
Florida Master Site File
Eman.Vovsi@DOS.MyFlorida.com

Florida Master Site File

AR=14
SS=1
CM=0
RG=0
BR=0
Total=15

Cultural Resource Roster

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
SE00022	AR	THICKET MOUND				
SE00023	AR	HEIFFER MOUND		Human Remains May Be Present		
SE00024	AR	SADDLE MOUND				
SE00029	AR	NOAH MOUND				
SE00030	AR	MOCCASIN MOUND				
SE00032	AR	FLYING TURTLE MOUND		Human Remains May Be Present		
SE00090	AR	JACOB'S MOUND				
SE01091	AR	NELADOR MOUND	GENEVA (GV)			
SE01092	AR	TURKEY MOUND	GENEVA (GV)			
SE01954	AR	Grandma's Grove			Eligible	
SE02745	AR	Orange Tree Mound			Eligible	
SE02795	AR	Panther Tracks Shell Midden				
SE02796	AR	Stipkovits- DiCecco Mound	Chuluota			
SE02825	AR	Raccoon Shell Midden	Chuluota			
SE02827	SS	Turkey Creek Windmill	At end of Curryville RD, Chuluota	c1958		

Exhibit H

Management Procedures
for
Archaeological and Historical Sites and Properties on State Owned or Controlled Lands

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties
(revised September 2019)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in-depth information can be found at:
https://dos.myflorida.com/historical/preservation/compliance-and-review/regulations-guidelines/

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:
https://dos.myflorida.com/media/31392/minimum_review_documentation_requirements.pdf

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Robin Jackson
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Email: Robin.Jackson@DOS.MyFlorida.com
Phone: (850) 245-6496
Toll Free: (800) 847-7278
Fax: (850) 245-6439

Exhibit I

Soil Types Map and Descriptions

Florida Forest Service

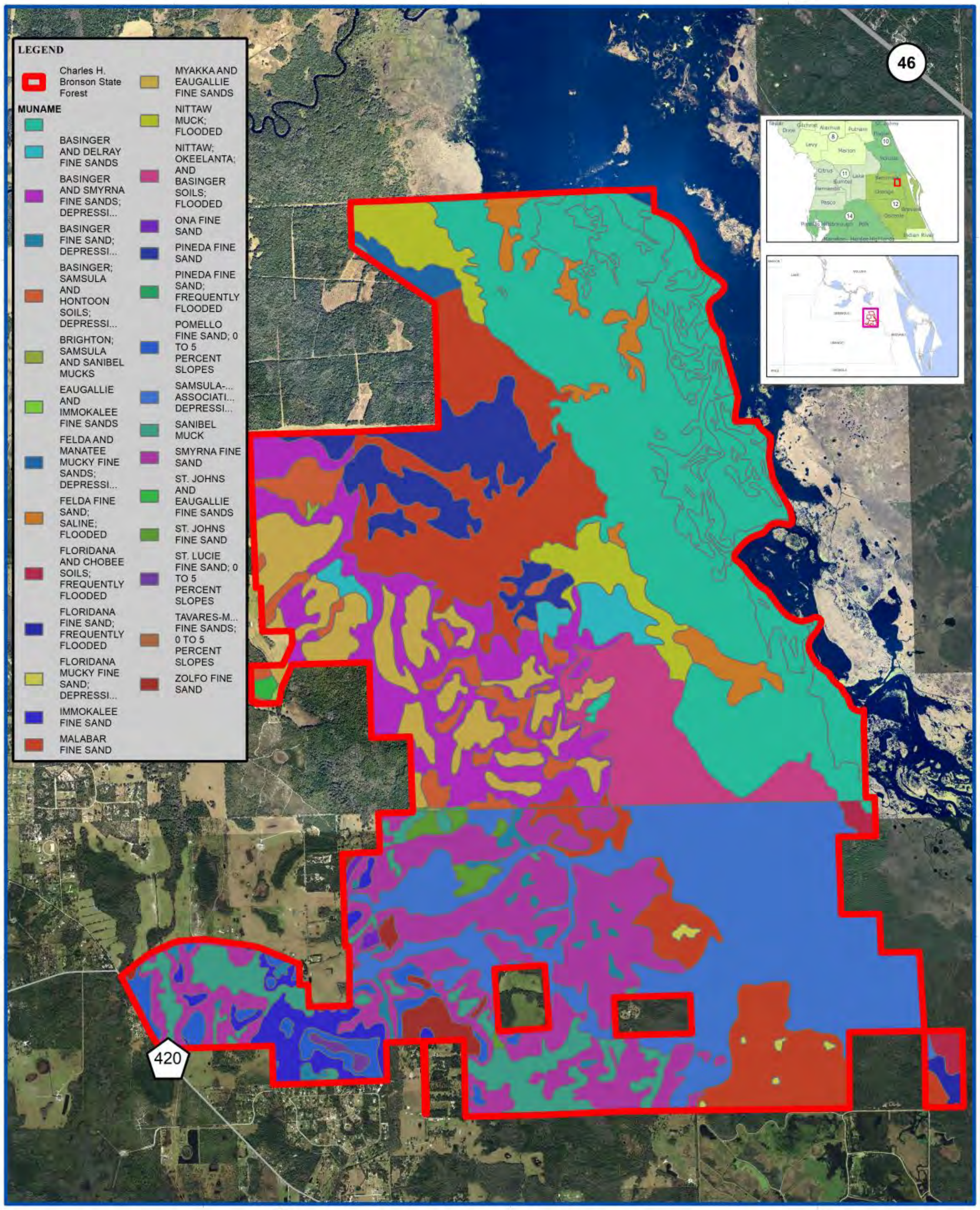
Charles H. Bronson State Forest

Soil Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

DISCLAIMER:

Managed Area boundaries courtesy of the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS) from the US Army Corps of Engineers



0.5 0.25 0 0.5 Miles

1,000 500 0 1,000 2,000 Yards

Map Month/Year: August 2019

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Basinger fine sand, frequently ponded, 0 to 1 percent slopes	89.6	0.8%
11	Floridana and Chobee soils, frequently flooded	50.9	0.4%
16	Floridana fine sand, 0 to 2 percent slopes, frequently flooded	25.4	0.2%
17	Floridana mucky fine sand, frequently ponded, 0 to 1 percent slopes	14.6	0.1%
20	Immokalee fine sand	206.3	1.8%
23	Malabar fine sand	522.7	4.4%
26	Ona fine sand, 0 to 2 percent slopes	14.3	0.1%
31	Pineda fine sand, frequently flooded	0.9	0.0%
34	Pomello fine sand, 0 to 5 percent slopes	181.6	1.5%
37	St. Johns fine sand	56.0	0.5%
38	St. Lucie fine sand, 0 to 5 percent slopes	16.6	0.1%
41	Samsula-Hontoon-Basinger association, depressional	1,588.2	13.5%
42	Sanibel muck	388.0	3.3%
44	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	1,329.0	11.3%
54	Zolfo fine sand, 0 to 2 percent slopes	98.8	0.8%
Subtotals for Soil Survey Area		**4,582.9**	**38.9%**
Totals for Area of Interest		**11,790.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Basinger and Delray fine sands	145.7	1.2%
10	Basinger, Samsula, and Hontoon soils, depressional	289.0	2.5%
11	Basinger and Smyrna fine sands, depressional	854.5	7.2%
13	EauGallie and Immokalee fine sands	3.6	0.0%
14	Felda fine sand, saline, frequently flooded	208.6	1.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
15	Felda and Manatee mucky fine sands, depressional	61.5	0.5%
17	Brighton, Samsula, and Sanibel mucks	7.2	0.1%
18	Malabar fine sand, 0 to 2 percent slopes	906.8	7.7%
19	Manatee, Floridana, and Holopaw soils, frequently flooded	2,242.3	19.0%
20	Myakka and EauGallie fine sands	604.8	5.1%
22	Nittaw muck, occasionally flooded	358.5	3.0%
23	Nittaw, Okeelanta, and Basinger soils, frequently flooded	522.2	4.4%
25	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	504.8	4.3%
29	St. Johns and EauGallie fine sands	15.7	0.1%
31	Tavares-Millhopper complex, 0 to 5 percent slopes	3.6	0.0%
99	Water	424.2	3.6%
Subtotals for Soil Survey Area		**7,153.0**	**60.7%**
Totals for Area of Interest		**11,790.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Bluff sandy clay loam	0.2	0.0%
24	Fluvaquents	14.6	0.1%
99	Water	39.7	0.3%
Subtotals for Soil Survey Area		**54.6**	**0.5%**
Totals for Area of Interest		**11,790.5**	**100.0%**

Component Legend

This report presents general information about the map units and map unit components in the selected area. It shows map unit symbols and names and the components in each map unit. It also shows the percent of the components in the map units, the kind of component, and the slope range of each component.

Report—Component Legend

Component Legend–Orange County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
3—Basinger fine sand, frequently ponded, 0 to 1 percent slopes	33,228						
		90	Basinger	Series	0.0	0.5	1.0
11—Floridana and Chobee soils, frequently flooded	16,264						
		74	Floridana	Series	0.0	1.0	2.0
		24	Chobee	Series	0.0	1.0	2.0
16—Floridana fine sand, 0 to 2 percent slopes, frequently flooded	4,317						
		86	Floridana	Series	0.0	0.5	1.0
17—Floridana mucky fine sand, frequently ponded, 0 to 1 percent slopes	2,175						
		85	Floridana	Series	0.0	0.5	1.0
20—Immokalee fine sand	19,908						
		82	Immokalee, non-hydric	Series	0.0	1.0	2.0
		10	Immokalee, hydric	Series	0.0	1.0	2.0
23—Malabar fine sand	20,658						
		60	Malabar, hydric	Series	0.0	1.0	2.0
		37	Malabar, non-hydric	Series	0.0	1.0	2.0
26—Ona fine sand, 0 to 2 percent slopes	5,187						
		85	Ona	Series	0.0	1.0	2.0
31—Pineda fine sand, frequently flooded	1,135						
		94	Pineda	Series	0.0	0.5	1.0
34—Pomello fine sand, 0 to 5 percent slopes	22,891						
		95	Pomello	Series	0.0	2.5	5.0

Component Legend–Orange County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
37—St. Johns fine sand	26,739						
		60	St. johns, non-hydric	Series	0.0	1.0	2.0
		30	St. johns, hydric	Series	0.0	1.0	2.0
38—St. Lucie fine sand, 0 to 5 percent slopes	3,823						
		90	St. lucie	Series	0.0	3.0	5.0
41—Samsula-Hontoon-Basinger association, depressional	30,158						
		47	Samsula	Series	0.0	0.5	1.0
		31	Hontoon	Series	0.0	0.5	1.0
		14	Basinger	Series	0.0	0.5	1.0
42—Sanibel muck	25,754						
		65	Sanibel, undrained	Series	0.0	0.5	1.0
		25	Sanibel, drained	Series	0.0	0.5	1.0
44—Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	145,161						
		76	Smyrna, non-hydric	Series	0.0	1.0	2.0
		20	Smyrna, hydric	Series	0.0	1.0	2.0
54—Zolfo fine sand, 0 to 2 percent slopes	14,080						
		85	Zolfo	Series	0.0	1.0	2.0

Component Legend–Seminole County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
9—Basinger and Delray fine sands	5,433						
		60	Basinger	Series	0.0	1.0	2.0
		32	Delray	Series	0.0	1.0	2.0
10—Basinger, Samsula, and Hontoon soils, depressional	22,896						
		58	Basinger	Series	0.0	1.0	2.0
		15	Samsula	Series	0.0	1.0	2.0
		15	Hontoon	Series	0.0	1.0	2.0
11—Basinger and Smyrna fine sands, depressional	8,124						
		63	Basinger	Series	0.0	1.0	2.0
		28	Smyrna	Series	0.0	1.0	2.0

Component Legend–Seminole County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
13—EauGallie and Immokalee fine sands	5,418						
		56	Eaugallie	Series	0.0	1.0	2.0
		35	Immokalee	Series	0.0	1.0	2.0
14—Felda fine sand, saline, frequently flooded	651						
		90	Felda, flooded	Series	0.0	1.0	2.0
15—Felda and Manatee mucky fine sands, depressional	5,063						
		56	Felda	Series	0.0	1.0	2.0
		38	Manatee	Series	0.0	1.0	2.0
17—Brighton, Samsula, and Sanibel mucks	3,140						
		47	Brighton, drained	Series	0.0	0.5	1.0
		35	Samsula, drained	Series	0.0	0.5	1.0
		15	Sanibel, drained	Series	0.0	0.5	1.0
18—Malabar fine sand, 0 to 2 percent slopes	1,526						
		85	Malabar	Series	0.0	1.0	2.0
19—Manatee, Floridana, and Holopaw soils, frequently flooded	8,475						
		61	Manatee, flooded	Series	0.0	1.0	2.0
		21	Floridana, flooded	Series	0.0	1.0	2.0
		15	Holopaw, flooded	Series	0.0	1.0	2.0
20—Myakka and EauGallie fine sands	29,547						
		58	Myakka	Series	0.0	1.0	2.0
		32	Eaugallie	Series	0.0	1.0	2.0
22—Nittaw muck, occasionally flooded	4,672						
		100	Nittaw, flooded	Series	0.0	1.0	2.0
23—Nittaw, Okeelanta, and Basinger soils, frequently flooded	7,891						
		45	Nittaw, flooded	Series	0.0	1.0	2.0
		34	Okeelanta, flooded	Series	0.0	1.0	2.0
		19	Basinger, flooded	Series	0.0	1.0	2.0

Component Legend–Seminole County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
25—Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	1,693						
		45	Pineda	Series	0.0	1.0	2.0
		40	Pineda, wet	Series	0.0	0.5	1.0
29—St. Johns and EauGallie fine sands	4,237						
		57	St. johns	Series	0.0	1.0	2.0
		36	Eaugallie	Series	0.0	1.0	2.0
31—Tavares-Millhopper complex, 0 to 5 percent slopes	14,603						
		63	Tavares	Series	0.0	3.0	5.0
		32	Millhopper	Series	0.0	3.0	5.0
99—Water	23,101						
		100	Water	Miscellaneous area			

Component Legend–Volusia County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
10—Bluff sandy clay loam	7,515						
		80	Bluff	Series	1.0	1.0	2.0
24—Fluvaquents	2,700						
		80	Fluvaquents	Taxon above family	0.0	1.0	2.0
99—Water	85,685						
		100	Water	Miscellaneous area			

Data Source Information

Soil Survey Area: Orange County, Florida
Survey Area Data: Version 15, Sep 13, 2018

Soil Survey Area: Seminole County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

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

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

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

Report—Map Unit Description (Brief, Generated)

Orange County, Florida

Map Unit: 3—Basinger fine sand, frequently ponded, 0 to 1 percent slopes

Component: Basinger (90%)

The Basinger component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 3 inches during January, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Smyrna (5%)

Generated brief soil descriptions are created for major soil components. The Smyrna soil is a minor component.

Component: Samsula (3%)

Generated brief soil descriptions are created for major soil components. The Samsula soil is a minor component.

Component: Floridana (2%)

Generated brief soil descriptions are created for major soil components. The Floridana soil is a minor component.

Map Unit: 11—Floridana and Chobee soils, frequently flooded

Component: Floridana (74%)

The Floridana component makes up 74 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Chobee (24%)

The Chobee component makes up 24 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Gator (2%)

Generated brief soil descriptions are created for major soil components. The Gator soil is a minor component.

Map Unit: 16—Floridana fine sand, 0 to 2 percent slopes, frequently flooded

Component: Floridana (86%)

The Floridana component makes up 86 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Holopaw (6%)

Generated brief soil descriptions are created for major soil components. The Holopaw soil is a minor component.

Component: Riviera (6%)

Generated brief soil descriptions are created for major soil components. The Riviera soil is a minor component.

Component: Gator (2%)

Generated brief soil descriptions are created for major soil components. The Gator soil is a minor component.

Map Unit: 17—Floridana mucky fine sand, frequently ponded, 0 to 1 percent slopes

Component: Floridana (85%)

The Floridana component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 3 inches during January, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 11 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Holopaw (5%)

Generated brief soil descriptions are created for major soil components. The Holopaw soil is a minor component.

Component: Felda (4%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Component: Gator (4%)

Generated brief soil descriptions are created for major soil components. The Gator soil is a minor component.

Component: Placid (2%)

Generated brief soil descriptions are created for major soil components. The Placid soil is a minor component.

Map Unit: 20—Immokalee fine sand

Component: Immokalee, non-hydric (82%)

The Immokalee, non-hydric component makes up 82 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during July, August. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Immokalee, hydric (10%)

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

Component: Wabasso (4%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Component: Pineda (4%)

Generated brief soil descriptions are created for major soil components. The Pineda soil is a minor component.

Map Unit: 23—Malabar fine sand

Component: Malabar, hydric (60%)

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

Component: Malabar, non-hydric (37%)

The Malabar, non-hydric component makes up 37 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Wabasso (3%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Map Unit: 26—Ona fine sand, 0 to 2 percent slopes

Component: Ona (85%)

The Ona component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (5%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Component: Immokalee (3%)

Generated brief soil descriptions are created for major soil components. The Immokalee soil is a minor component.

Component: Myakka (3%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Component: Pomello (2%)

Generated brief soil descriptions are created for major soil components. The Pomello soil is a minor component.

Component: EauGallie (2%)

Generated brief soil descriptions are created for major soil components. The EauGallie soil is a minor component.

Map Unit: 31—Pineda fine sand, frequently flooded

Component: Pineda (94%)

The Pineda component makes up 94 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during July, August. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Floridana (3%)

Generated brief soil descriptions are created for major soil components. The Floridana soil is a minor component.

Component: Wabasso (3%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Map Unit: 34—Pomello fine sand, 0 to 5 percent slopes

Component: Pomello (95%)

The Pomello component makes up 95 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges, coastal plains, The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 0 within 30 inches of the soil surface.

Component: Smyrna (3%)

Generated brief soil descriptions are created for major soil components. The Smyrna soil is a minor component.

Component: Tavares (1%)

Generated brief soil descriptions are created for major soil components. The Tavares soil is a minor component.

Component: Bulow (1%)

Generated brief soil descriptions are created for major soil components. The Bulow soil is a minor component.

Map Unit: 37—St. Johns fine sand

Component: St. Johns, non-hydric (60%)

The St. Johns, non-hydric component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: St. Johns, hydric (30%)

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

Component: Immokalee, non-hydric (5%)

Generated brief soil descriptions are created for major soil components. The Immokalee, non-hydric soil is a minor component.

Component: Wabasso (5%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Map Unit: 38—St. Lucie fine sand, 0 to 5 percent slopes

Component: St. Lucie (90%)

The St. Lucie component makes up 90 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: St. Lucie (90%)

The St. Lucie component makes up 90 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Archbold (4%)

Generated brief soil descriptions are created for major soil components. The Archbold soil is a minor component.

Component: Archbold (4%)

Generated brief soil descriptions are created for major soil components. The Archbold soil is a minor component.

Component: Cassia (3%)

Generated brief soil descriptions are created for major soil components. The Cassia soil is a minor component.

Component: Cassia (3%)

Generated brief soil descriptions are created for major soil components. The Cassia soil is a minor component.

Component: Myakka (3%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Component: Myakka (3%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Map Unit: 41—Samsula-Hontoon-Basinger association, depressional

Component: Samsula (47%)

The Samsula component makes up 47 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 60 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Hontoon (31%)

The Hontoon component makes up 31 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (14%)

The Basinger component makes up 14 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Ona (4%)

Generated brief soil descriptions are created for major soil components. The Ona soil is a minor component.

Component: Holopaw (4%)

Generated brief soil descriptions are created for major soil components. The Holopaw soil is a minor component.

Map Unit: 42—Sanibel muck

Component: Sanibel, undrained (65%)

The Sanibel, undrained component makes up 65 percent of the map unit. Slopes are 0 to 1 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of thin organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 35 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Sanibel, drained (25%)

The Sanibel, drained component makes up 25 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of thin organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 18 inches (depth from the mineral surface is 7 inches) during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 35 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Samsula (5%)

Generated brief soil descriptions are created for major soil components. The Samsula soil is a minor component.

Component: Hontoon, undrained (5%)

Generated brief soil descriptions are created for major soil components. The Hontoon, undrained soil is a minor component.

Map Unit: 44—Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes

Component: Smyrna, non-hydric (76%)

The Smyrna, non-hydric component makes up 76 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 0 within 30 inches of the soil surface.

Component: Smyrna, hydric (20%)

The Smyrna, hydric component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 0 within 30 inches of the soil surface.

Component: Basinger, depressional (2%)

Generated brief soil descriptions are created for major soil components. The Basinger, depressional soil is a minor component.

Component: Pomona, non-hydric (1%)

Generated brief soil descriptions are created for major soil components. The Pomona, non-hydric soil is a minor component.

Component: EauGallie, hydric (1%)

Generated brief soil descriptions are created for major soil components. The EauGallie, hydric soil is a minor component.

Map Unit: 54—Zolfo fine sand, 0 to 2 percent slopes

Component: Zolfo (85%)

The Zolfo component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka (5%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Component: Millhopper (4%)

Generated brief soil descriptions are created for major soil components. The Millhopper soil is a minor component.

Component: Tavares (4%)

Generated brief soil descriptions are created for major soil components. The Tavares soil is a minor component.

Component: Malabar (2%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Seminole County, Florida

Map Unit: 9—Basinger and Delray fine sands

Component: Basinger (60%)

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

Component: Delray (32%)

The Delray component makes up 32 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Malabar (4%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Component: Wabasso (4%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Map Unit: 10—Basinger, Samsula, and Hontoon soils, depressional

Component: Basinger (58%)

The Basinger component makes up 58 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 14 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Hontoon (15%)

The Hontoon component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Samsula (15%)

The Samsula component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 60 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (3%)

Generated brief soil descriptions are created for major soil components. The EauGallie soil is a minor component.

Component: Felda (3%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Component: Smyrna (2%)

Generated brief soil descriptions are created for major soil components. The Smyrna soil is a minor component.

Component: Myakka (2%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Component: St. Johns (2%)

Generated brief soil descriptions are created for major soil components. The St. Johns soil is a minor component.

Map Unit: 11—Basinger and Smyrna fine sands, depressional

Component: Basinger (63%)

The Basinger component makes up 63 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 14 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Smyrna (28%)

The Smyrna component makes up 28 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (5%)

Generated brief soil descriptions are created for major soil components. The EauGallie soil is a minor component.

Component: Malabar (4%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Map Unit: 13—EauGallie and Immokalee fine sands

Component: EauGallie (56%)

The EauGallie component makes up 56 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Immokalee (35%)

The Immokalee component makes up 35 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Malabar (9%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Map Unit: 14—Felda fine sand, saline, frequently flooded

Component: Felda, flooded (90%)

The Felda, flooded component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, July, August, September, October, November, December. Organic matter content in the surface horizon is about 15 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pineda (10%)

Generated brief soil descriptions are created for major soil components. The Pineda soil is a minor component.

Map Unit: 15—Felda and Manatee mucky fine sands, depressional

Component: Felda (56%)

The Felda component makes up 56 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 15 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Manatee (38%)

The Manatee component makes up 38 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 23 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Wabasso (3%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Component: Delray (3%)

Generated brief soil descriptions are created for major soil components. The Delray soil is a minor component.

Map Unit: 17—Brighton, Samsula, and Sanibel mucks

Component: Brighton, drained (47%)

The Brighton, drained component makes up 47 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of woody organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Samsula, drained (35%)

The Samsula, drained component makes up 35 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 60 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Sanibel, drained (15%)

The Sanibel, drained component makes up 15 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of thin organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 45 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Delray (2%)

Generated brief soil descriptions are created for major soil components. The Delray soil is a minor component.

Component: Basinger (1%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Map Unit: 18—Malabar fine sand, 0 to 2 percent slopes

Component: Malabar (85%)

The Malabar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R155XY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Valkaria (5%)

Generated brief soil descriptions are created for major soil components. The Valkaria soil is a minor component.

Component: Pineda (4%)

Generated brief soil descriptions are created for major soil components. The Pineda soil is a minor component.

Component: Oldsmar (4%)

Generated brief soil descriptions are created for major soil components. The Oldsmar soil is a minor component.

Component: Basinger (2%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Map Unit: 19—Manatee, Floridana, and Holopaw soils, frequently flooded

Component: Manatee, flooded (61%)

The Manatee, flooded component makes up 61 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Floridana, flooded (21%)

The Floridana, flooded component makes up 21 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 11 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Holopaw, flooded (15%)

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

Component: Basinger, flooded (3%)

Generated brief soil descriptions are created for major soil components. The Basinger, flooded soil is a minor component.

Map Unit: 20—Myakka and EauGallie fine sands

Component: Myakka (58%)

The Myakka component makes up 58 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (32%)

The EauGallie component makes up 32 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (5%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Component: Pompano, flooded (5%)

Generated brief soil descriptions are created for major soil components. The Pompano, flooded soil is a minor component.

Map Unit: 22—Nittaw muck, occasionally flooded

Component: Nittaw, flooded (100%)

The Nittaw, flooded component makes up 100 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit: 23—Nittaw, Okeelanta, and Basinger soils, frequently flooded

Component: Nittaw, flooded (45%)

The Nittaw, flooded component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Okeelanta, flooded (34%)

The Okeelanta, flooded component makes up 34 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 73 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger, flooded (19%)

The Basinger, flooded component makes up 19 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pompano, flooded (2%)

Generated brief soil descriptions are created for major soil components. The Pompano, flooded soil is a minor component.

Map Unit: 25—Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes

Component: Pineda (45%)

The Pineda component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pineda, wet (40%)

The Pineda, wet component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during July, August, September, October. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Felda (6%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Component: Wabasso (3%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Component: Boca (2%)

Generated brief soil descriptions are created for major soil components. The Boca soil is a minor component.

Component: Valkaria (2%)

Generated brief soil descriptions are created for major soil components. The Valkaria soil is a minor component.

Component: Hallandale (2%)

Generated brief soil descriptions are created for major soil components. The Hallandale soil is a minor component.

Map Unit: 29—St. Johns and EauGallie fine sands

Component: St. Johns (57%)

The St. Johns component makes up 57 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (36%)

The EauGallie component makes up 36 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Felda (7%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Map Unit: 31—Tavares-Millhopper complex, 0 to 5 percent slopes

Component: Tavares (63%)

The Tavares component makes up 63 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Millhopper (32%)

The Millhopper component makes up 32 percent of the map unit. Slopes are 0 to 5 percent. This component is on knolls on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Candler (3%)

Generated brief soil descriptions are created for major soil components. The Candler soil is a minor component.

Component: Astatula (2%)

Generated brief soil descriptions are created for major soil components. The Astatula soil is a minor component.

Map Unit: 99—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Volusia County, Florida

Map Unit: 10—Bluff sandy clay loam

Component: Bluff (80%)

The Bluff component makes up 80 percent of the map unit. Slopes are 1 to 2 percent. This component is on stream terraces on flood plains on marine terraces on coastal plains. The parent material consists of loamy and clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Chobee, frequently flooded (7%)

Generated brief soil descriptions are created for major soil components. The Chobee, frequently flooded soil is a minor component.

Component: Gator (7%)

Generated brief soil descriptions are created for major soil components. The Gator soil is a minor component.

Component: Holopaw, hydric (6%)

Generated brief soil descriptions are created for major soil components. The Holopaw, hydric soil is a minor component.

Map Unit: 24—Fluvaquents

Component: Fluvaquents (80%)

The Fluvaquents component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy fluvial sediments. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger, depressional (4%)

Generated brief soil descriptions are created for major soil components. The Basinger, depressional soil is a minor component.

Component: Samsula (4%)

Generated brief soil descriptions are created for major soil components. The Samsula soil is a minor component.

Component: Chobee, frequently flooded (4%)

Generated brief soil descriptions are created for major soil components. The Chobee, frequently flooded soil is a minor component.

Component: Gator (4%)

Generated brief soil descriptions are created for major soil components. The Gator soil is a minor component.

Component: Bluff (4%)

Generated brief soil descriptions are created for major soil components. The Bluff soil is a minor component.

Map Unit: 99—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Data Source Information

Soil Survey Area: Orange County, Florida
Survey Area Data: Version 15, Sep 13, 2018

Soil Survey Area: Seminole County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Exhibit J

Department of Environmental Protection
Outstanding Florida Waters

FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

January 10, 2019

Ms. Patti Anderson
Florida Forest Service Land Management Plan Coordinator
Florida Department of Agriculture and Consumer Services
3125 Conner Boulevard, Suite I-262, Mail Stop C-25
Tallahassee, FL 32399-1650

RE: Charles H. Bronson State Forest

Dear Ms. Anderson:

Thank you for your inquiry regarding the surface water quality classification of waters on and near the Charles H. Bronson State Forest in Seminole and Orange Counties. There are no waters on or near the site listed as exceptions to Class III in subparagraph 62-302.400(17)(b)59. and 16., Florida Administrative Code (F.A.C.); therefore, all of the surface waters on or adjacent to the site are classified as Class III waters (Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife), which is the statewide default classification under subsection 62-302.400(15), F.A.C.

As requested, we also checked to see if there are any Outstanding Florida Waters (OFWs) near the state forest. According to subchapter 62-302.700(9), FAC, there are no OFWs on or adjacent to the state forest. The nearest OFW, the Econlockhatchee River System, is described in subchapter 62-302.700(9)(i)11. F.A.C., and appears to be less than 0.5 miles away within the Little Big Econ State Forest. While there are several other parcels on, adjacent, or nearby that are considered conservation lands at a Federal, State or Local level (according to the Florida Natural Areas Inventory Managed Areas data layer), they have not been designated as OFWs beyond what is described above.

If you have any questions or need additional information, please feel free to contact me at the letterhead address (mail station 6511), by phone at 850-245-8427, or via E-mail at Janet.Klemm@FloridaDEP.gov.

Sincerely,

Janet Klemm
Environmental Specialist
DEP Water Quality Standards Program

Exhibit K

Water Resources Map

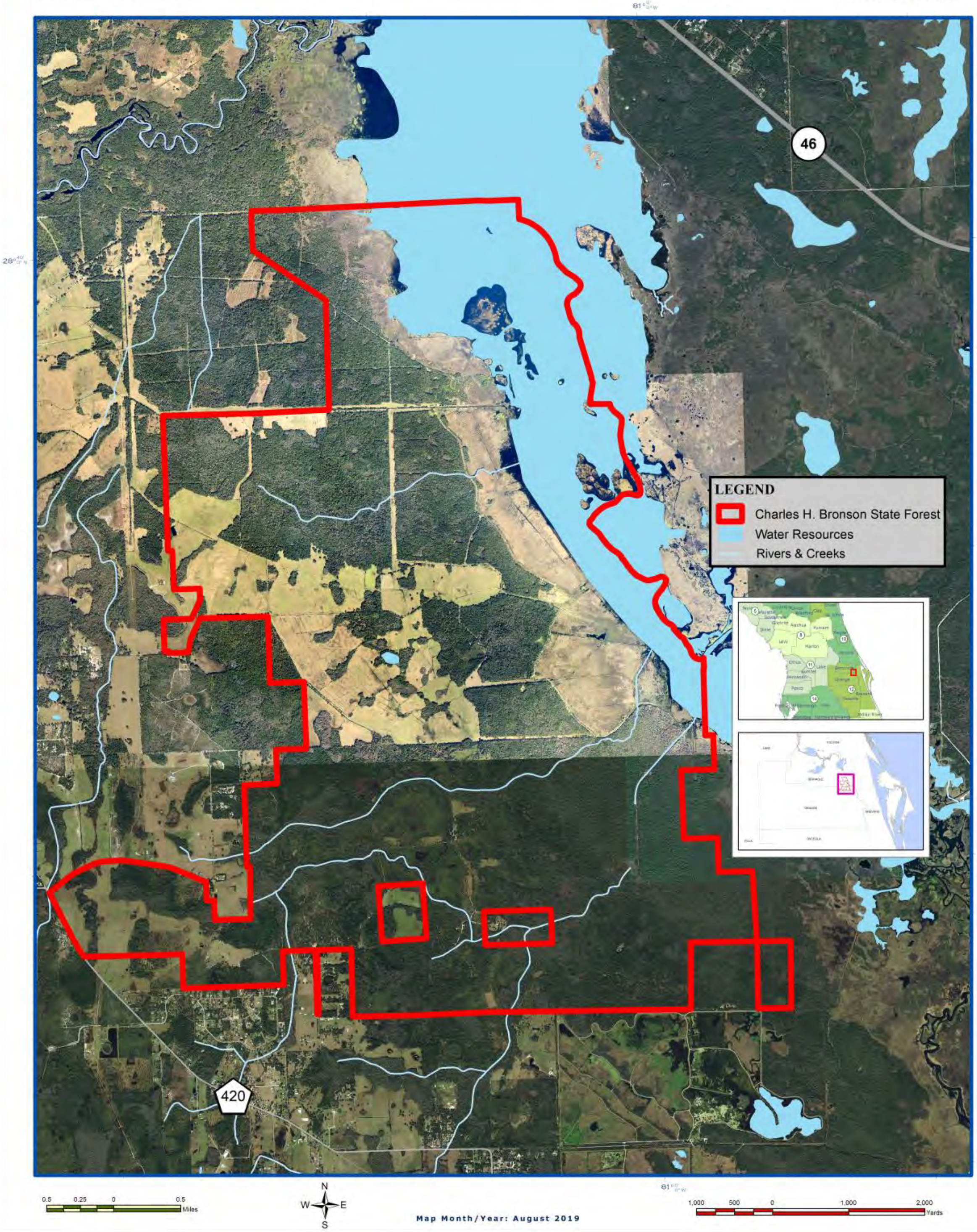
Florida Forest Service

Charles H. Bronson State Forest

Water Resources Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers



Map Month/Year: August 2019

Exhibit L

Florida Natural Areas Inventory
Managed Area Tracking Record

FLORIDA
Natural Areas
INVENTORY

1018 Thomasville Road
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Tallahassee, FL 32303
850-224-8207
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www.fnai.org

December 20, 2018

Patti Anderson
Florida Forest Service
Florida Department of Agriculture and Consumer Services
3125 Conner Boulevard
Suite I-262, Mail Stop C-25
Tallahassee, FL 32399-1650

Dear Ms. Anderson,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project:	Charles H Bronson
Date Received:	12/18/18
Location:	Seminole & Orange County

Based on the information available, this site appears to be located on or very near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare species within a small area. Additional consideration should be given to avoid and/or mitigate impacts to these natural resources, and to design land uses that are compatible with these resources.

Element Occurrences

A search of our maps and database indicates that we currently have several element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

Florida Resources and Environmental Analysis Center

Institute of Science and Public Affairs

The Florida State University

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Florida Scrub-jay Survey – U.S. Fish and Wildlife Service

This survey was conducted by staff and associates of the Archbold Biological Station from 1992 to 1996. An attempt was made to record all scrub-jay (*Aphelocoma coerulescens*) groups, although most federal lands were not officially surveyed. Each map point represents one or more groups.

This data layer indicates that there are potential scrub-jay populations on or very near your site. For additional information:

Fitzpatrick, J.W., B. Pranty, and B. Stith. 1994. Florida scrub jay statewide map, 1992-1993. U. S. Fish and Wildlife Service Report, Cooperative Agreement no. 14-16-004-91-950.

Managed Areas

Portions of the site appear to be located within the Charles H. Bronson State Forest, managed by the FL Dept. of Agriculture and Consumer Services, Florida Forest Service, adjacent to the Orlando Wetlands Park, managed by the City of Orlando, adjacent to the Chuluota Wilderness Area managed by Seminole County, adjacent to Seminole Ranch Conservation Area, managed by St. Johns River Water Management District, adjacent to Clonts Conservation Easement managed by St. Johns River Water Management District, and adjacent to the Little Big Econ State Forest, managed by FL Dept. of Agriculture and Consumer Services, Florida Forest Service.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

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

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

This report is made available at no charge due to funding from the Florida Department of Environmental Protection, Division of State Lands.

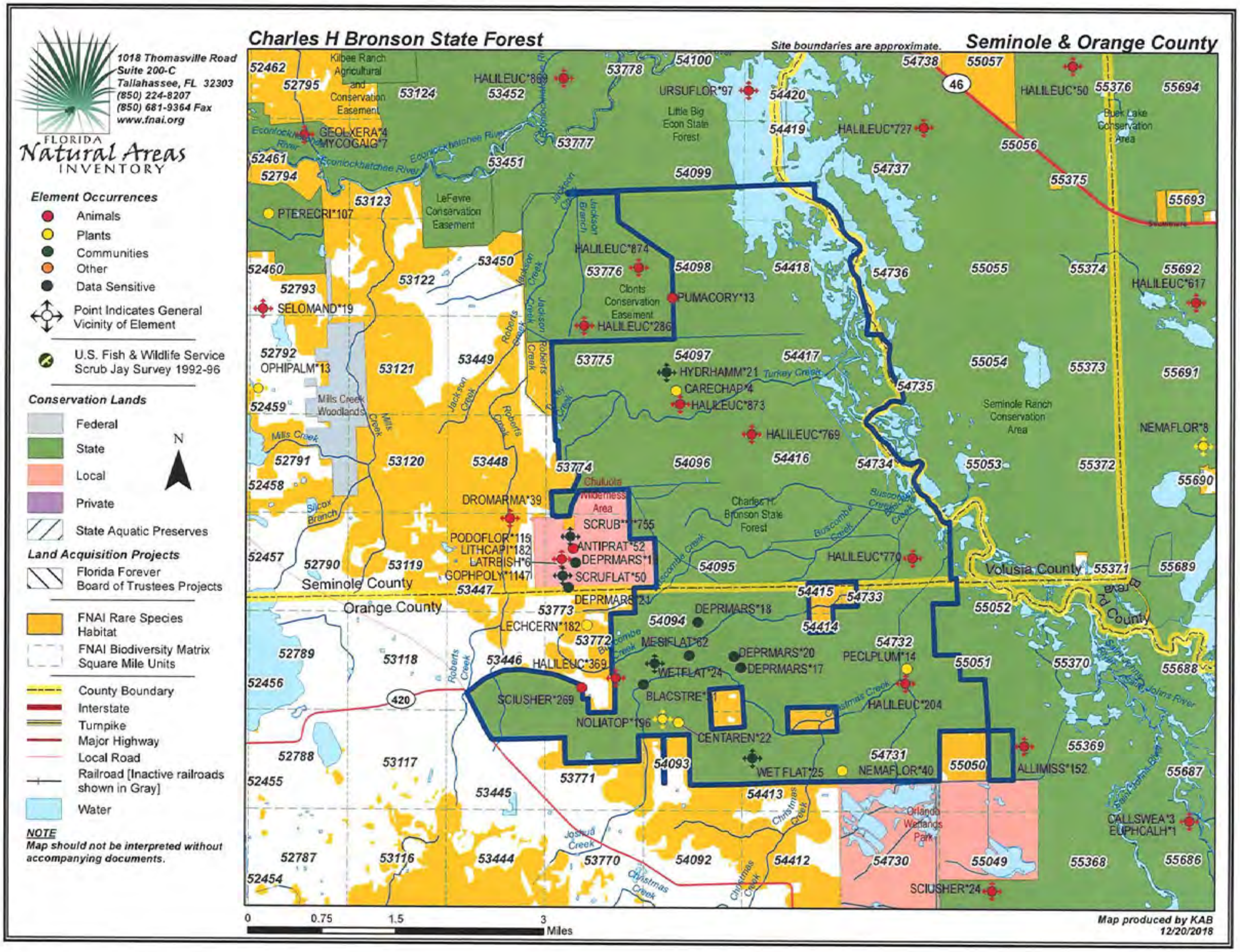
Thank you for your use of FNAI services. If I can be of further assistance, please contact me at (850) 224-8207 or at kbrinegar@fnai.fsu.edu.

Sincerely,

Kerri Brinegar

Kerri Brinegar
GIS / Data Services

Encl


Charles H Bronson State Forest
Seminole & Orange County
Site boundaries are approximate.
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FLORIDA
Natural Areas
INVENTORY
Element Occurrences
Animals
Plants
Communities
Other
Data Sensitive
Point Indicates General Vicinity of Element
U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96
Conservation Lands
Federal
State
Local
Private
State Aquatic Preserves
Land Acquisition Projects
Florida Forever
Board of Trustees Projects
FNAI Rare Species Habitat
FNAI Biodiversity Matrix Square Mile Units
County Boundary
Interstate
Turnpike
Major Highway
Local Road
Railroad [Inactive railroads shown in Gray]
Water
NOTE
Map should not be interpreted without accompanying documents.
N
Kilbee Ranch Agricultural and Conservation Easement
LeFevre Conservation Easement
Little Big Econ State Forest
Clonts Conservation Easement
Charles H. Bronson State Forest
Chuluota Wilderness Area
Seminole Ranch Conservation Area
Buck Lake Conservation Area
Orlando Wetlands Park
Mills Creek Woodlands
Seminole County
Orange County
Volusia County
Econlockhatchee River
Jackson Branch
Jackson Creek
Roberts Creek
Turkey Creek
Buscombe Creek
Christmas Creek
Mills Creek
Silcox Branch
Joshua Creek
St Johns River
46
420
PTERECRI*107
GEOLXERA*4
MYCOGAIG*7
SELOMAND*19
OPHIPALM*13
HALILEUC*874
HALILEUC*286
PUMACORY*13
URSUFLOR*97
HALILEUC*727
HALILEUC*50
HALILEUC*617
HYDRHAMM*21
CARECHAP*4
HALILEUC*873
HALILEUC*769
NEMAFLOR*8
DROMARMA*39
SCRUB***755
ANTIPRAT*52
DEPRMARS*1
SCRUFLAT*50
PODOFLOR*115
LITHCAPI*182
LATRBISH*6
GOPHPOLY*1147
HALILEUC*770
DEPRMARS*18
ECHCERN*182
MESIFLAT*62
DEPRMARS*20
DEPRMARS*17
PECLPLUM*14
WETFLAT*24
HALILEUC*369
SCIUSHER*269
BLACSTRE
NOLIATOP*196
CENTAREN*22
HALILEUC*204
WET FLAT*25
NEMAFLOR*40
ALLIMISS*152
CALLSWEA*3
EUPHCALH*1
SCIUSHER*24
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Map produced by KAB
12/20/2018

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ALLIMISS*152	*Alligator mississippiensis*	American Alligator	G5	S4	SAT	FT(S/A)	2007-09-11	floodplain, blackwater stream, canal, basin marsh, impoundments, marsh lake.	21-26 alligators observed
ANTIPRAT*52	*Antigone canadensis pratensis*	Florida Sandhill Crane	G5T2	S2	N	ST	1997-07-17	1997-07-17: depressional marsh, largely vegetated with maiden cane, surrounded by sand pine scrub, and scrubby flatwoods (U97DUB03FLUS).	1997-07-17: three, (2 adults, 1 juvenile) seen feeding in marsh. No nesting observed (U97DUB03FLUS).
BLACSTRE*31	Blackwater stream		G4	S3	N	N	2007-08-01	2007-08-01: Blackwater stream surrounded by hydric hammock (F08FNA01FLUS). 1992-06-30: free-flowing small to medium sized blackwater stream flowing through a wet and mesic flatwoods with hydric hammock landscape with St. Johns River Valley (PNDORZ01FLUS).	2007-08-01: Blackwater stream surrounded by hydric hammock (F08FNA01FLUS). 1992-06-30: the vegatation along this blackwater stream is a combination of baygall and hydric hammock communities. The overstory is comprized of cabbage palm, sweetbay magnolia, diamon-leaf oak (Quercus laurifolia), sweetgum, and red maple; understory has dahoon holly, sweet-spire (Itea virginica), wax myrtle, highbush blueberry, and swamp honeysuckle (Rhododendron viscosum). There may be thick carpets of sphagnum moss, with lizard's tail, golden club, Elliott's sedge, royal fern, spikegrass, and poison ivy (PNDORZ01FLUS).
CALLSWEA*3	*Callophrys gryneus sweadneri*	Florida Olive Hairstreak	G5T2	S2	N	N	2006-05-27	2006-05: The site is described as being in or near roadside ditches with pickerelweed, buttonbush, and coastal plain willow near hydric hammock with sabal palmetto and red cedars (N07KEI01FLUS).	2006-05-27: One adult seen (N07KEI01FLUS). 2006-02: One adult seen (N07KEI01FLUS). 2005-09: One adult seen (N07KEI01FLUS). 2005-06: Two adults seen (N07KEI01FLUS).
CARECHAP*4	*Carex chapmannii*	Chapman's sedge	G3	S3	N	T	1992-06-30	HARDWOOD, HYDRIC HAMMOCK WITH CABBAGE PALM ON VERY POORLY DRAINED SOILS. SEE DOT AERIAL PHOTO PD 3812-13-04 FLOWN ON 2-27-89.	No EO data given
CENTAREN*22	*Centrosema arenicola*	sand butterfly pea	G2Q	S2	N	E	2007-08-02	2007-08-02: Sandhill in conservation area adjacent to pasture and residential development (F08FNA01FLUS).	2007-08-02: Two reproductive individuals distributed over 10 - 100 sq meters in sandhill habitat that is disturbed by cattle grazing and Paspalum notatum (exotic species) (F08FNA01FLUS).

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Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
DEPRMARS*17	Depression marsh		G4	S4	N	N	2007-08-02	2007-08-02: Excellent quality depression marsh within mesic flatwoods (F08FNA01FLUS). 1992-06-30: flatwoods depression pond in pond pine (wet) flatwoods landscape (PNDORZ01FLUS).	2007-08-02: Excellent quality depression marsh with Hypericum fasciculatum, Hypericum myrtifolium, Panicum hemitomon, Andropogon glomeratus var. glaucopsis, Rhynchelytrum repens, Eriocaulon sp, Pluchea sp. (F08FNA01FLUS). 1992-06-30: pond pine flatwoods depression marsh with distinct concentric vegatation zones. The outer rim is dominated by bantam-buttons (Syngonanthus flavidulus), hat pins, and beakrush (Rhynchospora cephalantha). The next waterward zone is dominated by guinea cypress (Hypericum fasciculatum), hat pins (Eriocaulon compressum, E. decangulare), beakrush beakrush (R. filifolia), and pinebarren milkwort (Polygala cymosa). This zone grades into a zone dominated by Eriocaulon compressum, Rhynchospora inundata, R. tracyi, R. harperi, water-hyssop (Bacopa caroliniana), and yellow-eyed grass (Xyris smalliana), which is usually inundated by shallow standing water. In the deepest water in the center of the depression the dominant plants are pickerel week, some scattered swamp black gum (Nyssa biflora), and open water (PNDORZ01FLUS).

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Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
DEPRMARS*18	Depression marsh		G4	S4	N	N	2007-09-12	2007-09-12: Depression marsh within wet flatwoods (F08FNA08FLUS). 1992-06-30: herbaceous dominated wetland depression marshy-pond (PNDORZ01FLUS).	2007-09-12: Depression marsh with Cephalanthus occidentalis, Myrica cerifera, Salix caroliniana, Juniperus virginiana in the tall shrub layer and Cladium jamaicense, Spartina bakeri, Eriocaulon decangulare, Sagittaria lancifolia, Saccharum giganteum in the herbaceous layer. Moderate woody encroachment present (F08FNA08FLUS). 1992-06-30: fairly shallow herbaceous dominated depression with a peaty pond center. Spartina bakeri/Rhynchospora inundata/Bacopa caroliniana are dominants in peaty pond center. Other wetland plants associated with this seasonally wet depression include Centella asiatica, Eriocaulon compressum, E. decangulare, Gratiola ramosa, Juncus polycephalus, Lachnanthes caroliniana, Manisuris rugosa, Panicum hemitomum, Pluchea rosea, Ryhnchospora decurrens, R. microcarpa, Sabatia stellaris, Sagittaria lancifolia, Oxypolis filiformis, and Cladium jamaicense (PNDORZ01FLUS).

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Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
DEPRMARS*19	Depression marsh		G4	S4	N	N	2004	1992-06-30: sandy, margin upland depression pond (PNDORZ01FLUS).	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-30) (U05FNA02FLUS). 1992-06-30: the upper sandy margin of this pond is dominated by big-carpet grass (Axonopus furcatus), bantam-buttons (Syngonanthus flavidules), bog-buttons (Lachnocaulou minus), a seedbox (Ludwigia sphaerocarpa), beakrush (Rhynchospera microcephala), umbrella sedge (Fuirena scirpoidea, and reticulate nutrush (Scleria reticularis). Waterward of this zone is a vegetation ring dominated by hat-pins (Eriocaulon compressum), penny-wort (Hydrocotyle umbellata), meadow-beauty (Rhexia mariana), and beakrush (Rhynchospora inundata). In the next zone, where there is shallow standing water, cut-grass (Leersia hexandra) and arrow-head (Sagittaria graminea) are dominant. Where the water is the deepest there is a floating mat of vegetation with maidencane grass (Panicum hemitomon), water-lily (Nuphar luteum), sweetbay, meadow-beauty, and other wetland plants (PNDORZ01FLUS).
DEPRMARS*20	Depression marsh		G4	S4	N	N	2007-08-15	2007-08-15: Fair quality depression marsh within a landscape of mesic flatwoods (F08FNA01FLUS). 1992-06-30: small scattered shallow depression ponds with a wet to mesic flatwoods groundcover and some wetland plants.	2007-08-15: Fair quality depression marsh (F08FNA01FLUS). 1992-06-30: there are also some small, shallow depression marshes in the mesic flatwoods. Species included Eriocaulon decangulare, Rhynchospora fascicularis, R. decurrens, R. filifolia, Syngonanthus flavidulus, Polygala cymosa, and Hypericum myrtifolium.

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Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
DEPRMARS*21	Depression marsh		G4	S4	N	N	2004	MARSHY FLATWOODS DEPRESSION POND. SEE DOT AERIAL PHOTO PD 3812-13-02 FLOWN ON 2-27-89.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-30) (U05FNA02FLUS). ANDROPOGON GLAUCOPSIS DOMINATES OUTER MARGIN OF DEPRESSION MARSH ON DRIER BUT MOIST SAND SOIL. ANDROPOGON BRACHYSTACHYUS, POLYGALA RUGELII, AND LYONIA LUCIDA ARE COMMON IN THE ECOTONE ABOVE A. GLAUCOPSIS WITH XYRIS BREVIFOLIA, SERENOA REPENS, AND SYNGONANTHUS FLAVIDULUS. ERIOCAULON DECANGULARE, EUPATORIUM LEPTOPHYLLUM, HYPERICUM MUTILUM, RHYNCHOSPORA DECURRENS, WOODWARDIA VIRGINICA, XYRIS ELLIOTTII, AND RHYNCHOSPORA MICROCEPHALA ARE COMMON IN TEH DEPRESSION.
DROMARMA*39	*Dromogomphus armatus*	Southeastern Spinyleg	G4	S3	N	N	2000-04-04	2000-04-04: No description given (U09DEP01FLUS).	2000-04-04: Staff from the Florida Department of Environmental Protection collected this species on this date and on the following dates: 1999-10-21, 1998-03-09 (U09DEP01FLUS).
ELLIMONR*4	*Elliptio monroensis*	St. Johns Elephantear	G2G3	S2S3	N	N	2015 pre	St. Johns River system, at least south (upstream) of Lake George. Inhabits river, lakes along the main stem, and lower reaches of some large tributaries (B14WIL01FLUS:205).	Williams et al. (2014) depict at least 17 sites from which this occurrence has been documented. For specific data, references, and sites, see individual source features and Additional Topics field in this record.
EUPHCALH*1	*Euphyes dukesi calhouni*	Calhoun's Skipper	G3T1	S1	N	N	2006-05	2006-05: The skippers were seen in or near roadside ditches with pickerelweed, buttonbush and coastal plain willow, near a hydric hammock with sabal palmetto and red cedars (N07KEI01FLUS).	2006-05: One adult found (N07KEI01FLUS). 2005-09: One adult found, diagnostic photo taken (N07KEI01FLUS)
GEOLXERA*4	*Geolycosa xera*	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N	1963 pre	1963-Pre: No description given (A63MCC01FLUS).	1963-Pre: Eleven specimens were collected (A63MCC01FLUS).

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GOPHPOLY*1147	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	2000-05	2000: Blihovde described site as highly disturbed remnant sandhill; overgrown with oaks due to lack of fire for years prior to 2000, when used as cattle ranch and hunting preserve; dense palmetto; includes depression marsh used by gopher frogs (U00BLI01FLUS).	2000-1999: During his study of gopher frogs, Blihovde noted high local density of gopher tortoises (burrows) (U00BLI01FLUS).
HALILEUC*204	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Active - 2003, 2002, 2001, 2000; Inactive - 1999; Status 1995-98: Active - 1998; Inactive - 1997, 1996; Unknown/not assessed - 1995; (U03FWC01FLUS). Previous data (note different format) NEST; 1986-85: OTHER ANIMAL; 1984: INACTIVE; 1983: ACTIVE, PRODUCED 0 YOUNG; 1982: INACTIVE; 0 YOUNG IN 1981, 1980, 1976; 1 YOUNG IN 1979,1977.
HALILEUC*286	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: PRODUCED 2 YOUNG; 1994: PRODUCED 1 YOUNG; 1993: PRODUCED 1 YOUNG; 1992: ACTIVE, PRODUCED 0 YOUNG; 1991: PRODUCED 1 YOUNG; 1990: INACTIVE; 1989: ACTIVE, PRODUCED 0 YOUNG; 1975-1985, 1987-1988 ACTIVE; 1986 INACTIVE. FLEDGED YOUNG 1977, 1979-1980, 1982-1983, 1985, 1987-1988; 1978 AND 1981 UNKNOWN.
HALILEUC*369	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	1987	No general description given	Nest status 1999-2003: Inactive - 2003; Unknown/not assessed - 2002, 2001, 2000, 1999; Status 1995-98: Inactive - 1998, 1997, 1996, 1995; (U03FWC01FLUS). Previous data (note different format) NEST; 1995-1989: GONE; 1988: INACTIVE; 1987: ACTIVE, PRODUCED 0 YOUNG; 1986: PRODUCED 2 YOUNG; 1985: PRODUCED 1 YOUNG; 1984: PRODUCED 1 YOUNG; 1983: PRODUCED 2 YOUNG.

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Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
HALILEUC*727	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Continuously active; Status 1995-98: Active - 1998, 1996; Inactive - 1997, 1995; (U03FWC01FLUS). Previous data (note different format) NEST; 1995: INACTIVE; 1994: PRODUCED 1 YOUNG; 1993: PRODUCED 2 YOUNG; 1992: NOT ACTIVE. 1991: ACTIVE BUT PRODUCED 0 YOUNG; 1990: PRODUCED 2 YOUNG; 1989: PRODUCTIVITY UNKNOWN.
HALILEUC*769	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2001	No general description given	Nest status 1999-2003: Active - 2001, 2000, 1999; Inactive - 2003, 2002;Status 1995-98: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: PRODUCED 2 YOUNG; 1994: PRODUCED 2 YOUNG; 1993: PRODUCED 2 YOUNG; 1992: ACTIVE BUT PRODUCED 0 YOUNG.
HALILEUC*770	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: ACTIVE, PRODUCED 0 YOUNG; 1994: ACTIVE, PRODUCED 0 YOUNG; 1993: PRODUCED 3 YOUNG; 1992: ACTIVE BUT PRODUCED 0 YOUNG.
HALILEUC*869	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2001	No general description given	Nest status 1999-2003: Active - 2001, 2000, 1999; Inactive - 2003, 2002;Status 1995-98: Continuously active. (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Active, produced 0 young; 1994: Active, produced 0 young; 1993: Active, produced 0 young; 1992: Produced 2 young; 1991: Produced 1 young; 1990-86: Gone; 1985: Inactive; 1984: Active, produced 0 young; 1983-82: Down; 1981: No data; 1980: Inactive; 1979: Osprey; 1978: Inactive; 1977: Produced 1 young; 1976-75: Owl; 1974: Produced 1 young.

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HALILEUC*873	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Continuously active; Status 1995-98: Active - 1998, 1997, 1995; Inactive - 1996; (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Active, produced 0 young; 1994: Produced 2 young.
HALILEUC*874	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Produced 1 young; 1994: Produced 1 young.

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HYDRHAMM*21	Hydric hammock		G4	S4	N	N	2004	HARDWOOD, HYDRIC HAMMOCK WITH CABBAGE PALM ON VERY POORLY DRAINED SOILS OR ON SOILS WITH HIGH WATER TABLES CHARACTERISTIC WITHIN THE EASTERN VALLEY PHYSIOGRAPHIC REGION (ST. JOHNS RIVER VALLEY) OF SEMINOLE AND ORANGE COUNTY. DOT AERIAL PHOTO PD 3812-13-04 FLOWN ON 2-27-89.	HYDRIC HAMMOCK IS FOUND ON THE MALABAR, PINEDA, BASINGER, AND SMYRNA SOIL SERIES. THESE SOILS OCCUR ON NEARLY LEVEL TERRAIN, OR ALONG POORLY DEFINED DRAINAGEWAYS, AND HAVE EITHER A SEASONAL HIGH WATER TABLE OR IN UNDRAINED AREAS MAY INUNDATE FOR TWO TO NINE MONTHS IN MOST YEARS. THERE ARE TWO DISTINCT SUBTYPES OF HYDRIC HAMMOCK. A CLAYEY HYDRIC HAMMOCK SUBTYPE, OCCURRING ON THE PINEDA SOIL SERIES, IS MAPPED ON SOIL SHEET 32 IN THE 1990 SEMINOLE COUNTY SOIL SURVEY. PINEDA SOILS HAVE A HIGH CLAY CONTENT IN THE SUBSOIL WITH A 5-8.5 PH RANGE, RENDERING THE SOIL SOMEWHAT CALCAREOUS. ANOTHER MORE ACIDIC SUBTYPE OF HYDRIC HAMMOCK OCCURS ON THE BASINGER, SMYRNA, AND MALABAR SOIL SERIES, WHICH ARE SANDY OR HAVE SOME ORGANIC MATTER AT THE SURFACE, AND HAVE A LOW CLAY CONTENT (PH 3.6-7.0) IN THE SUBSOIL. THE CALCAREOUS HYDRIC HAMMOCK SUBTYPE HAS A CANOPY OF SOUTHERN CEDAR (JUNIPERUS SILICICOLA) AS A CODOMINANT WITH FLORIDA ELM (ULMUS FLORIDANA), LIVE OAK (QUERCUS VIRGINIANA), DIAMOND-LEAF OAK (QUERCUS LAURIFOLIA), AND CABBAGE PALM (SABAL PALMETTO). THE MAJOR DISTINCTION NOTED DURING THE FIELD SURVEY BETWEEN THE SUBTYPES OTHER THAN SOIL TYPE IS THE PRESENCE OF LARGE SPECIMENS OF SOUTHERN CEDAR IN THE CANOPY OF THE CALCAREOUS SUBTYPE. THE SHRUB LAYER OF THESE MORE MESIC, CALCAREOUS HAMMOCKS IS DOMINATED BY BEAUTY-BERRY (CALLICARPA AMERICANA), WITH A GROUND LAYER

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									OF SPIKEGRASS (CHASMANTHIUM SESSILIFLORUM) AND VIRGINIA CHAIN FERN (WOODWARDIA VIRGINICA). IN THE ACIDIC SUBTYPE OF HYDRIC HAMMOCK THERE ARE AT LEAST THREE RATHER DISTINCT PLANT COMMUNITIES BASED UPON HYDROPERIOD AND SOIL MOISTURE. A PLANT COMMUNITY WHICH MIGHT BEST BE REFERRED TO AS A MESIC HAMMOCK HAS A CANOPY OF LIVE OAK (QUERCUS VIRGINIANA), DIAMOND-LEAF OAK (QUERCUS LAURIFOLIA), WATER OAK (QUERCUS NIGRA), SWEET GUM (LIQUIDAMBAR STYRACIFLUA), SLASH PINE (PINUS ELLIOTTII), AND SOUTHERN MAGNOLIA (MAGNOLIA GRANDIFLORA), WITH A SUBCANOPY OF 30-FOOT TALL STAGGER-BUSH (LYONIA FERRUGINEA), AND A GROUNDCOVER INCLUDING FETTERBUSH (LYONIA LKUCIDA) AND SAW PALMETTO (SERENOA REPENS). THIS COMMUNITY DEVELOPS ON THE SOMEWHAT BETTER DRAINED SANDY SOILS. WHERE HYDRIC HAMMOCK HAS DEVELOPED DOWNSLOPE FROM SCRUB OR SCRUBBY FLATWOODS, AND THERE IS LATERAL GROUNDWATER SEEPAGE ENTERING INTO THE HYDRIC HAMMOCK, THERE IS A DIFFERENT PLANT COMMUNITY. IN THIS HYDRIC HAMMOCK THE OVERSTORY IS DOMINATED BY RED MAPLE (ACER RUBRUM), SWEETBAY (MAGNOLIA VIRGINIANA), SWEETGUM, AND SWAMP BLACK GUM (NYSSA BIFLORA). THE UNDERSTORY IS MOSTLY RED MAPLE AND THE SHRUB LAYER IS TALL WAX-MYRTLE, AND BUTTON-BUSH. LIZARDS-TAIL (SAURURUS CERNUUS), CHAIN FERN (WOODWARDIA VIRGINICA), MIDSORUS FERN (BLECHNUM SERRULATUM), AND BEAKRUSH

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									(RHYNCHOSPORA MILIACEA) ARE COMMON IN THE GROUND LAYER. IN THE LONGER HYDROPERIOD TYPE OF ACIDIC HYDRIC HAMMOCK THE CANOPY IS DOMINATED BY CABBAGE PALM, RED MAPLE, SWEETGUM, SWAMP BLACK GRUM, FLORIDA ELM (ULMUS FLORIDANA), AND RARELY BASSWOOD (TILIA CAROLINIANA). THE UNDERSTORY IS PREDOMINATELY A MIXTURE OF CANOPY TREES, BUT IN PLACES CONSISTED ALMOST ENTIRELY OF CABBAGE PALM. THE HERBACEOUS LAYER INCLUDES JACK-IN-THE-PULPIT (ARISAEMA TRIPHYLLUM), CHAPMAN'S SEDGE (CAREX CHAPMANII), SHIELD FERN (DRYOPTERIS LUDOVICIANA), YELLOW-STAR GRASS (HYPOSIX LEPTOCARPA), BASKET GRASS (OPLISMENUS SETARIUS), CINNAMON FERN (OSMUNDA CINNAMOMEA), ROYAL FERN, RED-TOP PANIC GRASS (PANICUM RIGIDULUM), BEAKRUSHES (RHYNCHOSPORA MIXTA, R. MILIACEA), ROSE-GENTIAN (SABATIA CALYCINA), MARSH FERN (THELYPTERIS PALUSTRIS), MID-SORUS FERN, CAMPHOR WEED (PLUCHEA LONGIFOLIA), MIST FLOWER (CONOCLINIUM COELESTINUM), AND WHISK FERN (PSILOTUM NUDUM). FERNS BECOME A CONSPICUOUS MEMBERS OF THE GROUNDCOVER, AND THE TREES TYPICALLY HAVE BUTTRESSED BASES DUE TO THE PROLONGED SATURATED CONDITIONS IN THE SOIL. IN THIS HYDRIC HAMMOCK TYPE THERE ARE SHALLOW DEPRESSIONS AND POORLY DEFINED DRAINAGEWAYS WHICH CONTAINED STANDING WATER DURING THE FIELD SURVEY. SINCE THIS HYDRIC HAMMOCK TYPE OCCURS ON NEARLY LEVEL, VERY POORLY DRAINED LAND IN THE

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LATRBISH*6	*Latrodectus bishopi*	Red Widow Spider	G2G3	S2S3	N	N	1997-08-08	1997-08-08: Sandpine/rosemary scrub; Pinus clausa. Shrubs: Ceratiola ericoides, Lyonia lucid, L. ferruginea, Quercus myrtifolia, Q. chapmani, Q. geminata, Serenoa repens. Shrub layer ca. 1-2 meters in height. Many open sandy patches, reindeer moss abundant (U97DUB04FLUS).	1997-08-08: 2 females, one with egg sack, on their web in a Serenoa repens. First individual of this species found at this locality (U97DUB04FLUS).
LECHCERN*182	*Lechea cernua*	nodding pinweed	G3	S3	N	T	2007-08-13	2007-08-13: In moderately disturbed scrubby flatwoods along eastern and western roadsides; associated species include Calamintha coccinea, Garberia heterophylla, Pinus clausa, Pinus palustris, Serenoa repens, Lyonia ferruingea, Quercus geminata, Quercus chapmanii, Osmunda megacarpus, Licania michauxii, Aristida stricta var. berychiana, and Solidago odora (F08FNA01FLUS).	2007-08-13: 101-1000 reproductive individuals distributed over 100-1000 sq. meters in scrubby flatwoods with moderate disturbance from lack of fire and fire breaks (F08FNA01FLUS).
LITHCAPI*182	*Lithobates capito*	Gopher Frog	G3	S3	N	N	2000-05	2000: Blihovde described site as highly disturbed remnant sandhill; overgrown with oaks due to lack of fire for years prior to 2000, when used as cattle ranch and hunting preserve; dense palmetto; includes depression marsh used for breeding by gopher frogs (U00BLI01FLUS).	2000-1999: Blihovde (2001) studied local population for 14 months using nocturnal visual censuses; 36% of monitored burrows (mostly tortoise but some pocket gopher) were used by frogs, though frogs used 1-4 burrows each (U00BLI01FLUS). 1997-06-27: 10 frogs captured/seen at the entrance of gopher tortoise burrows (U97DUB01FLUS).

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MESIFLAT*62	Mesic flatwoods		G4	S4	N	N	2007-08-15	2007-08-15: Mesic flatwoods bordered by hydric hammock with blackwater stream. Depression marshes and wet flatwoods/prairie occur in wetter areas (F08FNA01FLUS). 1992-06-30: mesic longleaf pine flatwoods developed on Smyrna soils (Aeric Haplaquods), see soil survey sheet #25 in Orange County Soil Survey (PNDORZ01FLUS).	2007-08-15: Mesic flatwoods with Pinus serotina, Serenoa repens, Lyonia lucida, Sorghastrum secundum, Aristida stricta, Polygala rugellii, and Galactia elliottii (F08FNA01FLUS). 1992-06-30: in the longleaf flatwoods the groundcover consists of a mixture of Aristida stricta, Serenoa repens, Quercus minima, Myrica cerifera, Ilex glabra. Some of the herbaceous plants included Carphephorus odoratissimus, Ctenium aromaticum, Eryngium yuccifolim, Eupatorium rotudifolium, Ludwigia virgata, Polygala rugelii, Pteridium aquilinum, Pterocaulon pycnostachyum, Xyris caroliniana, X. platylepis, Galactia elliottii, Scleria pauciflora, Physostegia purpurea, Fimbristlyis puberula (PNDORZ01FLUS).
MYCOGAIG*7	*Mycotrupes gaigei*	North Peninsular Mycotrupes Beetle	G2G3	S2S3	N	N	1960-04-20	1960-04-20: No description given (B73WOO01FLUS).	1960-04-20: Fifty one specimens were collected by R.E. Woodruff using a malt trap (B73WOO01FLUS).

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NEMAFLOR*40	*Nemastylis floridana*	celestial lily	G2	S2	N	E	2007-09-12	2007-09-12: Total estimate for 2-day September 2007 survey is 321-474 plants across nearly 5 km of Joshua Creek Conservation Area. Plants occurring mostly in wet flatwoods, with additional observations in hydric hammocks, basin marshes and a depression marsh. Frequently encountered along or near unimproved roads. Associated species: Pinus elliottii, P. serotina, Sabal palmetto, Quercus laurifolia, Q. minima, Q. nigra, Q. virginiana, Callicarpa americana, Diospyros virginiana, Hypericum cistifolium, H. hypericoides, Ilex glabra, Juniperus virginiana, Myrica cerifera, Sideroxylon reclinata, Vaccinium myrsinites / Andropogon sp., Amphicarpum muhlenbergianum, Aristida stricta var. beyrichiana, Cyperus sp., Dichanthelium sp., Euthamia caroliniana, Hyptis alata, Oxypolis sp., Pluchea rosea, Rhynchospora inundata, Sorghastrum secundum (F08FNA01FLUS).	2007-09-12: See individual source features for specific information. Total estimate for 2-day September 2007 survey is 321-474 plants across nearly 5 km of Joshua Creek Conservation Area. Plants occurring mostly in wet flatwoods, with additional observations in hydric hammocks, basin marshes and a depression marsh. Frequently encountered along or near unimproved roads. Associated species: Pinus elliottii, P. serotina, Sabal palmetto, Quercus laurifolia, Q. minima, Q. nigra, Q. virginiana, Callicarpa americana, Diospyros virginiana, Hypericum cistifolium, H. hypericoides, Ilex glabra, Juniperus virginiana, Myrica cerifera, Sideroxylon reclinata, Vaccinium myrsinites / Andropogon sp., Amphicarpum muhlenbergianum, Aristida stricta var. beyrichiana, Cyperus sp., Dichanthelium sp., Euthamia caroliniana, Hyptis alata, Oxypolis sp., Pluchea rosea, Rhynchospora inundata, Sorghastrum secundum (F08FNA01FLUS).

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NEMAFLOR*41	*Nemastylis floridana*	celestial lily	G2	S2	N	E	2007-09-13	2007-09-13: All plants observed in flower/bud. Total population exceeds 1,000 plants. Occurring in ruderal and marshy areas along unimproved roads and a powerline right-of-way, as well as on the edges of hammocks, dome swamps, flatwoods and improved and semi-improved pastures, often with a high degree of cattle disturbance (F08FNA01FLUS).	2007-09-13: All plants observed in flower/bud / no. 1 = roughly 200 plants in ruderal area 100-1000 sq. m; all along road through hydric hammock; hammock itself appears too shaded / no. 2 = several hundred plants in ruderal area 100-1000 sq. m, on marshy edge on either side of road / no. 3 = eight plants in ruderal area, 10-100 sq. m, in open, marshy edge of road and hammock / no. 4 = several hundred plants in ruderal area 100-1000 sq. m, extending from point eastward in powerline right-of-way / no. 5 = six plants scattered along road (area <1 sq. m); south edge of dome swamp, edge of road; heavy disturbance from ditch and road / no. 6 = total of 20 plants in open, marshy edge of road and flatwoods; ruderal area 100-1000 sq. m / no. 7 = Count of six plants in area 10-100 sq. m; semi-improved pasture with cattle disturbance / no. 8 = Estimate of about 70 plants in 100-1000 sq. m area; improved pasture with heavy to severe cattle disturbance / no. 9 = Estimate of about 70 plants in area of 100-1000 sq. m; improved agricultural pasture with cattle disturbance / no. 10 = Range of 11-50 plants over 100-1000 sq. m; improved pasture with disturbance from cattle, on edge of hydric/mesic hammock / no. 11 = Count of 1-10 plants in area of 1-10 sq. m; improved pasture on edge of hammock with cattle disturbance / no. 12 = Count of 30 plants over 100-1000 sq. m; along road through hydric hammock (F08FNA01FLUS).
NOLIATOP*196	*Nolina atopocarpa*	Florida beargrass	G3	S3	N	T	2007-09-12	2007-09-12: Total estimated range of 24-50 plants occurring in mesic flatwoods and scrubby flatwoods. Plants flowering and fruiting (F08FNA01FLUS).	2007-09-12: Total estimated range of 24-50 plants. Mesic flatwoods and scrubby flatwoods with light disturbance from road, ORV trail, forestry operations or cattle disturbance. Plants in bud/flowering at beginning of August and bearing capsules by mid-September (F08FNA01FLUS).

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PECLPLUM*14	*Pecluma plumula*	plume polypody	G5	S2	N	E	2007-08-13	2007-08-13: Hydric hammock (PNDDIA02FLUS).	2007-08-13: Estimate of 1-10 plants observed in leaf in hydric hammock (PNDDIA02FLUS).
PODOFLOR*115	*Podomys floridanus*	Florida Mouse	G3	S3	N	N	1999 winter	1997-07-31: sandpine/rosemary scrub: canopy of Pinus clausa; understory/shrubs: Ceratiola ericoides, Quercus myrtifolia, Q. chapmanii, Q. geminata, Serenoa repens, Lyonia ferruginea; height 3-4 meters; open sandy patches, abundant reindeer moss (U97DUB02FLUS).	1999-Winter: 1 found (U99DUBFLUS). 1997-07-31: 9 individuals captured in Sherman live traps, at least one female and one juvenile; 200 trap nights; Peromyscus gossypinus also documented (U97DUB02FLUS). 1997-07-12: 7 mice caught at 25 stations (2 traps per station); all were adults (U97DUB02FLUS).
PUMACORY*13	*Puma concolor coryi*	Florida Panther	G5T1	S1	E	FE	2011-03-02	Pine plantation, hydric hammock, basin swamp, and pastures west of the upper St. Johns marshes (PNDHIP01FLUS).	2011-03-02: Dave Turner and Bryan Ames observed and photographed panther track on a sandy path along a new fence line (U11SHU01FLUS).
SCIUSHER*24	*Sciurus niger shermani*	Sherman's Fox Squirrel	G5T3	S3	N	SSC	1986	No general description given	SMALL POP. ("SCARCE BUT PRESENT") IN 1986, ACCORDING TO GFC BIOLOGIST MORGAN RICHARDSON (TIM O'MEARA)
SCIUSHER*269	*Sciurus niger shermani*	Sherman's Fox Squirrel	G5T3	S3	N	SSC	2007-08-01	mesic flatwoods	1 individual foraging

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SCRUB****755	Scrub		G2	S2	N	N	2004	LOW BURNED OAK SCRUB AND UNBURNED MATURE SAND PINE-ERICAD SCRUB, WITH SOME ASSOCIATED RARE SCRUB PLANTS (ASCLEPIAS CURTISSII). DOT AERIAL PHOTO PD 3812-13-02 FLOWN ON 2-27-89.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-30) (U05FNA02FLUS). THE SCRUB CAN BE DIVIDED INTO A LOW, BURNED OAK-ERICAD DOMINATED SCRUB AND AN UNBURNED, MATURE SAND PINE FORESTED SCRUB. EXCEPT FOR STRUCTURAL VEGETATION DIFFERENCES, THE TWO TYPES ARE FAIRLY SIMILAR IN SPECIES COMPOSITION. THE SAND PINE FOREST HAS A FAIRLY OPEN CANOPY OF SCATTERED SAND PINES (PINUS CLAUSA), WITH A FAIRLY OPEN SHRUB LAYER DOMINATED BY RUSTY LYONIA (LYONIA FERRUGINEA). CHAPMAN'S OAK (QUERCUS CHAPMANII), AND ROSEMARY (CERATIOLA ERICOIDES), WITH A FEW WIDELY SPACED SAW PALMETTO, ARE ALSO PREVALENT IN THE SHRUB LAYER. THERE ARE SOME OPEN LOW GROWTH PATCHES OF SCRUB OAK, PRIMARILY CHAPMAN'S OAK, WITH MUCH BARE EXPOSED SAND ON THE GROUND LAYER, WITH SOME MILKPEA (GALACTIA ELLIOTTII) OR (CLADONIA SSP.) LICHEN CLUMPS. THE BURNED SCRUB IS DOMINATED BY CHAPMAN'S OAK, MYRTLE OAK (QUERCUS MYRTIFOLIA), FETTERBUSH, AND SAW PALMETTO. THERE ARE SOME YOUNG EMERGENT SAND PINES WHICH HAVE SPROUTED FOLLOWING THE FIRE, AND SOME TARFLOWER (BEFARIA RACEMOSA).

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SCRUFLAT*50	Scrubby flatwoods		G2	S2?	N	N	2004	SCRUBBY FLATWOODS IN A XERIC UPLAND LANDSCAPE MOSAIC WITH SCRUB.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-30) (U05FNA02FLUS). THE SCRUBBY FLATWOODS ARE DOMINATED BY WIDELY SCATTERED LONGLEAF PINES, ESTIMATED TO BE 40-50 YEARS OLD. THE GROUND LAYER CONSISTS OF A LOW GROWTH OF SAW PALMETTO WITH SOME FETTERBUSH, AND LARGE CLUMPS OF WIREGRASS. COMMONLY ENCOUNTERED GROUNDCOVER PLANTS IN THE SCRUBBY FLATWOODS INCLUDE: MILKPEA (GALACTIA ELLIOTTII), SILK GRASS (PITYOPSIS GRAMINIFOLIA), NUTRUSH (SCLERIA PAUCIFLORA), ST. JOHNS WORT (HYPERICUM REDUCTUM), LECHEA (LECHEA TENUIFOLIA), BEAKRUSH (RHYNCHOSPORA INTERMEDIA), SENNA SEYMERIA (SEYMERIA CASSIOIDES), GOPHER APPLE (LICANIA MICHAUXII), YELLOW BUTTONS (BALDUINA ANGUSTIFOLIA), AND BATCHELOR'S BUTTONS (POLYGALA SETACEA). IN MORE XERIC PORTIONS OF THE SCRUBBY FLATWOODS THERE ARE DENSE 10-15 FOOT TALL PATCHES OF SAND LIVE OAK (QUERCUS GEMINATA).

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URSUFLOR*97	*Ursus americanus floridanus*	Florida Black Bear	G5T2	S2	N	N	2015-03-11	Largely private commercial timberland, nurseries, and small neighborhoods; public lands are dominated by pine plantation but also have flatwoods interspersed with dome swamps and patches of scrub(U05SIM01FLUS). 2015/03/11: Riparian habitat protection zone; floodplain swamp/stream is 400-to >1000-ft wide that connects Tomoka SP (east) to undeveloped lands contiguous to Tiger Bay SF (west). (UNDFNA02FLUS).	2002: Estimated population of 96-170 individuals (U05SIM01FLUS); This EO represents the Primary and Secondary Bear Ranges for the St. Johns population. Primary is the FWC-designated core area that represents breeding range and contains documented evidence of reproduction or female bears within available habitat, and Secondary is the FWC-designated area where bears occur within available habitat but outside primary bear range (evidence of bears without documented evidence of reproduction) (U12FWC02FLUS, U05SIM01FLUS). These data are based on decades of bear observations, roadkill distribution, nuisance bear locations, and bear research projects. For detailed location data contact the FWC. 2015/03/11: Tracks are in thick clayey mud inside a culvert that is persistent and not easily eroded or otherwise erased; hard to tell when the tracks were made, they could be weeks old (UNDFNA02FLUS).

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
WET FLAT*24	Wet flatwoods		G4	S4	N	N	2007-08-02	2007-08-02: Excellent quality wet flatwoods surrounded by mesic flatwoods and bordering a depression marsh (F08FNA01FLUS). 1991-06-30: pond-pine dominated flatwoods developed on the Smyrna soil series (Aeric Haplaquods) (PNDORZ01FLUS).	2007-08-02: Excellent quality wet flatwoods with canopy and subcanopy dominated by Pinus elliottii and Pinus serotina. Tall and short shrubs are dominated by Pinus serotina, Pinus elliottii, Sabal palmetto, Myrica cerifera, Serenoa repens, Lyonia lucida, and Ilex glabra. The sparse herb cover is dominated by Aristida stricta var. beyrichiana, Polygala rugelii, Eleocharis sp., Xyris sp., Rhynchelytrum repens (F08FNA01FLUS). 1991-06-30: wet flatwoods dominated by mature pond pine, with occasional individuals of longleaf and slash pine. There are three distinct ground layer plant associations in these flatwoods: 1) a wiregrass-mixed herb association dominated by wiregrass, toothache grass (Ctenium aromaticum), red-root (Lachnanthes caroliniana), and fasiculate beakrush (Rhynchospora fascicularis). 2) a mixed herb association dominated by yellow milkwort (Polygala lutea), beakrushes (Rhynchospora debilis, R. rariflora), and rose-gentain (Sabatia grandiflora); and 3) a saw palmetto association. The overall ground cover of these pond pine flatwoods is quite diverse and includes: colic-root (Aletris lutea), blue maidencane (Amphicarpum muhlenbergianum), deer-tongue (Carphephorus odoratissimus), wooly sunbonnets (Chaptalia tomentosa), thorough-wort, slender goldenrod (Euthamia minor), hedgehyssop (Gratiola pilosa), bogbuttons (Lachnocaulon anceps), rose camphor-weed (Pluchea rosea), milkworts (Polygala lutea, P. ramosa, P. rugelii) blackroot meadow-beauty (Rhexia petiolata), beakrushes (Rhynchospora ciliaris, R. colorata), Hooded pitcher plant (Sarracenia minor), nutrush (Scleria triglomerata), shiny blueberry (Vaccinium myrsinites), dragon-head, dwarf huckleberry (Gaylussacia dumosa),

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Charles H Bronson State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
									cinnomon fern (Osmunda cinnamonea), reticulate aster (Aster reticularis), bracken fern, and fetterbush. The saw palmetto association is dominated by saw palmetto with fetterbush and inkberry holly, and some scattered herbaceous species (PNDORZ01FLUS).
WET FLAT*25	Wet flatwoods		G4	S4	N	N	2007-08-01	2007-08-01: Wet flatwoods in a matrix of mesic flatwoods and hydric hammock along a blackwater stream (F08FNA01FLUS). 1992-06-30: wet-mesic pond pine flatwoods downslope from a Pinus palustris/Aristida stricta mesic flatwoods grading into a Cladium jamaicense/Woodwardia virginia/Gordonia lasianthus baygall area (PNDORZ01FLUS).	2007-08-01: Wet flatwoods dominated by Pinus elliottii, Pinus serotina, Sabal palmetto, Lyonia lucida, Osmunda cinnamomea, Rhynchospora sp., Polygala rugellii (F08FNA01FLUS). 1992-06-30: Shrubby species included Gaylussacia frondosa, Hypericum tetrapetalum, Ilex glabra, Lyonia lucida, L. fruticosa, L. ligustrina, Serenoa repens and Vaccinium myrsinites; dominant groundcover species were Andropogon glaucopsis, Aristida stricta, Aster reticularis, Lachnocaulon anceps, Osmunda cinnamonea, Pteridium aquilinum, Rhexia petiolata, Rhynchospora baldwinii, R. ciliaris, R. fascicularis, Sarracenia minor, Scleria triglomerata, Phystostegia purpurea, and Galactia elliottii (PNDORZ01FLUS).

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Aggregated Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Documented					
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Carex chapmannii	Chapman's sedge	G3	S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Depression marsh		G4	S4	N	N
Euphyes dukesi calhouni	Calhoun's Skipper	G3T1	S1	N	N
Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Mesic flatwoods		G4	S4	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Pecluma plumula	plume polypody	G5	S2	N	E
Podomys floridanus	Florida Mouse	G3	S3	N	N
Puma concolor coryi	Florida Panther	G5T1	S1	E	FE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Scrub		G2	S2	N	N
Scrubby flatwoods			S2?	N	N
Wet flatwoods		G4	S4	N	N
Likely					
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Blackwater stream		G4	S3	N	N
Callophrys gryneus sweadneri	Florida Olive Hairstreak	G5T2	S2	N	N
Drymarchon couperi	Eastern Indigo Snake	G3Q	S3	T	FT
Elliptio monroensis	St. Johns Elephantear	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hydric hammock		G4	S4	N	N
Latrodectus bishopi	Red Widow Spider	G2G3	S2S3	N	N
Lithobates capito	Gopher Frog	G3	S3	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sandhill		G3	S2	N	N
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	N
Potential					
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	T	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Coleataenia abscissa	cutthroatgrass	G3	S3	N	E
Conradina grandiflora	large-flowered rosemary		S3	N	T
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus pulchellus	beautiful pawpaw		S1	E	E
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake		S2	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Notophthalmus perstriatus	Striped Newt	G2G3	S2	C	N
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Picoides borealis	Red-cockaded Woodpecker		S2	E	FE
Platanthera integra	yellow fringeless orchid	G3G4	S3	N	E
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Salix floridana	Florida willow	G2	S2	N	E

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Aggregated Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Trichechus manatus	West Indian Manatee	G2	S2	T	FT
Warea carteri	Carter's warea	G3	S3	E	E

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

Elements and Element Occurrences

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature.

An **element occurrence (EO)** is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
SX = Believed to be extirpated throughout Florida.
SU = Unrankable; due to a lack of information no rank or range can be assigned.
SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
SNR = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
E, T = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
E, PDL = Species currently listed endangered but has been proposed for delisting.
E, PT = Species currently listed endangered but has been proposed for listing as threatened.
E, XN = Species currently listed endangered but tracked population is a non-essential experimental population.
T = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
PE = Species proposed for listing as endangered
PS = Partial status: some but not all of the species' infraspecific taxa have federal
PT = Species proposed for listing as threatened
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

C = Candidate for listing at the Federal level by the U. S. Fish and Wildlife Service
FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
FXN = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://www.doacs.state.fl.us/pi/.

E = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
T = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

A = Excellent estimated viability
A? = Possibly excellent estimated viability
AB = Excellent or good estimated viability
AC = Excellent, good, or fair estimated viability
B = Good estimated viability
B? = Possibly good estimated viability
BC = Good or fair estimated viability
BD = Good, fair, or poor estimated viability
C = Fair estimated viability
C? = Possibly fair estimated viability
CD = Fair or poor estimated viability
D = Poor estimated viability
D? = Possibly poor estimated viability
E = Verified extant (viability not assessed)
F = Failed to find
H = Historical
NR = Not ranked, a placeholder when an EO is not (yet) ranked.
U = Unrankable
X = Extirpated

*For additional detail on the above ranks see: http://www.natureserve.org/explorer/eorankguide.htm

FNAI also uses the following EO ranks:

H? = Possibly historical
F? = Possibly failed to find
X? = Possibly extirpated

The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

Exhibit M

Florida Fish and Wildlife Conservation Commission
Listed Species Occurrence Records

Florida Fish and Wildlife Conservation Commission

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MyFWC.com

01/08/2019

Patti Anderson
Land Planning Coordinator
Florida Forest Service
3125 Conner Boulevard
Tallahassee, FL
32399

Dear Patti Anderson:

This letter is in response to your request for listed species occurrence records and Strategic Habitat Conservation Areas (SHCA's), on the following properties: Little-Big Econ, Charles H. Bronson, Holopaw, Pine log, Carl Duval Moore, Watson Island, Tiger Bay, and Myakka. Records from The Florida Fish and Wildlife Conservation Commission's database indicate that listed species occurrence data and critical habitats are located within the project areas. The Florida Fish and Wildlife Conservation Commission's database indicates that SHCA's for short-tailed hawk occur on Carl Duval Moore. SHCA's for Cooper's hawk, swallow-tailed kite, and short-tailed hawk occur in Charles H. Bronson. SHCA's for Cooper's hawk and Florida black bear were found on Pine Log, and SHCA's for Cooper's hawk and Florida black bear occur on Tiger Bay. Enclosed are 8.5 x 11 maps showing prioritized SHCA's, priority wetlands, landcover, species richness, and species locations for all projects. Additional species records were found on, or within a 1-mile distance of, the properties will be included in a spreadsheet; these species records are maintained by FNAI and cannot be distributed through FWC.

This letter and attachments should not be considered as a review or an assessment of the impact upon threatened or endangered species of the project site. It provides FWC's most current data regarding the location of listed species and their associated habitats.

Our SHCA recommendations are intended to be used as a guide. Land development and ownership in Florida is ever-changing and priority areas identified as SHCA might already have been significantly altered due to development or acquired into public ownership. Onsite surveys, literature reviews, and coordination with FWC biologists remain essential steps in documenting the presence or absence of rare and imperiled species and habitats within the project area.

Our fish and wildlife location data represents only those occurrences recorded by FWC staff and other affiliated researchers. It is important to understand that our database does not necessarily contain records of all listed species that may occur in a given area. Also, data on certain species, such as gopher tortoises, are not entered into our database on a site-specific basis.

Therefore, one should not assume that an absence of occurrences in our database indicates that species of significance do not occur in the area.

The Florida Natural Areas Inventory (FNAI) maintains a separate database of listed plant and wildlife species, please contact FNAI directly for specific information on the location of element occurrences within the project area.

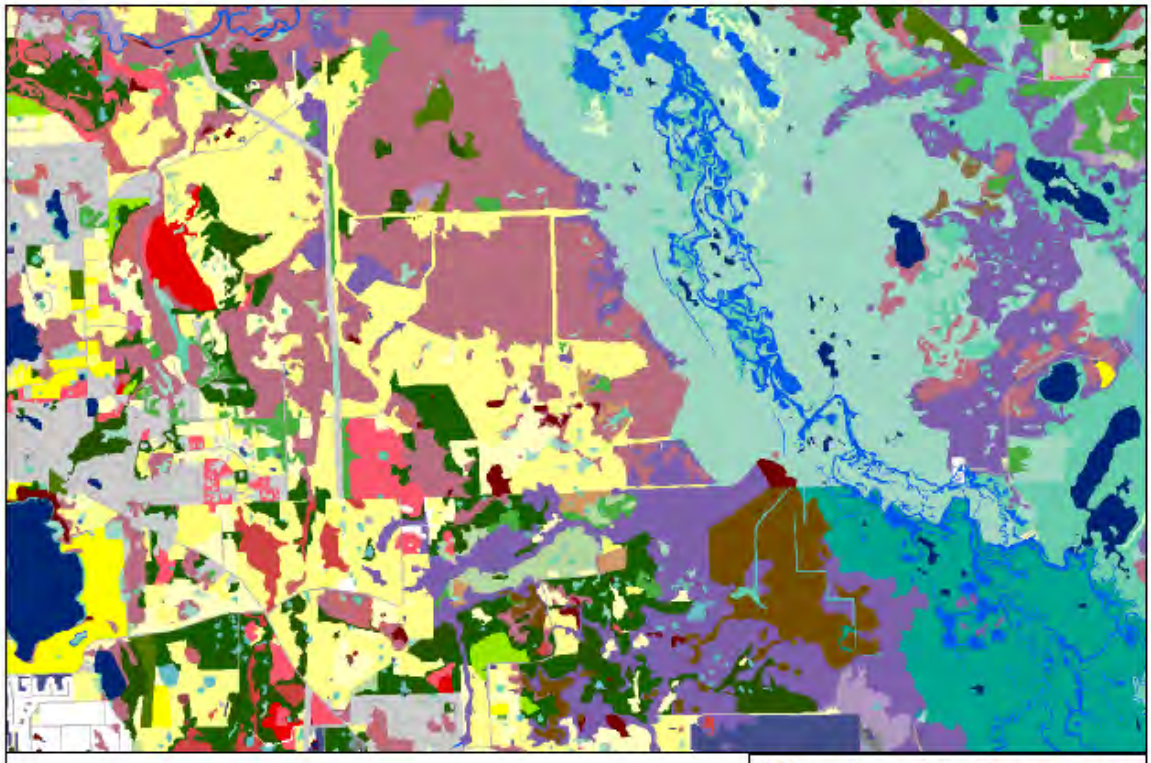
Because FNAI is funded to provide information to public agencies only, you may be required to pay a fee for this information. County-wide listed species information can be located at their website (http://www.fnai.org).

Please credit the Florida Fish and Wildlife Conservation Commission in any publication or presentation of these data. If you have any questions or further requests, please contact me at (850) 488-0588 or gisrequests@myfwc.com.

Sincerely,

Eva Salinas
Research Assistant

ES
2019_6326
Enclosures



Charles H. Bronson

Cooperative Land Cover -- State Classes

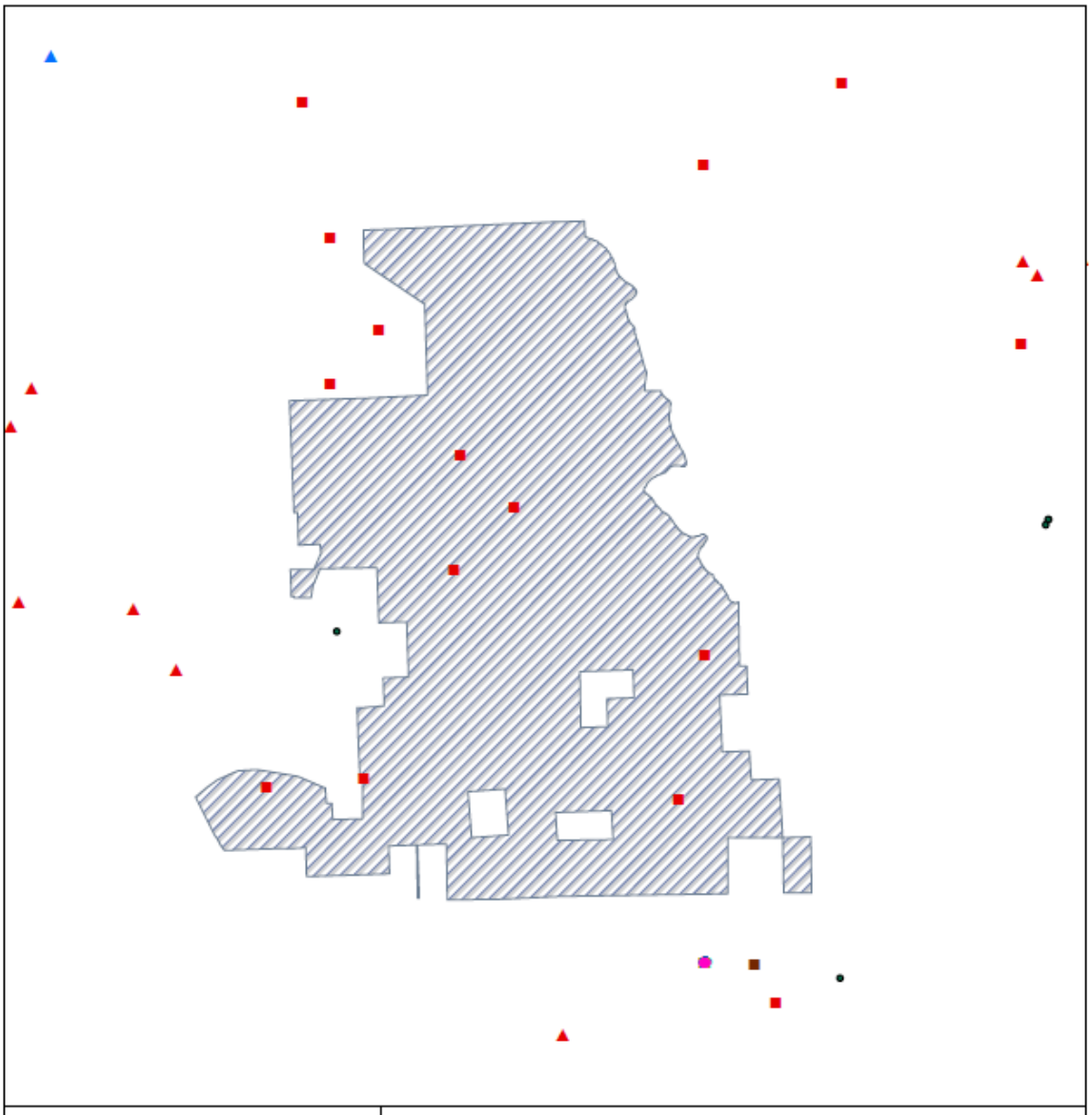
- Hardwod Forested Uplands
- Mesic Hammock
- Xeric Hammock
- Scrub
- Sandhill
- Mesic Flatwoods
- Scrubby Flatwoods
- Mixed Hardwood-Coniferous
- Shrub and Brushland
- Cultural - Terrestrial
- Low Intensity Urban
- High Intensity Urban
- Rural
- Cropland/Pasture
- Improved Pasture
- Orchards/Groves
- Tree Plantations
- Vineyard and Nurseries
- Other Agriculture
- Transportation
- Communication
- Utilities
- Extractive
- Freshwater Non-Forested Wetlands
- Prairies and Bogs
- Marshes
- Isolated Freshwater Marsh
- Floodplain Marsh
- Freshwater Forested Wetlands
- Cypress
- Dome Swamp
- Basin Swamp
- Floodplain Swamp
- Wet Flatwoods
- Atlantic White Cedar
- Baygall
- Hydric Hammock
- Non-vegetated Wetland
- Cultural-Palustrine
- Lacustrine
- Natural Lakes and Ponds
- Cultural - Lacustrine
- Riverine
- Natural Rivers and Streams
- Cultural - Riverine

N

Florida Fish and Wildlife Conservation Commission
MyFWC.com

Miles
0 0.75 1.5 2.25 3

FWC ID: 2019_6326 January 4th, 2019



Charles H. Bronson

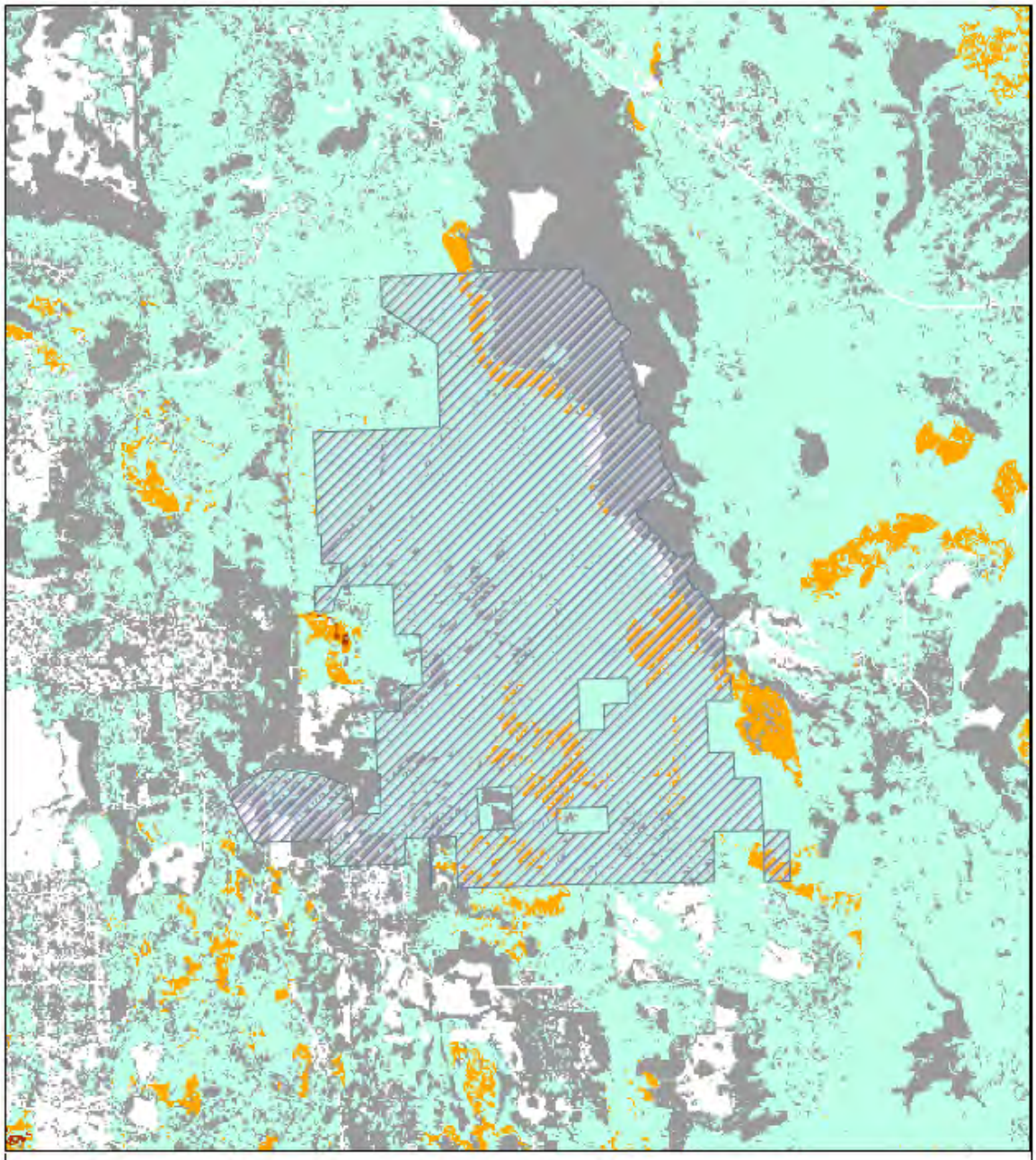
- Indigo Snake
- Shorebirds
- Eagles Nests
- Florida Wood Stork Nests -FWC
- Shore Birds Nests 2002
- Bear Calls
- Bear Mortality
- Wildlife Observations

N

Florida Fish and Wildlife Conservation Commission
MyFWC.com

Miles
0 0.7 1.4 2.1 2.8

FWC ID: 2019_6326 January 4th, 2019



Charles H. Bronson

Species Richness

1 - 3
4 - 6
7 - 9
10 - 13

Miles

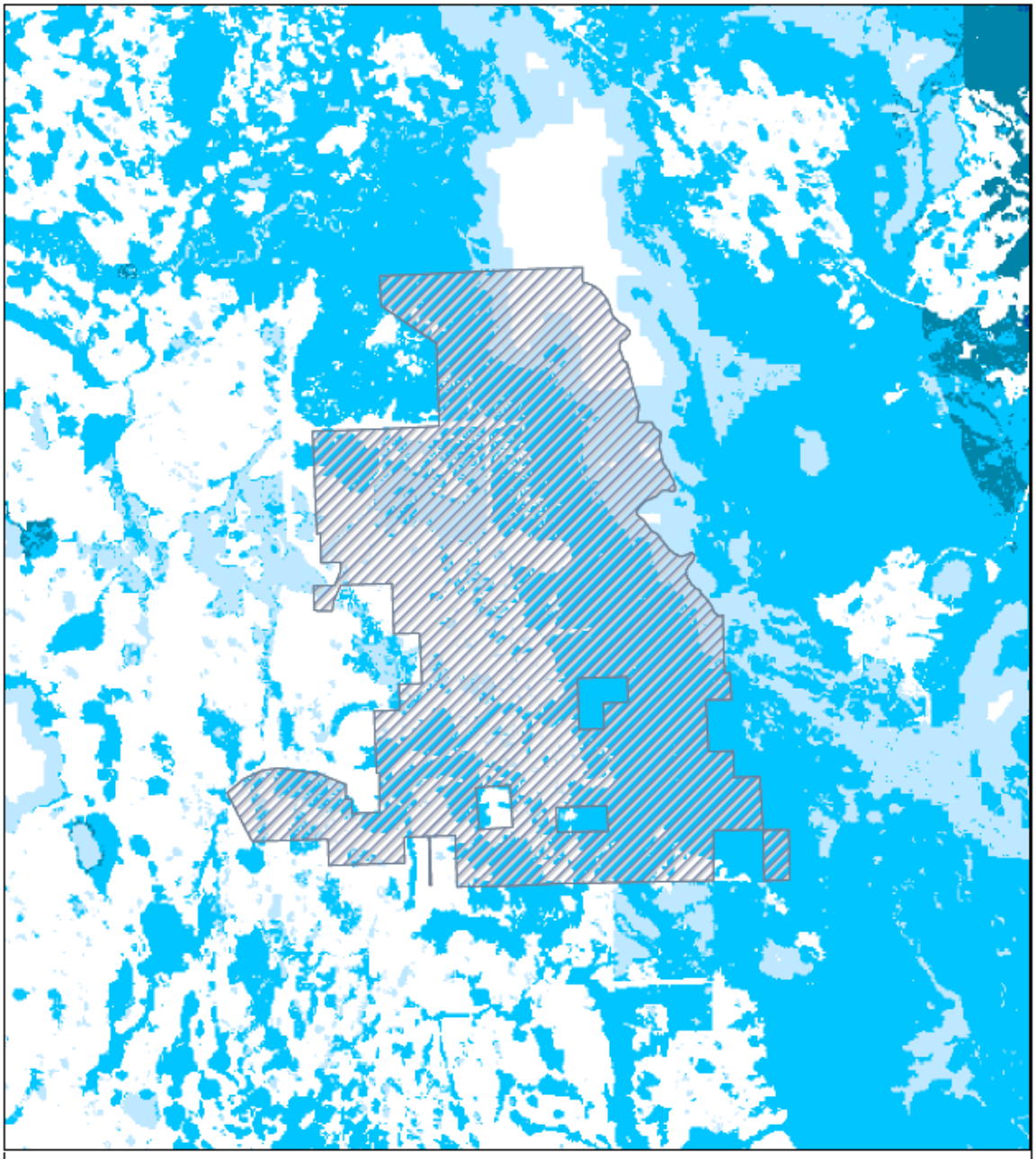
0 0.7 1.4 2.1 2.8

N

Florida Fish and Wildlife Conservation Commission

MyFWC.com

FWC ID: 2019_6326 January 4th, 2019



Charles H. Bronson

Priority Wetlands

- 1-3 Species, Wetlands habitat
- 4-6 Species, Wetlands habitat
- 7-9 Species, Wetlands habitat
- 10-11 Species, Wetlands habitat

Miles

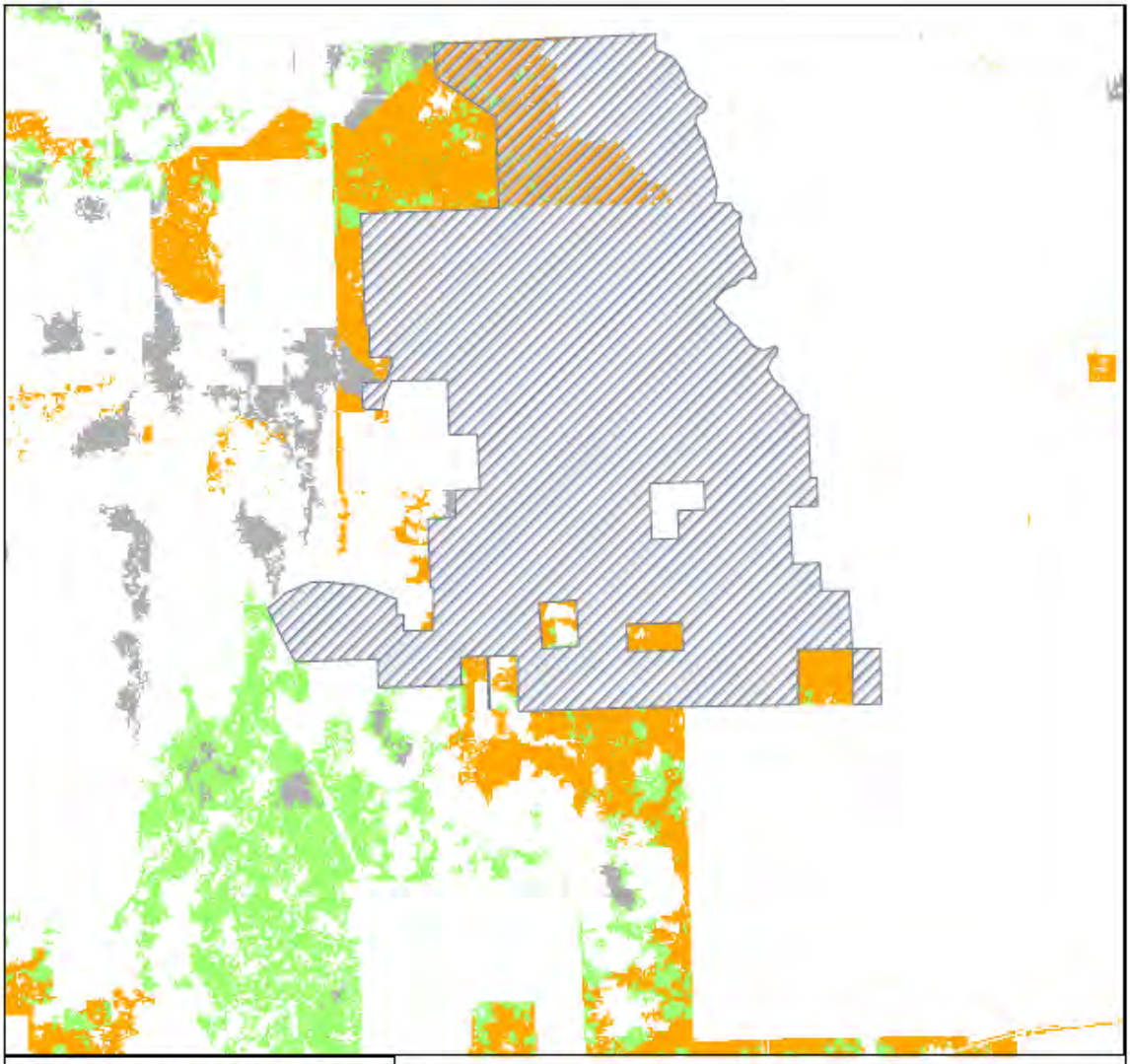
0 0.7 1.4 2.1 2.8

N

Florida Fish and Wildlife Conservation Commission

MyFWC.com

FWC ID: 2019_6326 January 4th, 2019



Charles H. Bronson

Prioritized SHCA's

Priority 1 Priority 2 Priority 3 Priority 4 Priority 5

The prioritized SHCA map identifies 5 classes of SHCA based upon Heritage ranking criteria developed by The Nature Conservancy, the Natural Heritage Program Network, and the Florida Natural Areas Inventory. There are 2 possible ranks used to prioritize a species' SHCA: 1) the global rank based on a species worldwide status, and 2) the state rank based upon the species status in Florida. The state and global ranks are based upon many factors such as known occurrence locations, estimated abundance, range, amount of habitat currently protected, perceived levels of threats towards the species, and ecological fragility.

N

Florida Fish and Wildlife Conservation Commission
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Miles
0 0.7 1.4 2.1 2.8

FWC ID: 2019_6326 January 4th, 2019

Exhibit N

Fire History

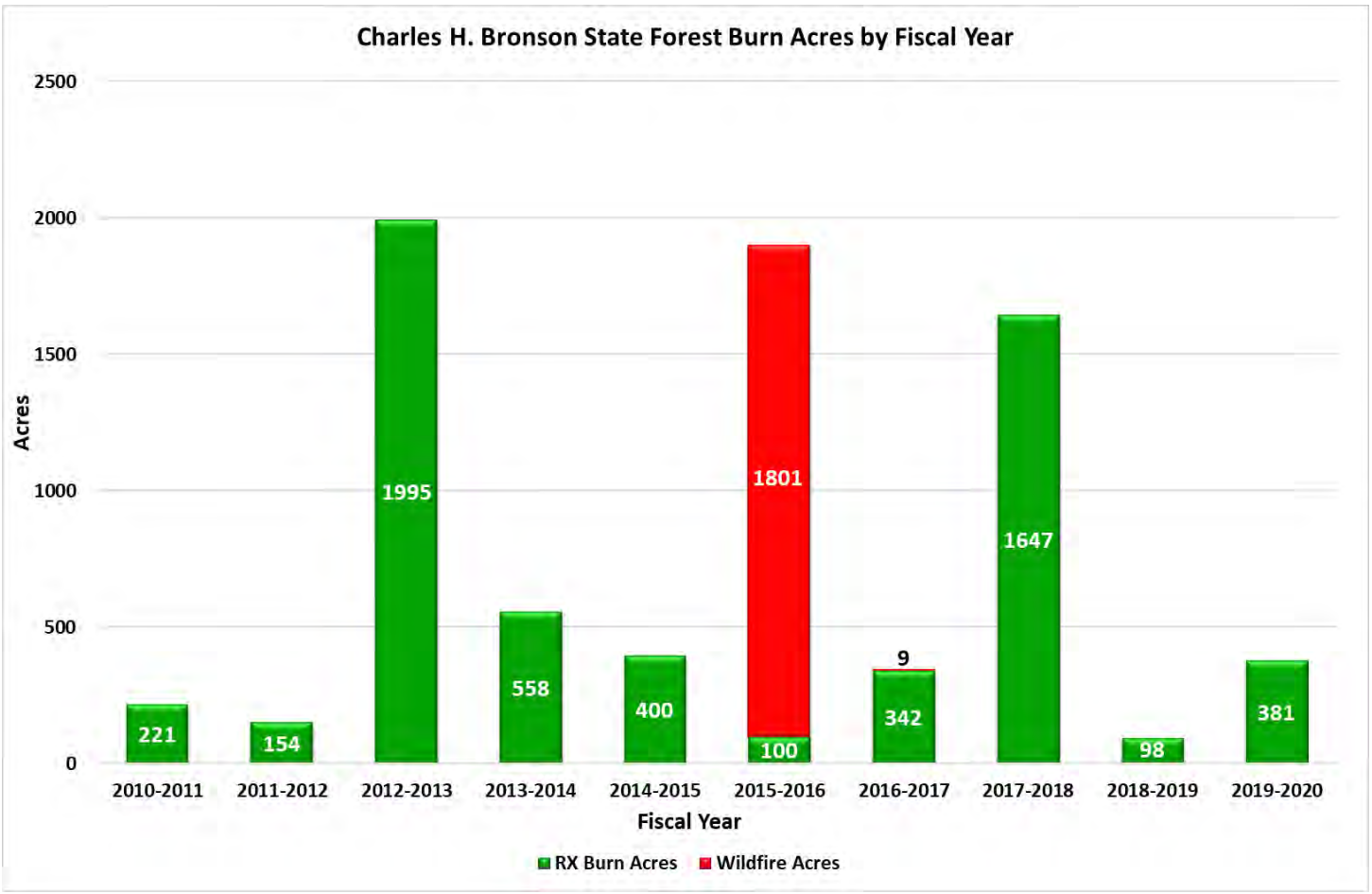

Charles H. Bronson State Forest Burn Acres by Fiscal Year
2500
2000
1500
1000
500
0
Acres
221
154
1995
558
400
1801
100
9
342
1647
98
381
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Fiscal Year
RX Burn Acres
Wildfire Acres

Exhibit O

Non-Native Invasive Species

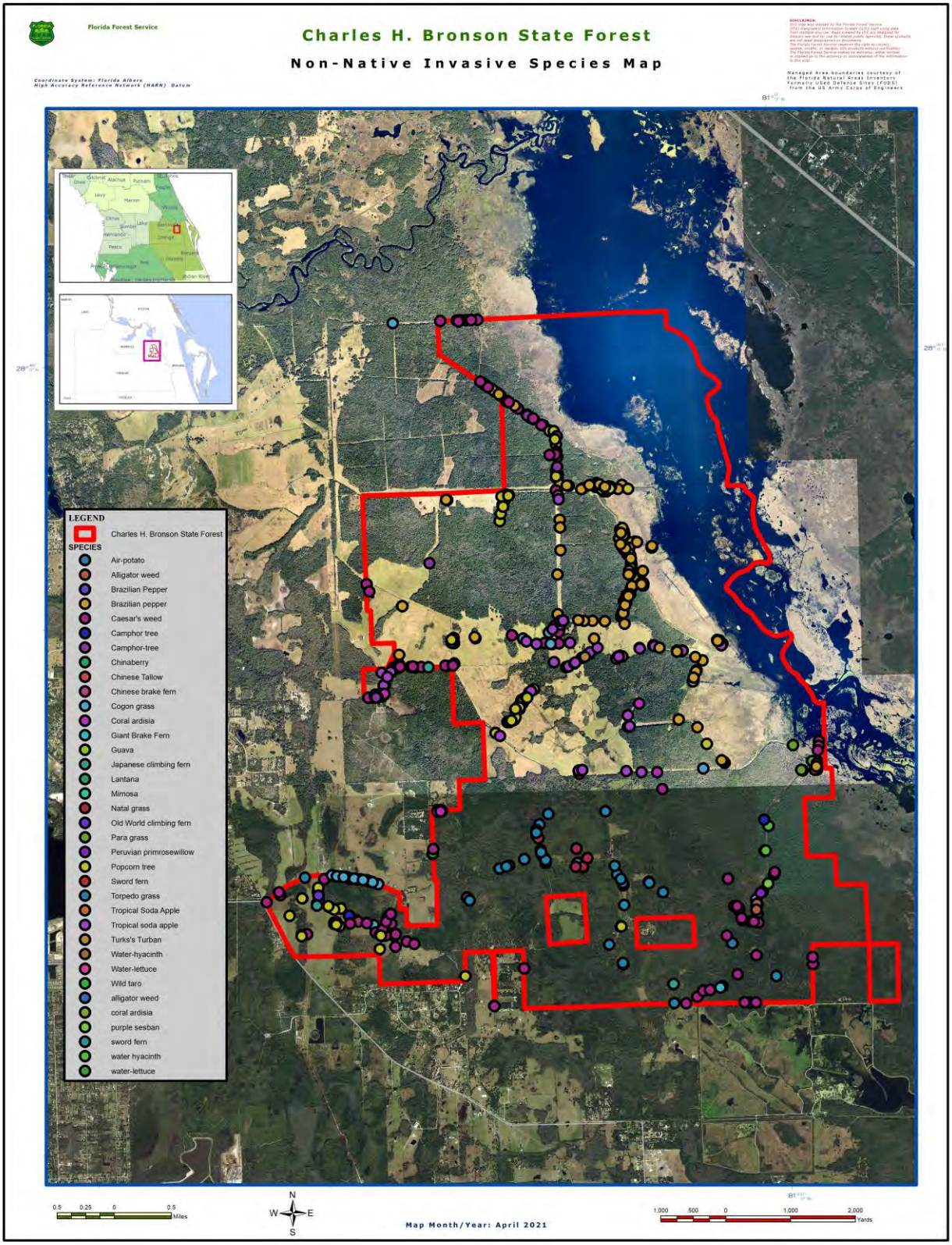

Florida Forest Service
Charles H. Bronson State Forest
Non-Native Invasive Species Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area Boundaries courtesy of the Florida Natural Areas Inventory formerly Used Defense Sites (FUDS) from the US Army Corps of Engineers
LEGEND
Charles H. Bronson State Forest
SPECIES
Air-potato
Alligator weed
Brazilian Pepper
Brazilian pepper
Caesar's weed
Camphor tree
Camphor-tree
Chinaberry
Chinese Tallow
Chinese brake fern
Cogon grass
Coral ardisia
Giant Brake Fern
Guava
Japanese climbing fern
Lantana
Mimosa
Natal grass
Old World climbing fern
Para grass
Peruvian primrosewillow
Popcorn tree
Sword fern
Torpedo grass
Tropical Soda Apple
Tropical soda apple
Turks's Turban
Water-hyacinth
Water-lettuce
Wild taro
alligator weed
coral ardisia
purple sesban
sword fern
water hyacinth
water-lettuce
0.5 0.25 0 0.5 Miles
N
W E
S
1,000 500 0 1,000 2,000 Yards
Map Month/Year: April 2021

Exhibit P

Current Natural Communities and Cover Type Map

Florida Forest Service

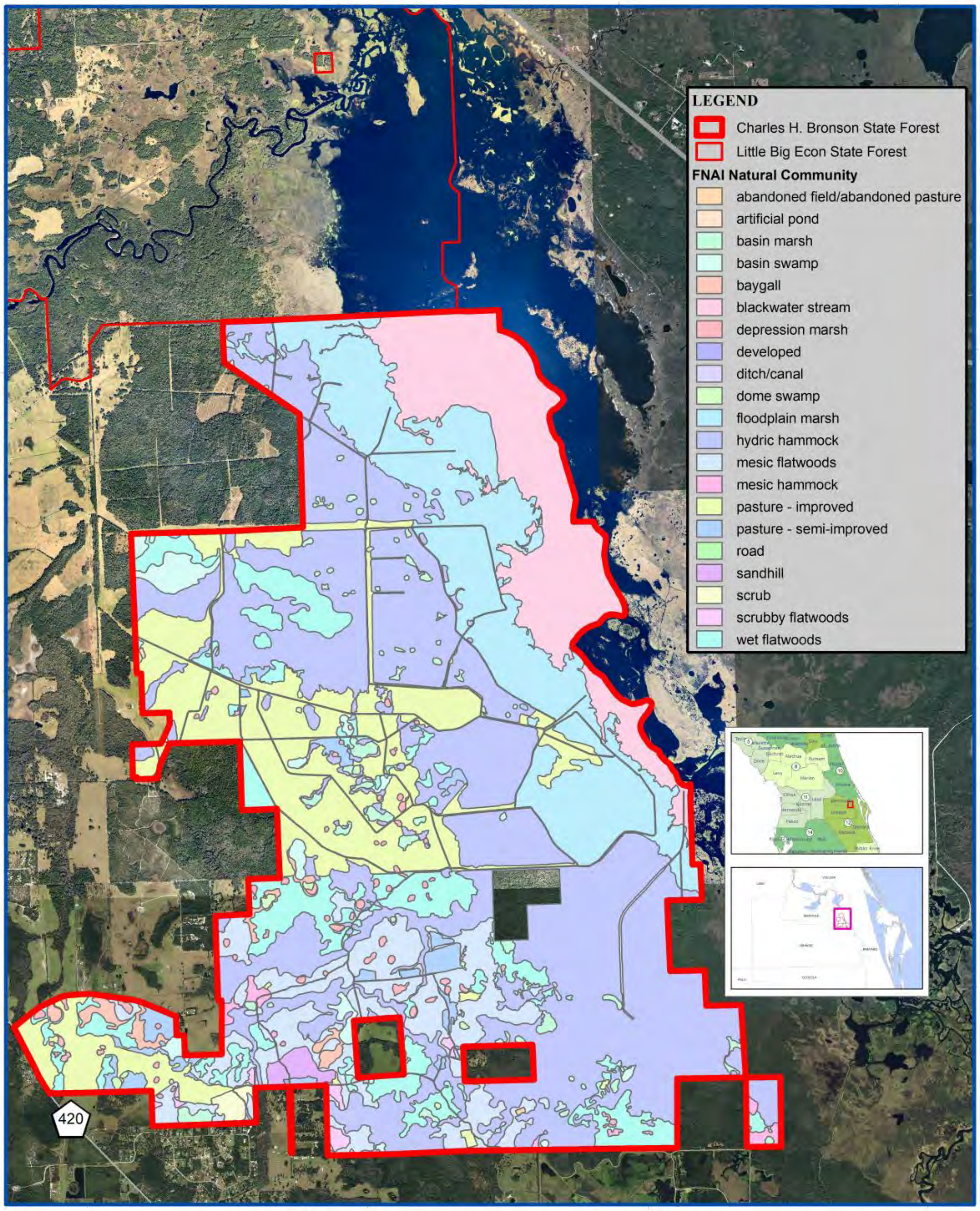
Charles H. Bronson State Forest

Current FNAI Natural Communities And Cover Type Map

Coordinate System: Florida Albers High Accuracy Reference Network (HARN) Datum

DISCLAIMER:
This map was created by the Florida Forest Service (FFS) Geographic Information System (GIS) staff using data from multiple sources. Maps created by FFS are designed for decision use and for use by related public agencies; these products are not legal descriptions or documents. The Florida Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. The Florida Forest Service makes no warranty, either written or implied as to the accuracy or completeness of the information in this map.

Managed Area boundaries courtesy of the Florida Natural Areas Inventory
Formally USed Defense Sites [FUDS] from the US Army Corps of Engineers



0.5 0.25 0 0.5 Miles

N W E S

Map Month/Year: August 2019

1,000 500 0 1,000 2,000 Yards

Exhibit Q

Historic Natural Communities Map

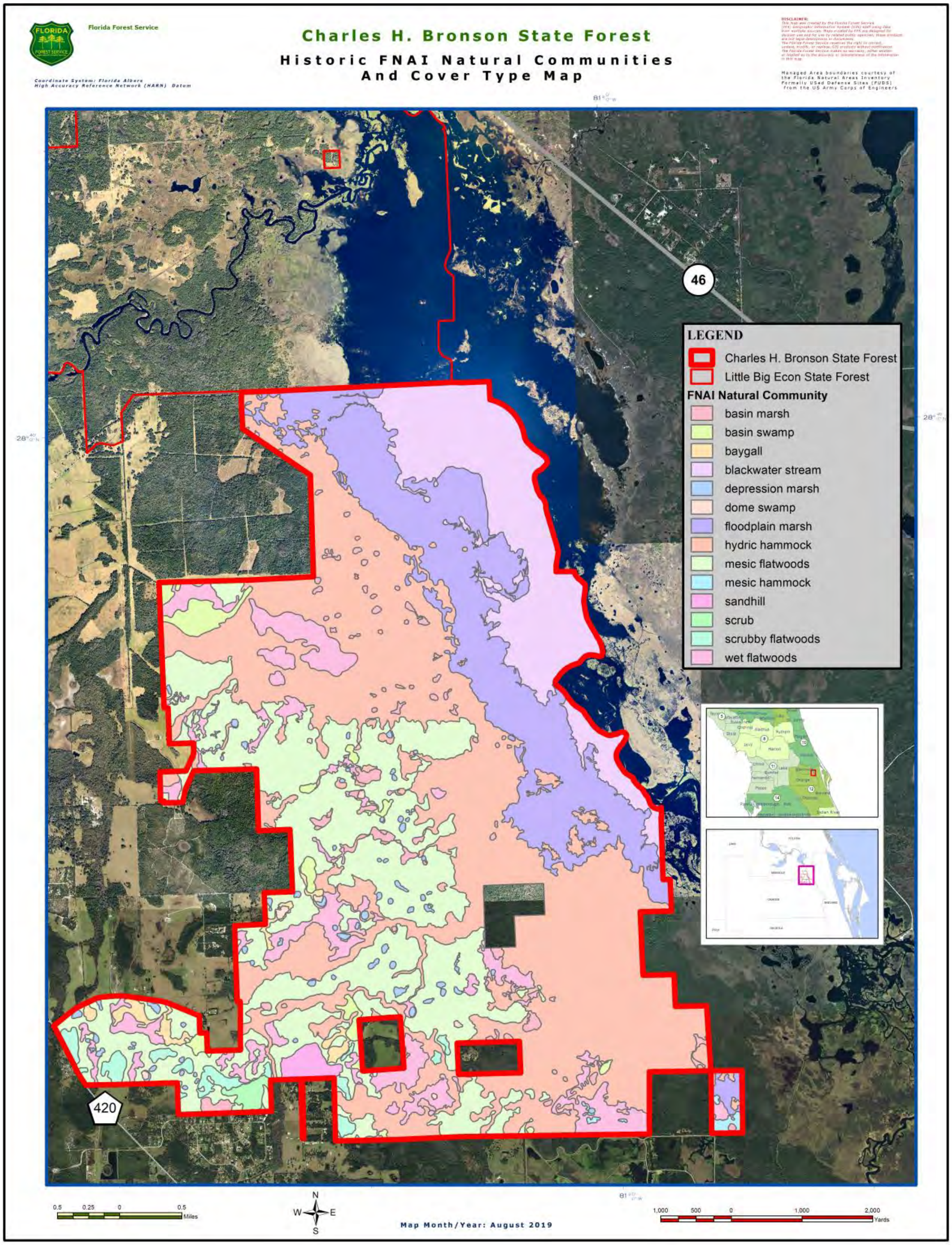

Florida Forest Service
Charles H. Bronson State Forest
Historic FNAI Natural Communities
And Cover Type Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers
46
LEGEND
Charles H. Bronson State Forest
Little Big Econ State Forest
FNAI Natural Community
basin marsh
basin swamp
baygall
blackwater stream
depression marsh
dome swamp
floodplain marsh
hydric hammock
mesic flatwoods
mesic hammock
sandhill
scrub
scrubby flatwoods
wet flatwoods
420
Miles
Map Month/Year: August 2019
Yards

Exhibit R

Management Prospectus

Econ-St. Johns Ecosystem

Orange, Seminole and Volusia Counties

Group A
Full Fee

Purpose for State Acquisition
Between the growing cities of Orlando and Titusville is a near wilderness through which the middle St. Johns River flows. The Econ-St. Johns Ecosystem project will protect part of this undeveloped area along Puzzle Lake where the Econlockhatchee River flows into the St. Johns, adding to conservation lands already on the river, protecting habitat for bald eagle and other wildlife and rare plants, preserving several archaeological sites, and providing the public of this urbanizing region opportunities for canoeing, fishing, hunting, and other recreation. This project may also help complete the Florida National Scenic Trail, a statewide non-motorized trail that crosses a number of Florida Forever project sites.

Manager
Division of Forestry (DOF), Florida Department of Agriculture and Consumer Services.

General Description
The Econ-St. Johns Ecosystem projec□will protect wetlands associated with the Econlockhatchee (a black-water stream) and St. Johns Rivers, extensive hydric hammocks, and over nine miles of frontage on the St. Johns River. Other communities within the project include baygall, mesic/wet flatwoods, floodplain marsh, and scrub/scrubby flatwoods. They support several rare species such as Chapman's sedge, bald eagle, Curtiss' milkweed, and decurrent sedge. Much of the uplands have been converted to improved pasture; grazing and clearcutting have also impacted natural areas. This project, adjacent to the Seminole Ranch Save Our Rivers project, could ultimately be part of public land protecting a riparian corridor nearly 54 miles long along the Econlockhatchee and St. Johns Rivers. Fourteen archaeological sites are known from the project, with good potential for more. The area is threatened by unrestricted logging and residential development.

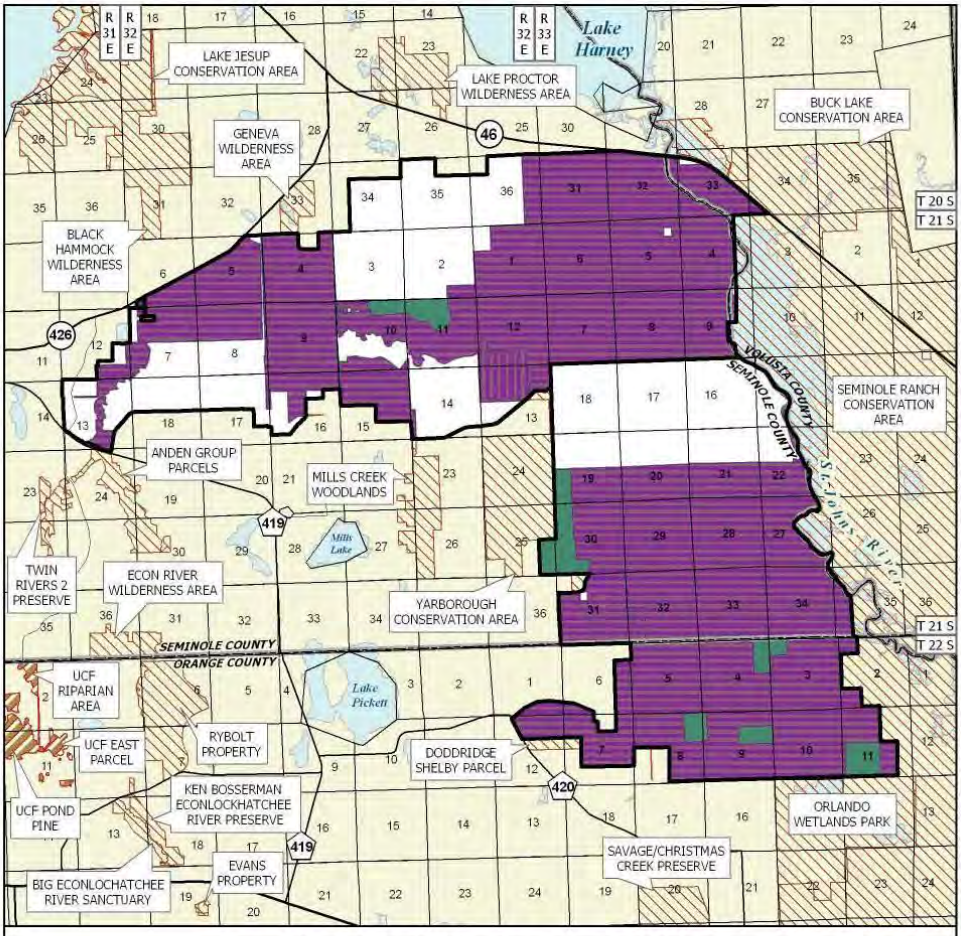
Econ-St. Johns Ecosystem FNAI Elements	
Florida Black Bear	G5T2/S2
Gopher Tortoise	G3/S3
Florida Mouse	G3/S3
Bald Eagle	G5/S3
Celestial Lily	G2/S2
Sand Butterfly Pea	G2Q/S2
Giant Orchid	G2G3/S2
Florida Sandhill Crane	G5T2T3/S2S3
Chapman's Sedge	G3/S3
Florida Beargrass	G3/S3
Florida Mountain-mint	G3/S3
Plume Polypody	G5/S2
18 rare species are associated with the project	

Public Use
The project is designated a state forest, with such uses as fishing, canoeing, hiking, camping, cultural education and nature appreciation.

Acquisition Planning
Econ-St. Johns—Phase I (essential): Hunters Development Fund (acquired); Lee Ranch (acquired); Ray Fore (acquired by Seminole County). Phase II: Northernmost large ownership and remaining inholdings including Clonts, Henning, McLeod, Baker and Ritcher.
Lower Econlockhatchee—Phase 1: Demetree, the largest ownership buffering portions of both sides of river (essential—acquired—shared acquisition with the district). Phase II: Other large tracts including Kilbee (essential—acquired by district), Yarborough (essential - 3,462 acres acquired in less-than-fee by the St. Johns River Water Management District [SJRWMD]), Clonts, Jones and others.

Placed on List	**1994***
Project Area (Acres)	**28,274**
Acres Acquired	**21,969****
at a Cost of	**$135,012,323****
Acres Remaining	**6,305**
with Estimated (Tax Assessed) Value of	**$7,547,810**

* Econ-St Johns and Lower Econlockhatchee projects were combined to create Econ-St. Johns Ecosystem in 1994
** Includes acreage acquired and funds expended by SJRWMD and Orange County. Includes 2009 settlement on Turkey Creek.



ECON - ST. JOHNS ECOSYSTEM

ORANGE, SEMINOLE AND VOLUSIA COUNTIES

- Florida Forever BOT Project Boundary
- Acquired for Conservation (Fee Simple)
- Acquired for Conservation (Less-Than-Fee)
- Essential Parcel(s) Remaining
- State Owned Lands
- Other Conservation Lands

0 1 2 4 Miles

NOVEMBER 2009

Essential parcels in both the Econ-St. Johns and Lower Econlockhatchee projects were acquired (fee and less-than-fee) either by, or in conjunction with, the St. Johns River Water Management District. On January 17, 1990, LAMAC eliminated all phasing.

On December 7, 1994, the Land Acquisition Advisory Council (LAAC) approved combining the Lower Econlockhatchee and Econ-St. Johns Corridor CARL projects and renaming the new project Econ-St. Johns Ecosystem. The total acreage for the project was approximately 27,652.

On June 9, 2006, the Acquisition & Restoration Council (ARC) approved a fee-simple 622-acre addition to the project boundary. It was sponsored by owner Land South Hunters LLC and had a 2005 taxable value of $98,580. This parcel has been designated as essential. The landowner already has acreage within the current boundary (3,978) and will only sell the entire 4,600 acres as a whole. The acquisition is expected to occur as a partnership between the SJRWMD and the Board of Trustees. The Council also moved the project to Group A. On 12/13/2011 4.57 ac.with a closed value of $23,000 were acquired through an exchange known as Clonts Exchange.

Coordination

The SJRWMD is an acquisition partner in this project as are both Seminole and Orange Counties. The district's expenditures are reflected in the table at the beginning of the project summary.

Management Policy Statement

The primary goals of management of the Econ-St Johns Ecosystem project are to conserve and protect significant habitat for native species or endangered and threatened species; to conserve, protect, manage, or restore important ecosystems, landscapes and forests, in order to enhance or protect significant surface water, coastal, recreational, timber, fish or wildlife resources which local or state regulatory programs cannot adequately protect; to provide areas, including recreational trails, for natural resource based recreation; and to preserve significant archaeological or historical sites.

Management Prospectus

Qualifications for state designation The size and restorable forest resources of the Econ-St. Johns River Ecosystem make it highly desirable for management as a state forest.

Manager The DOF is recommended as manager.

Conditions affecting intensity of management Other than the habitat restoration needs mentioned below, the management needs for this project are expected to be typical for a state forest.

Timetable for implementing management and provisions for security and protection of infrastructure Approximately 15% of the project has already been acquired. Although a full complement of positions has not yet been funded, the public is being provided access for low-intensity, non-facilities-related outdoor recreation. Current management involves securing the site, providing public and fire management accesses, and removing trash. The Division will provide access to the public while protecting sensitive resources. After enough of the project is acquired, the sites' natural resources and threatened and endangered plants and animals will be inventoried to provide the basis for a management plan.

Long-range plans for this project will generally be directed toward restoring disturbed areas to their original conditions, as far as possible, as well as protecting threatened and endangered species. The project contains a considerable acreage of pasture and range that is suitable for reforestation. An all-season burning program will use, whenever possible, existing roads, black lines, foam lines and natural breaks to contain fires. Timber management will mostly involve improvement thinning and regeneration harvests. Plantations will be thinned and, where appropriate, reforested with species found in natural ecosystems. Stands will not have a targeted rotation age. Infrastructure will primarily be located in disturbed areas and will be the minimum required for management and public access. The Division will promote environmental education.

Revenue-generating potential The DOF will sell timber as needed to improve or maintain desirable ecosystem conditions. These sales will provide a variable source of revenue, but the revenue-generating potential for this project is expected to be low.

Cooperators in management activities The DOF is cooperating with other state agencies, local government entities and other interested parties.

Management Cost Summary/ DOF			
Category	1995/96	1996/97	1997/98
Source of Funds	CARL	CARL	CARL
Salary	$39,373	$40,554	$43,000
OPS	$0	$4,320	$0
Expense	$28,487	$24,841	$25,000
OCO	$2,860	$6,500	$5,000
FCO	$0	$0	$0
TOTAL	$70,720	$76,215	$73,000

Exhibit S

Land Management Reviews
(2013 and 2018)

Name of Site: Charles H. Bronson State Forest **County:** Seminole/Orange

Managed by: Department of Agriculture and Consumer Services
Florida Forest Service **Acres:** 9,032 Acres

Review Date: 04/30/13 **Management Plan Approval Date:** 12/10/10

Review Team Determination

Managed in accordance with acquisition purpose? Yes = 8, No = 0

Management practices, including public access, in compliance with the management plan? Yes = 8, No = 0

Categories	Management Plan Review	Field Review
Natural Communities	0.60	4.27
Listed Species	0.82	3.93
Natural Resource Survey	0.76	3.37
Cultural Resources	0.93	4.56
Prescribed Fire	1.00	4.71
Restoration	1.00	3.93
Exotic Species	0.91	3.50
Hydrology	0.85	3.79
Groundwater Monitoring	0.15	1.88
Surface Water Monitoring	0.54	2.54
Resource Protection	0.96	4.34
Adjacent Property Concerns	0.61	3.19
Public Access & Education	0.83	3.72
Managed Area Uses	0.96	N/A
Buildings, Equipment, Staff & Funding	N/A	2.77

Consensus Commendations to the Managing Agency

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

1. The team commends the FFS staff for their efforts to initiate an effective prescribed burning program that has included a very successful recent aerial ignition burn over a large area of wet prairie. (VOTE: 8+, 0-)

★★★★★★★★

2. The team commends the FFS manager for his extra effort at identifying and submitting potential historical and cultural sites to DHR, including a significant ring mound site near the St. Johns River. (VOTE: 8+, 0-)

★★★★★★★★

3. The team commends the extraordinary work by SJRWMD, NRCS and FFS staff to implement hydrological restoration of the wet prairie and floodplain marshes through removal of dikes, addition of ditch blocks, and the reduction of undesired wood vegetation through burning and selective rollerchopping. (VOTE: 8+, 0-)

★★★★★★★★

4. The team commends the FFS staff for their efforts to develop strong relationships with cattle lessees that has engaged them in controlling hogs and to assist with rollerchopping associated with a hydrological restoration project. (VOTE: 8+, 0-)

★★★★★★★★

5. The team commends the manager for the thorough packet of documents prepared and provided in advance of the land management review. (VOTE: 8+, 0-)

★★★★★★★★

6. The team commends the FFS staff and local leadership for engaging and supporting the local community on multiple occasions and event hosting. (VOTE: 8+, 0-)

★★★★★★★★

Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The management plan must include responses to the recommendations identified below.

1. The team recommends that the FFS reconvene the Liaison Group meetings for CBSF. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Charles H. Bronson State Forest liaison group was established after the management plan was approved in December 2010. The last meeting we had was in 2012. We will hold semi-annually meetings, and sometimes more, if the need presents itself.

2. The team recommends that FFS investigate opportunities for additional plant and animal surveys, such as a "bio blitz" approach that would invite other agency biologists and non-profit organizations, like the FNPS. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Florida Forest Service has started documenting incidental observations of state and/or federally listed plant and animal species on Charles H. Bronson State Forest and is recording these in its Forest Data Model. The Florida Forest Service will continue to seek funding and/or opportunities to implement imperiled species surveys and monitoring as identified in the various Goal 8 objectives listed in the management plan.

3. The team recommends that FFS consider involving cattle lessees more with the control of certain invasive exotic plant species. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Florida Forest Service will have the cattle lessees control exotic and invasive plants that are within the leased area. The exotic and invasive plants that the lessees will be asked to control will include tropical soda apple, cogon grass, Brazilian pepper, and Chinese tallow. Less-common and/or difficult-to-identify invasive species within the forest will continue to be controlled by Florida Forest Service staff and through control grants for contract treatment.

4. The team recommends that FFS pursue their plans to rollerchop and reduce palmetto fuels in order to increase fire frequency in fire-suppressed sections of mesic and wet flatwoods. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Florida Forest Service will use staff, cattle lessees in kind service and contract chopping to reduce palmetto fuels over the next ten years.

5. The team recommends that FFS continue their efforts and use a FFS-funded regional OPS staff person to map and treat invasive exotic plants on selected sections of the property, and seek the additional funding/staff necessary to increase the level of survey and treatment commensurate with a large population of exotic plants. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Florida Forest Service will apply for control grants for contract treatment of exotic and invasive plants.

6. The team recommends that FFS investigate the potential for additional methods to reducing or eradicating invasive exotic animals. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Florida Forest Service will apply for control grants for contract treatment of exotic and invasive animals.

7. The team recommends that additional staff and funding be added to CBSF. (VOTE: 8+, 0-)

★★★★★★★★

Managing Agency Response: The Florida Forest Service will staff CHBSF as funding allows.

Field Review Checklist Findings

The following items received high scores on the review team checklist, indicating the management actions in the field exceeded expectations.

- Natural Communities, specifically hydric hammock, floodplain swamp, mesic flatwoods, wet flatwoods, wet prairie, depression marsh, baygall, sandhill, basin marsh, floodplain marsh, scrubby flatwoods, dome swamp, basin swamp, mesic hammock, scrub, blackwater stream and river floodplain lake.
- Listed Species, specifically animal and plant inventory.
- Natural Resources Survey, specifically fire effects monitoring, other habitat management effects monitoring and invasive species survey/monitoring.
- Cultural Resources, specifically cultural resource survey, protection and preservation.
- Resource Management, Prescribed Fire, specifically area being burned (no. acres), frequency and quality.
- Restoration of Ruderal Areas, specifically hydrological restoration for wetlands.
- Forest Management, specifically, timber inventory.
- Non-Native, Invasive & Problem Species, specifically prevention of plants and animals.
- Hydrologic/Geologic Function, specifically roads/culverts and hydro-period alteration.
- Resource Protection, specifically boundary survey, gates/fencing, signage and law enforcement presence.

- Adjacent Property Concerns, specifically inholdings/additions.
- Public Access & Education, specifically roads and parking.
- Environmental Education & Outreach, specifically wildlife, interpretive facilities, signs, recreational opportunities and management of visitor impacts.

Items Requiring Improvement Actions in the Management Plan

The following items received low scores on the review team checklist, which indicates that the text noted in the Management Plan Review does not sufficiently address this issue (less than .5 score on average.). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan must include responses to the checklist items identified below:

1. The review team average score indicates a need for acknowledgement of natural communities, specifically wet flatwoods, depression marsh, dome swamp, scrub and river floodplain lake. Please provide documentation in the management plan.

2. The review team average score indicates a need for acknowledgement of ground water monitoring, specifically water quality and quantity and surface water quantity. Please provide documentation in the management plan.

3. The review team average score indicates a need for acknowledgement of adjacent property concerns, specifically expanding development and surplus lands identified. Please provide documentation in the management plan.

4. The review team average score indicates a need for acknowledgement of environmental education &outreach, specifically invasive species and habitat management activities. Please provide documentation in the management plan.

PLAN REVIEW		1	2	3	4	5	6	7	8	AVERAGE
Natural Communities (I.A)										
Hydric Hammock	I.A.1		0	1		1	1	1	0	0.67
Floodplain Swamp	I.A.2		0	1		1	1	1	0	0.67
Mesic Flatwoods	I.A.3		0	1		1	1	1	0	0.67
Wet Flatwoods	I.A.4		0	1		1	0	1	0	0.50
Wet Prairie	I.A.5		0	1		1	1	1	0	0.67
Depression Marsh	I.A.6		0	1		1	0	1	0	0.50
Baygall	I.A.7		0	1		1		1	0	0.60
Sandhill	I.A.8		1	1		1	1	1	0	0.83
Basin Marsh	I.A.9		0	1		1		1	0	0.60
Floodplain Marsh	I.A.10		0	1		1		1	0	0.60
Scrubby Flatwoods	I.A.11		0	1		1		1	0	0.60
Dome Swamp	I.A.12		0	1		0		1	0	0.40
Basin Swamp	I.A.14		0	1		1	1	1	0	0.67
Mesic Hammock	I.A.15		0	1		1	1	1	0	0.67
Scrub	I.A.16		0	1				1	0	0.50
Blackwater Stream	I.A.17		0	1		1		1	0	0.60
River Floodplain Lake	I.A.18		0	1		1		0	0	0.40

Listed species:Protection & Preservation (I.B)										
Animal	I.B.1	1	1	1			1	1	0	0.83
Plant	I.B.2	1	1				1	1	0	0.80
Natural Resources Survey/Management Resources (I.C)										
Listed species or habitat monitoring	I.C.2	1	0	1		0	1	1	0	0.57
Other non-game species or habitat monitoring	I.C.3	1	0	1		0	1	1	1	0.71
Fire effects monitoring	I.C.4	1	0	1		1	1	1	1	0.86
Other habitat management effects monitoring	I.C.5	1	0	1			1	1	1	0.83
Invasive species survey / monitoring	I.C.6	1	1	1			1	1	0	0.83
Cultural Resources (Archeological & Historic sites) (II.A,II.B)										
Cultural Res. Survey	II.A	1	1	1		1	1	1	1	1.00
Protection and preservation	II.B	1	0	1		1	1	1	1	0.86
Resource Management, Prescribed Fire (III.A)										
Area Being Burned (no. acres)	III.A.1	1	1	1		1	1	1	1	1.00
Frequency	III.A.2	1	1	1		1	1	1	1	1.00
Quality	III.A.3	1	1	1		1	1	1	1	1.00
Restoration of Ruderal Areas (III.B)										
Hydrological Restoration for Wetlands	III.B.1	1	1	1			1	1	1	1.00
Groundcover Restoration	III.B.2	1	1	1		1	1	1	1	1.00
Forest Management (III.C)										
Timber Inventory	III.C.1	1	1	1		1	1	1	1	1.00
Non-Native, Invasive & Problem Species (III.E)										
Prevention										
prevention - plants	III.E.1.a	1	1	1		1	1	1	0	0.86
prevention - animals	III.E.1.b	1	1	1		1	1	1	1	1.00
Control										
control - plants	III.E.2.a		1	1			1	1	0	0.80
control - animals	III.E.2.b		1	1		1	1	1	1	1.00
Hydrologic/Geologic function Hydro-Alteration (III.F.1)										
Roads/culverts	III.F.1.a	1	1	1		1	1	1	0	0.86
Ditches	III.F.1.b	1	1	1		1	1	1	0	0.86
Hydro-period Alteration	III.F.1.c	1	1			1	1	1	0	0.83
Ground Water Monitoring (III.F.2)										
Ground water quality	III.F.2.a	0	0	0		0	0	0	1	0.14
Ground water quantity	III.F.2.b	0	0	0			0	0	1	0.17
Surface Water Monitoring (III.F.3)										

Surface water quality	III.F.3.a	1	0	0		1	0	1	1	0.57
Surface water quantity	III.F.3.b	1	0	0			0	1	1	0.50
Resource Protection (III.G)										
Boundary survey	III.G.1	1	1	1		1	1	1	1	1.00
Gates & fencing	III.G.2	1	1	1		1	1	1	1	1.00
Signage	III.G.3	1	1	1		1	1	1	1	1.00
Law enforcement presence	III.G.4		0	1		1	1	1	1	0.83
Adjacent Property Concerns (III.H)										
Land Use										
Expanding development	III.H.1.a	0	0	1		0	0	1	1	0.43
Inholdings/additions	III.H.2	0	1	1		1	1	1	1	0.86
Discussion of Potential Surplus Land Determination	III.H.3	1	1	1		0	0	1	1	0.71
Surplus Lands Identified?	III.H.4	0	1	0		1	0	0	1	0.43
Public Access & Education										
Public Access										
Roads	IV.1.a	1	1	1		1	1	1	1	1.00
Parking	IV.1.b	1	1	1		1	1	1	1	1.00
Environmental Education & Outreach										
Wildlife	IV.2.a	0	0	1			1	1	1	0.67
Invasive Species	IV.2.b	0	0	1			0	1	1	0.50
Habitat Management Activities	IV.2.c	0	0	1			0	1	1	0.50
Interpretive facilities and signs	IV.3	1	1			1	1	1	1	1.00
Recreational Opportunities	IV.4	1	1	1		1	1	1	1	1.00
Management of Visitor Impacts	IV.5	1	1	1			1	1	1	1.00
Managed Area Uses										
Existing Uses										
Hunting	VI.A.1	1	1	1	1	1	1	1	1	1.00
Hiking	VI.A.2	1	1	1	1	1	1	1	1	1.00
Horseback Riding	VI.A.3	1	1	1	1		1	1	1	1.00
Cattle Grazing	VI.A.4		1	1	1		0	1	1	0.83
Apiaries	VI.A.5	1	1	1	1		0	1	1	0.86
Camping	VI.A.6	1	1	1	1	1	1	1	1	1.00
Picnicking	VI.A.7	1	1	1	1	1	1	1	1	1.00
Wildlife Appreciation	VI.A.8	1	1	1	1	1	1	1	1	1.00
Proposed Uses										
Bicycling	VI.B.1	1	1	1	1	0	1	1	1	0.88
Miscellaneous Forest Products	VI.B.2	1	1	1	1	0	0	1	1	0.75

Items Requiring Improvement Actions in the Field

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review were not considered sufficient (less than 2.5 score on average). However, in the case of the natural community scoring, the scores reflect the estimation by team members of what percentage of the community type was judged to be in "maintenance condition" – based on their

observations and the statements of the manager during the LMR. Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan must include responses to the checklist items identified below:

1. The review team average score indicates a need additional management effort for acknowledgement of natural resources survey/management resources, specifically as it relates to listed species or habitat monitoring. Please provide documentation in the management plan.
Managing Agency Response: Over the past year the Florida Forest Service tried to contract the ecosystem mapping (current & historical) and gopher tortoise survey through the Florida Natural Areas Inventory but we did not have the funds to get the surveys completed. As stated within the 10 year resource management plan the Florida Forest Service will develop a baseline imperiled species occurrence inventory list, it will develop monitoring protocols for selected imperiled species to determine population status and will develop a wildlife management plan in cooperation with the Florida Fish and Wildlife Conservation Commission.

2. The review team average score indicates a need for additional management effort acknowledgement of restoration of ruderal areas, specifically as it relates to groundcover restoration. Please provide documentation in the management plan.
Managing Agency Response: The Florida Forest Service will develop a plan for groundcover restoration in the ruderal areas. The plan will not be able to be implemented until the current cattle leases expire and we get funds or grants to implement the plan. For now, FFS will continue to monitor the cattle lease areas – particularly those more intact natural habitat areas – to help identify priorities for burning to enhance native groundcover that is present now.

3. The review team average score indicates a need for additional management effort acknowledgement of ground water monitoring, specifically as it relates to water quality and quantity and surface water quantity. Please provide documentation in the management plan.
Managing Agency Response: The Florida Forest Service will seek input from St. Johns River Water Management District and Florida Department of Environmental Protection on their current monitoring protocols for ground and surface water quality and quantity on, and in the area of the state forest. FFS will request that results of any monitoring be provided to the forest manager as it becomes available.

4. The review team average score indicates a need for additional acknowledgement management resources, specifically staff and funding. Please provide documentation in the management plan.
Managing Agency Response: Florida Forest Service will staff CHBSF as funding allows.

FIELD REVIEW		1	2	3	4	5	6	7	8	AVERAGE
Natural Communities (I.A)										
Hydric Hammock	I.A.1	5	5	5	5	5	5	5	5	5.00
Floodplain Swamp	I.A.2	5	5	5	5	5	5	5	5	5.00
Mesic Flatwoods	I.A.3	4	4	4	4	4	4	4	4	4.00
Wet Flatwoods	I.A.4	4	4	4	3	4	2	4	3	3.50
Wet Prairie	I.A.5	4	4	4	4	5	3	5	4	4.13
Depression Marsh	I.A.6	4	3	3	5	4	3	3	3	3.50
Baygall	I.A.7	5	X	3		4	X	X	5	4.25
Sandhill	I.A.8	5	4		4	4	4	5	4	4.29
Basin Marsh	I.A.9	X	X	3	4	3	X	4	4	3.60
Floodplain Marsh	I.A.10	5	4	3	5	5	X	5	5	4.57
Scrubby Flatwoods	I.A.11	5	4	4	4	5	X	5	4	4.43
Dome Swamp	I.A.12	5	4	4	4	5	X	4	4	4.29
Basin Swamp	I.A.14	5	4	5	5	5	5	4	4	4.63
Mesic Hammock	I.A.15	5	4	5	5	5	X	4	2	4.29

Scrub	I.A.16	5	X	3	3		X	3	5	3.80
Blackwater Stream	I.A.17	5	5	4	5	5	X	4	4	4.57
River Floodplain Lake	I.A.18	X	5	5	X	5	X	X	4	4.75
Listed species:Protection & Preservation (I.B)										
Animal	I.B.1	5	5	4	3		5	3	3	4.00
Plant	I.B.2	5	5	3	3		5	3	3	3.86
Natural Resources Survey/Management Resources (I.C)										
Listed species or habitat monitoring	I.C.2	4	1	1	2		4	3	2	2.43
Other non-game species or habitat monitoring	I.C.3	3	2	4	3		4	X	3	3.17
Fire effects monitoring	I.C.4	4	4	4	4	4	5	5	3	4.13
Other habitat management effects monitoring	I.C.5	4	2	4	3	3	4	5	3	3.50
Invasive species survey / monitoring	I.C.6	5	2	4	4	3	4	4	3	3.63
Cultural Resources (Archeological & Historic sites) (II.A,II.B)										
Cultural Res. Survey	II.A	5	3	5	5	5	4	5	5	4.63
Protection and preservation	II.B	5	2	5	5	5	4	5	5	4.50
Resource Management, Prescribed Fire (III.A)										
Area Being Burned (no. acres)	III.A1	5	5	5	4	5	4	5	4	4.63
Frequency	III.A.2	5	5	5	4	5	4	5	4	4.63
Quality	III.A.3	5	5	5	5	5	4	5	5	4.88
Restoration of Ruderal Areas (III.B)										
Hydrological Restoration for Wetlands	III.B.1	5	4	5	5		4		5	4.67
Groundcover Restoration	III.B.2	2	1	3	3	3	2	3	3	2.50
Forest Management (III.C)										
Timber Inventory	III.C.1	4	4	5	5	5	4	5	5	4.63
Non-Native, Invasive & Problem Species (III.E)										
Prevention										
prevention - plants	III.E.1.a	3	3	4	4	5	3	4	4	3.75
prevention - animals	III.E.1.b	3	3	4	4	3	3	4	4	3.50
Control										
control - plants	III.E.2.a		2	4	4		3	4	3	3.33
control - animals	III.E.2.b		2	4	4	3	3	4	4	3.43
Hydrologic/Geologic function Hydro-Alteration (III.E.1)										
Roads/culverts	III.F.1.a	5	4	4	4	5	3	4	5	4.25
Ditches	III.F.1.b	3	3	4	3	3	3	4	4	3.38
Hydro-period Alteration	III.F.1.c	4	4	3	4	3	3	4	5	3.75
Ground Water Monitoring (III.F.2)										
Ground water quality	III.F.2.a		1	2	X	3	1	X	3	2.00

Ground water quantity	III.F.2.b		1	2	X		1	X	3	1.75
Surface Water Monitoring (III.E.3)										
Surface water quality	III.F.3.a	3	2	3	X	3	1	3	3	2.57
Surface water quantity	III.F.3.b	3	2	3	X		1	3	3	2.50
Resource Protection (III.F)										
Boundary survey	III.G.1	3	3	5	5	5	5	5	5	4.50
Gates & fencing	III.G.2	5	4	5	5	5	5	5	5	4.88
Signage	III.G.3	3	4	5	4	5	4	5	4	4.25
Law enforcement presence	III.G.4	5	3	4	2	5	3	4	4	3.75
Adjacent Property Concerns (III.G)										
Land Use										
Expanding development	III.H.1.a	3	3	3	3	3	2	3	3	2.88
Inholdings/additions	III.H.2	4	3	4	4	X	X	3	3	3.50
Public Access & Education										
Public Access										
Roads	IV.1.a	3	5	4	3	4	4	4	3	3.75
Parking	IV.1.b	5	5	4	3		4	4	4	4.14
Environmental Education & Outreach										
Wildlife	IV.2.a	3	4	4	5		3	4	3	3.71
Invasive Species	IV.2.b	3	3	4	3		1	4	3	3.00
Habitat Management Activities	IV.2.c	3	4	4	X		1	4	3	3.17
Interpretive facilities and signs	IV.3	3	3	4	3		4	4	4	3.57
Recreational Opportunities	IV.4	4	4	5	5		4	5	4	4.43
Management of Visitor Impacts	IV.5	5	4	4	4		3	4	4	4.00
Management Resources										
Infrastructure										
Buildings	V.2.a	X	3	4	3		3	4	3	3.33
Equipment	V.2.b	3	3		3		4	4	3	3.33
Staff	V.3	1	1	2	2		5	2	2	2.14
Funding	V.4	1	2	2	2		5	2	2	2.29

Florida Forest Service Manager and Key Staff Present:

Stephen Stipkovits, FFS Forester
Paul Hartsfield, FFS Forest Area Supervisor
Sean Gallagher, FFS District Manager

APPENDIX:

The following comments represent individual comments, and may not represent the consensus of the land management review team.

I.A. Natural Communities

- Depression marshes are being impacted by cattle.
- Need more info on basin marsh.
- Must expand information on natural communities & planning for said communities in next plan update.
- FFS staff have done an excellent job of getting fire into much of the mesic/wet flatwoods, and except for somewhat heavier number of pond pine than you'd like in the mesic sites, the majority of the observed stands looked to be in maintenance condition. Recent fire has reduced fuels and improved habitat conditions in much of these flatwoods. Not much of the sandhill or scrub were observed during the LMR tour, but staff advised the sandhill near the Phillips Rd. entrance has had a couple of burns and was in pretty good shape with wiregrass and groundcover responding well to the fires. They stated too that oak competition was patchy and minimal overall. On the other hand, staff explained that the 12 acres of scrub had not been burned and the dense oak structure was in need of mechanical treatment and/or burning. The majority of wet prairie and marsh associated with St. Johns River looked in excellent condition - the result of a recent aerial burn and rollerchopping, to control areas where woody vegetation had reached undesirable levels. In addition, a "landscape" level project by WMD and NRCS to remove much of an extensive system of dikes has had very positive impact on increasing water levels and the hydro-period within these wetland communities. Outstanding project-with outstanding results! Forested wetland habitat, including an extensive acreage of hydric hammock and floodplain swamps all looked to be in maintenance condition-with little to no invasive plant issues. Staff needs to continue efforts to identify and assess depression/basin marshes to ensure they are burned and any negative cattle impacts are mitigated for. Only the Joshua Creek Tract has been critically surveyed & mapped (by FNAI) for natural communities boundaries. Staff should continue efforts initiated recently (in preparation for the LMR) to pursue this "typing" of the entire property to determine location and condition of all communities on the forest. The mgt. plan, when revised, needs to do a much better job of describing each of these communities as it relates to their current, and desired, condition - as well as any mgt. needs.
- Mesic flatwoods-In the future consider underplanting a low density of longleaf pine in pond pine dominated areas of the mesic flatwoods.

I.B. Listed Species: Protection and Preservation

- The endangered & threatened species list in the plan is not accurate. There has been no small mammal trapping on the property, yet Florida mice are listed. The on-site manager indicated that they were included because they have been found on nearby lands. This is very misleading, because the text for the list states that the species included "occur on this forest". In this case, what is more accurate is that some of these species are presumed to occur on this forest. This needs to be clarified on future management plans. Need to do a survey for hand ferns.
- Separate lists to, include found on-site vs. potential to occur list. Need to incl. focal spp.
- Movement around nest area protected as well as fire.
- More can be done to determine if certain species are present ex. hand fern, Florida mouse eagles.
- Suggest inviting DRP/WMD biologists to visit property (especially the hydric hammocks) for a one day "bioblitz" to build a more thorough plant list for the forest and to help identify future monitoring and/or mgt. needs. Staff has done a good job of including areas of the grazing lease in the aerial burns and then following up to survey/monitor the response of the pretty extensive pitcher plant population. The mgt. plan is not clear or accurate in describing what listed species actually have been observed on the state forest. The species list should make it clear which plants or animals have been observed vs. those that are "expected" to occur. The mgt. plan should also provide greater information on the nature and level of monitoring planned, or appropriate for, these specific species.

I.C. Natural Resources Survey/Management Natural Resources

- Though the management plan sets good goals for obtaining baseline studies and follow-up monitoring, whether due to funding restraints or short time for plan implementation, few of the baseline studies have been done. Staff is doing informal observational monitoring more staff &funding needed in all these areas.
- Invasive exotic species mapping & treatment is only partially sufficient – we saw much more Chinese Tallow (quite a bit of which were large reproductive individuals) than we should have. The cattle leases should be treating exotic species – as required already as part of their lease. The on-site forester needs more training in survey & monitoring. He's enthusiastic about things that interest him; for things that don't interest him, he's quick to mention budget cuts & staff reductions & "Tallahassee" bureaucracy.
- Insufficient due to lack of staffing cattle lease areas-FFS needs to utilize them more in treatment of invasive plant species.
- Need to identify specific need for monitoring. Add in photo monitoring.
- Staff needs help-very capable but has been given a very large track of land to keep tabs on a lot of virgin land-much to record.
- Obvious effort is being made to map and monitor, but it seems there is a lack of man power and/or time, given the large land area that must be covered.
- Suggest staff and state ecologist identify priorities for plant/animal monitoring on this forest, as well as enlist support of nearby FWC and WMA biologists to assist with monitoring as their schedules permit. Good job by staff to initiate process of surveying and mapping the property for invasive plants. Continued effort will be needed to complete this task-unless some of it can be funded and outsourced.
- Consider an Excel or Access database for inventory of non-game species. Consider some formal monitoring of habitat composition, effects from mechanical treatment and of wildlife species. Good job with managing invasive species on property outside cattle areas.

II.A.B. Cultural Resources

- Staff doing excellent job of IDing sites & monitoring to possible vandalism, and has not notes need for additional law enforcement.
- There needs to be more effort toward protection & preservation.
- It could be greatly improved in certain areas of camps or of these type duties.
- Excellent efforts by forest manager to discover document and monitor several previously unreported archeological sites-including what could be a very significant "ring" midden. The manager is encouraged to follow up with DHR to ensure these new sites, as well as the dozen or so older sites continue to be monitored annually. Continue also to maintain contacts with DHR to schedule some of their staff to visit the forest to survey further for new sites.
- Provide more education to staff on archaeological areas. Good job locating and recording archaeological areas.

III.A. Resource Management

- Need to include fireline map in prescribed burn management plan & burn unit map. Do an excellent job keeping up on goals.
- Very good job-much care of animals-climate-(fog days no burn) -1.
- Excellent work by FFS to burn the upland stands in the Orange County sections of this forest. Except for along the Southern boundary, nearly all of these flatwoods stands have seen one or two burns since acquisition. More effort is needed to burn the natural upland stands and depression marshes/pastures in the Turkey Creek and Clouts tracts. Excellent work this past year executing a large aerial burn that included extensive areas of prairie/marsh in the Seminole County areas of the forest. In all, 1600 acres were burned this current fiscal year, and over 3700 acres over the past five years together. Overall, there are 3400 acres of fire maintained habitat.
- Good job w/burning on property thus far and the focuses on their burning priorities and objectives.

III.B. Restoration

- Groundcover restoration is limited by existing cattle leases so the low score should not be held against staff, though additional planning should be done toward carrying out small areas of the leases to begin groundcover restoration.
- Remove dike between St. Johns River & upland-(land owner built dike to create cow pasture) 1960 hydrological recover.

- Groundcover restoration is a long term goal according to the plan-maintenance is occurring, however no major implementation at this time.
- As commented on elsewhere, excellent work to restore marsh and prairie hydrology through removal of extensive ditch/dike system. Good cooperation between FFS, WMA and NRCS on this landscape level project. Great results. FFS staff needs to continue to assess need and nature of groundcover restoration in ag/pasture areas. Future strategy may want to focus on approach that uses more frequent burning and scattered reforestation-such as that grazing can continue as a viable multiple use. All this should be documented in a more formal strategy or plan.

III.C. Forest Management

- No merchantable timber.
- Good inventory in place for existing timber stands. There have been no timber sales on this state forest, to date.

III.D. Non-native, Invasive & Problem Species

- Staff is monitoring & treating invasive plants, washing equipt. More resources are needed in this area which needs to be given priority in managing this properly. Hogs: consider permitting staff to carry fire arms for opportunistic takes and adding a couple of weekends for hog-only hunting in spring & summer.
- Exotic species prevention & control is not rapid. We saw much more Chinese Tallow than we should have. There is a lag time between the on-site staff surveying & GPSing locations & when the OPS exotic tech comes out to treat. On-site staff should be allowed to carry firearms to deal with feral hogs on an as-needed basis.
- Cows were quarantined for flushing out of invasive plants. Plants are increasing.
- The forest manager should initiate a protocol for, inspecting/cleaning of equipment (FFS and contractors) working in areas of known invasive plant populations. Good initial efforts by forest manager and outside funded OPS technician to treat select areas for invasive plants. The extensive populations and wide ranging locations though will continue to present a challenge for these limited resources. More funding is needed. One suggestion is for FFS to do more to engage the cattle lease holders to assist with the more accessible and easier treated species within their leases.
- Good job with what is currently in place for hog removal with the combination of cattle lease contractors and through hunting.

III.E. Hydrologic/Geologic Functions

- Not certain this is needed or a priority.
- Being done by SJRWMD.
- Remaining dike seems to be holding back water preventing "natural sheet flow".
- May need to remove plug on remaining ditch-road/east side.
- Consider ditch work removal in dike restoration area.
- Good efforts here as mentioned earlier-including the replacement of several culverts and introduction of low water crossings (along marsh dike). Investigate appropriateness of some minimal level of water level/quality monitoring of the several blackwater streams that cross the property.
- Good job on the hydrological restoration that took place.

III.F. Resource Protection

- Need a mention in the plan about gates, and signage.
- Game & fish---good relations with Seminole law enforcement need as many eyes as we can find.
- Good work to locate, mark and fence (where appropriate) the property boundaries.
- Could include a sign at gate at Orlando Wetlands Park to indicate property change and to promote the partnership between the City of Orlando and FFS and Orlando Wetlands Park closures.

III.G. Adjacent Property Concerns

- Management plan is good on attempting to purchase inholdings to simplify access control and overall management. But, additions upstream of the large ditches should be considered to permit further hydrological restoration with filling wholly or partially or with further ditch blocks.
- Water management district has determined no CHB land should be surplused.

IV. Public Access and Education

- Need to utilize existing facility. Need additional staffing to manage, monitor site. Current staff is doing a good job w/limited time they have to devote to these tasks. Need more funding to address management activities.
- See notes under Section VI "Managed Area Uses".

V. Infrastructure/ Management Resources

- Existing building should be moved close to one of the parking areas to provide a ranger residence, no other buildings required at this point. Equipment of LBESF appears adequate to needs of Bronson too. Need added staff or $ for control of invasives. Only special funding allowed for aerial burn which was crucial in achieving burn objectives. Existing staff is not adequate to keep up with invasives. Many of the surveys & studies called for in the plan have not yet been done and cannot be completed without additional funding.
- Need more staff & funding to address all the resource management (natural & cultural) issues- especially exotic species.
- On-site house would benefit by having a resident/caretaker/security person living in it.
- House on property could be moved to trailhead for office. Need senior forester. Need park ranger. Help Steven-Biologist. Too much land for 2 people to manage.
- Under staffed, under funded/staff is dedicated but hamstrung by Govt.
- Many of the shortcomings of this plan/property are directly related to staffing and funding shortcomings. There is only so much a single forester, an OPS employee, and a few fire guys can do.
- There is no specific staff that were added to the FFS Orlando District with the acquisition of this state forest property. Suggest seeking funding support for park ranger and forester/biologist positions if this mgt. plan is to be fully implemented as written.

VI. Managed Area Uses

- Staff needs to designate twin tracks &other improved roads for on road bicycle trails & provide a map.
- Cabbage palm products harvesting needs to be carefully sited to avoid overharvesting & impacts to sensitive resources, as well impacts to cultural resources. Cabbage palm removal damage needs to be mitigated.
- Given the extensive cattle leases and areas of impenetrable wetland terrain, there is actually a good level of public access and recreation opportunity on this forest. FS has taken the initiative to coordinate trailheads and access with adjacent public and managers. Good equestrian and hiking opportunities, with a few nice, but very primitive, camping sites. The area is also open to game and small game hunting.

Management Review Determination

- However, the cattle leases cover too large a portion of the total area, so the area covered should gradually be reduced to permit added restoration activities and make potential recreational users to feel more comfortable hiking, etc. But could be improved with adding a couple weekends of hog hunting and the bicycling trails added as previously noted public access.
- The land is being use for conservation & Recreation purposes.
- With the small staff in charge, they are doing a excellent job-they do need help!
- As far as my knowledge.
- The uses outlined and goals outlined are being executed. No violations of the plan noticed.

2018 Land Management Review Team Report for Charles H. Bronson State Forest

Table of Contents

1. Introduction

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

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

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

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

1.1. Property Reviewed in this Report

Name of Site: Charles H. Bronson State Forest

Managed by: Department of Agriculture and Consumer Services, Florida Forest Service

Acres: 11,603 **County:** Seminole/Orange

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

Acquisition Program(s): Florida Forever **Original Acquisition Date:** 10/07/08

Area Reviewed: Entire Property **Last Management Plan Approval Date:** 10/12/10

Review Date: 4/04/18

Agency Manager and Key Staff Present:

- Stephen Stipkovits, FFS, Manager

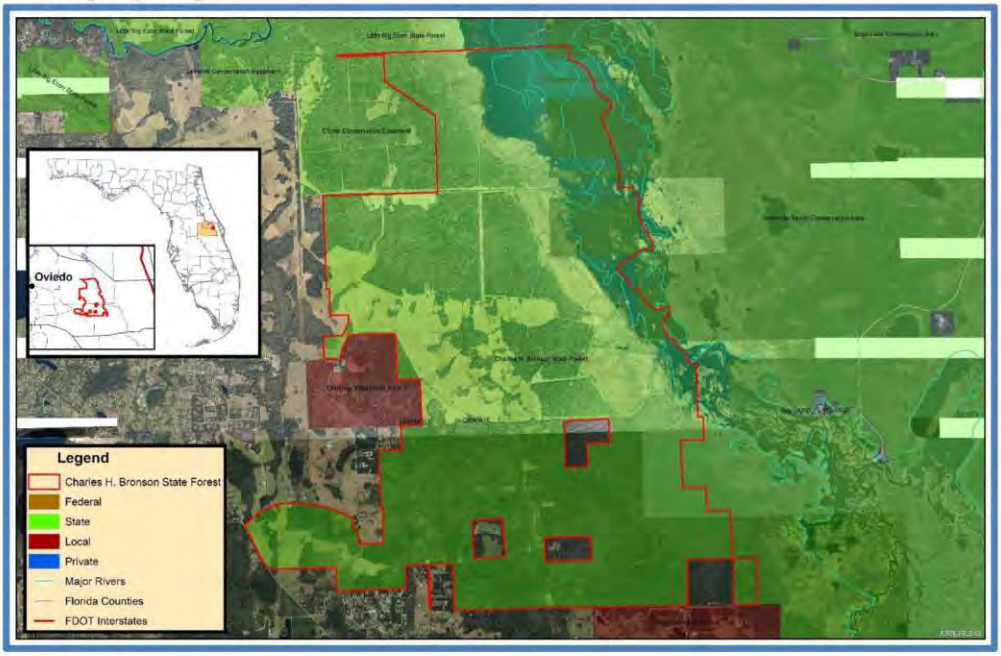
Review Team Members Present (voting)

- Paul Lammardo, DRP District
- Melanie Brodhead, Local Gov't.
- David Turner, FWC
- Edward Rysak, DEP District
- William Korn, FFS
- Graham Williams, SJRWMD
- Catherine Bowman, Cons. Organization
- Private Land Manager, None

Other Non-Team Members Present (attending)

- James Parker, DEP/DSL
- Travis McGowen, FFS
- Alan Davis, FFS
- Heather Schmiege, FFS
- Sean Gallagher, FFS
- Keith Singleton, DEP/DSL
- Wil Kitchings, FFS

1.2 Property Map



1.3. Overview of Land Management Review Results

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

Yes = 7, No = 0

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

Yes = 7, No = 0

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

Table 1: Results at a glance.

Major Land Management Categories	Field Review	Management Plan Review
Natural Communities / Forest Management	4.51	3.64
Prescribed Fire / Habitat Restoration	4.83	3.24
Hydrology	3.41	3.10
Imperiled Species	4.29	3.57
Exotic / Invasive Species	3.93	3.79
Cultural Resources	4.57	4.21
Public Access / Education / Law Enforcement	4.61	4.28
Infrastructure / Equipment / Staffing	3.00	N/A
Color Code (See Appendix A for detail)		
Excellent	Above Average	Below Average	Poor

1.3.1 Consensus Commendations for the Managing Agency

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

1. The team commends the Florida Forest Service (FFS) for continued efforts to meet fire frequency goals throughout the flatwoods. (7+, 0-)
2. The team commends the FFS for improved efforts to survey and treat invasive plants through establishment of an OPS park ranger position. (7+, 0-)
3. The team commends the FFS for integration of a cattle lease program on the forest, especially the ongoing grazing and pasture manatement work on the Joshua Creek tract. (7+, 0-)
4. The team commends the FFS for their efforts to improve hydrology through cooperative hydrological restoration projects with NRCS, SJRWMD, and other agencies. (7+, 0-)
5. The team commends the FFS for their efforts to improve public access through continued improvements to roads, trailheads, and trails. (7+, 0-)
6. The team commends the FFS for their use of FWC/NWTF funds to cost-sare and achieve more acres of beneficial mechanical treatments in the mesic flatwoods, and for their accomplishments following up with a burn in the chopped areas within a desirable timeframe. (7+, 0-)
7. The team commends the FFS for continued efforts to identify and protect cultural resources. (7+, 0-)
8. The team commends the FFS for their plan for restoring historic flowway of Turkey Creek and hydrology of hydric hammock at East End. (7+, 0-)
9. The team commends the FFS for the amount of, and level of, management activities conducted within the short period of time since gaining management authority of the property. (7+, 0-)
10. The team commends the FFS for an excellent tour packet and overall organization of tour. (7+, 0-)

1.3.2. Consensus Recommendations to the Managing Agency

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

1. The team recommends that the FFS refine the natural communities mapping to capture the sandhill and sandpine scrub communities that are present onsite. (7+, 0-)

   Managing Agency Response:

2. The team recommends that the FFS continue to work with DHR to address erosion issues and long-term protection of known sites that are subject to erosion problems. (7+, 0-)

   Managing Agency Response:

3. The team recommends that the FFS continue to utilize cattle lessees to accomplish desired resource management activities through in-kind service work projects. (7+, 0-)

   Managing Agency Response:

4. The team recommends that the FFS continue to pursue opportunities to acquire remaining outparcels within the Joshua Creek tract and pursue additional local acquisition partners. (7+, 0-)

   Managing Agency Response:

5. The team recommends that the FFS continue pursuing opportunities to acquire citizen science and academic researchers' data on plant and animal species, including a bio-blitz. (7+, 0-)

   Managing Agency Response:

2. Field Review Details

2.1 Field Review Checklist Findings

The following items received high scores on the review team checklist, which indicates that management actions exceeded expectations.

1. **Natural communities, specifically hydric hammock, mesic flatwoods, wet flatwoods, depression marsh, baygall, basin marsh, floodplain marsh, scrubby flatwoods, dome swamp, basin swamp, mesic hammock, blackwater stream**
2. **Listed species: Protection & Preservation, animals, plants**
3. **Natural resources survey/monitoring specifically other non-game species or their habitat monitoring, fire effects monitoring, other habitat management effects monitoring**
4. **Cultural resources, specifically cultural resource survey, and protection and preservation**
5. **Resource management (prescribed fire), specifically area being burned, frequency and quality.**
6. **Restoration, specifically, turkey creek restoration**
7. **Forest Management, specifically Timber inventory/assesment**
8. **Non-native, invasive, and problem species, specifically control of plants, animals and pest/pathogens.**
9. **Hydrologic/geologic function hydro-alteration, specifically roads/culverts, ditches, hydro-period alteration**
10. **Resource protection, specifically boundary survey gates and fencing, signage and law enforcement presence.**
11. **Adjacent property concerns, specifically expanding development, inholdings/additions**
12. **Public access, specifically roads, parking**
13. **Environmental education and outreach, specifically wildlife, invasive species, habitat management activities, recreational opportunities, management of visitor impacts**

2.2. Items Requiring Improvement Actions in the Field

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review were not considered sufficient (less than 3.0 score on average). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. **The management plan update should include information on how these items have been addressed:**

1. ***Surface Water Monitoring, specifically surface water quality and quantity, received a below average score. The review team is asked to evaluate, based on information provided by the managing agency, whether consideration of past and present hydrologic and geologic functions are sufficient.***

   Managing Agency Response:

2. ***Management Resources, specifically buildings, staff, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether management resources are sufficient.***

   Managing Agency Response:

3. Land Management Plan Review Details

3.1 Items Requiring Improvements in the Management Plan

The following items received low scores on the review team checklist, which indicates that the text noted in the Management Plan Review does not sufficiently address this issue (less than 3.0 score on average.). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The next management plan update should address the checklist items identified below:

1. ***Natural Communities, specifically scrubby flatwoods,basin marsh sandhill, basin swamp, baygall, depression marsh, dome swamp, floodplain marsh, scrub, blackwater stream, mesic hammock received below average scores. This is an indication that the management plan does not sufficiently address current or desired condition and/or future management actions to protect or restore.***

   Managing Agency Response:

2. ***Restoration, specifically Turkey Creek Restoration area being burned and frequency, received a below average score. This is an indication that the management plan does not sufficiently address restoration.***

   Managing Agency Response:

3. ***Surface Water Monitoring, specifically quality and quantity, received a below average score. This is an indication that the management plan does not sufficiently address surface water monitoring.***

   Managing Agency Response:

4. ***Adjacent Property Concerns, specifically discussion of potential surplus land determination, received a below average score. This is an indication that the management plan does not sufficiently address adjacent property.***

   Managing Agency Response:

Appendix A: Scoring System Detail

Explanation of Consensus Commendations:

Often, the exceptional condition of some of the property's attributes impress review team members. In those instances, team members are encouraged to offer positive feedback to the managing agency in the form of a commendation. The teams develop commendations generally by standard consensus processes or by majority vote if they cannot obtain a true consensus.

Explanation of Consensus Recommendations:

Subsection 259.036(2), F.S., specifically states that the managing entity shall consider the findings and recommendations of the land management review. We ask team members to provide general recommendations for improving the management or public access and use of the property. The teams discuss these recommendations and develop consensus recommendations as described above. We provide these recommendations to the managing agency to consider when finalizing the required ten-year management plan update. We encourage the manager to respond directly to these recommendations and include their responses in the final report when received in a timely manner.

Explanation of Field Review Checklist and Scores, and Management Plan Review Checklist and Scores:

We provide team members with a checklist to fill out during the evaluation workshop phase of the Land Management Review. The checklist is the uniform tool used to evaluate both the management actions and condition of the managed area, and the sufficiency of the management plan elements. During the evaluation workshop, team members individually provide scores on each issue on the checklist, from their individual perspective. Team members also base their evaluations on information provided by the managing agency staff as well as other team member discussions. Staff averages these scores to evaluate the overall conditions on the ground, and how the management plan addresses the issues. Team members must score each management issue 1 to 5: 1 being the management practices are clearly insufficient, and 5 being that the management practices are excellent. Members may choose to abstain if they have inadequate expertise or information to make a cardinal numeric choice, as indicated by an "X" on the checklist scores, or they may not provide a vote for other unknown reasons, as indicated by a blank. If a majority of members failed to vote on any issue, that issue is determined to be irrelevant to management of that property or it was inadequately reviewed by the team to make an intelligent choice. In either case staff eliminated the issue from the report to the manager.

Average scores are interpreted as follows:

Scores 4.0 to 5.0 are *Excellent*

Scores 3.0 to 3.99 are *Above Average*

Scores 2.0 to 2.99 are *Below Average*

Scores 1.0 to 1.99 are considered *Poor*

Exhibit T

Compliance with Local Comprehensive Plans

FLORIDA FOREST SERVICE
(850) 681-5800

THE CONNER BUILDING
3125 CONNER BOULEVARD
TALLAHASSEE, FLORIDA 32399-1650

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
COMMISSIONER NICOLE "NIKKI" FRIED

April 30, 2021

Mr. Greg Golgowski
Orange County Planning Division
Comprehensive Planning Section
201 South Rosalind Avenue, 2nd Floor
Orlando, FL 32801
(407) 836-5600

RE: Charles H. Bronson State Forest 10-Year Land Management Plan

Dear Mr. Golgowski,

Greetings from the Florida Forest Service (FFS). Attached is a copy of the Ten-Year Land Management Plan and plan Exhibits for Charles H. Bronson State Forest, prepared in accordance with F.S. 253.034. Please review the draft plan at your earliest convenience and reply as to whether the plan is consistent with Orange County's Comprehensive Plan.

Please address all correspondence concerning the Management Plan on official letterhead to the above mailing address or via e-mail. I can be reached by telephone at (850) 681-5889 or by email at Patricia.Anderson@FDACS.gov if you have any questions.

Thank you for assisting us in managing Charles H. Bronson State Forest's resources through a stewardship ethic to ensure they are available for future generations.

Sincerely,

Patti Anderson
State Lands Plan Coordinator

cc: Stephen Stipkovits, FFS Forester

FLORIDA FOREST SERVICE
(850) 681-5800

THE CONNER BUILDING
3125 CONNER BOULEVARD
TALLAHASSEE, FLORIDA 32399-1650

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
COMMISSIONER NICOLE "NIKKI" FRIED

April 30, 2021

Mr. Jeff Hopper
Seminole County Planning and Zoning
1101 East 1st Street
Sanford, FL 32771
(407) 665-7371

RE: Charles H. Bronson State Forest 10-Year Land Management Plan

Dear Mr. Hopper,

Greetings from the Florida Forest Service (FFS). Attached is a copy of the Ten-Year Land Management Plan and plan Exhibits for Charles H. Bronson State Forest, prepared in accordance with F.S. 253.034. Please review the draft plan at your earliest convenience and reply as to whether the plan is consistent with Seminole County's Comprehensive Plan.

Please address all correspondence concerning the Management Plan on official letterhead to the above mailing address or via e-mail. I can be reached by telephone at (850) 681-5889 or by email at Patricia.Anderson@FDACS.gov if you have any questions.

Thank you for assisting us in managing Charles H. Bronson State Forest's resources through a stewardship ethic to ensure they are available for future generations.

Sincerely,

Patti Anderson
State Lands Plan Coordinator

cc: Stephen Stipkovits, FFS Forester

Exhibit U

State Forest Management Plan
Advisory Group Summary

Management Plan Advisory Group Public Hearing
Charles H. Bronson State Forest
10-Year Land Management Plan

March 29, 2021
10:30 A.M.

Meeting Minutes

MPAG Members Present:

• Sean Gallagher	Orlando District Manager, Florida Forest Service (FFS)
• Bryan Ames	Biologist, Florida Fish and Wildlife Conservation Commission (FWC)
• Graham Williams	Land Manager, St. Johns River Water Management District
• Ed Young	Group 4 Supervisor, Soil and Water Conservation District
• Crenel Francis	Easement Program Coordinator, Natural Resources Conservation Service
• Eric Hennig	Private Property Owner
• Emily Bonilla	Commissioner, Orange County Board of Commissioners
• Bob Dallari	Commissioner, Seminole County Board of Commissioners

MPAG Members Not Present:

• Seth Boulware	Private Property Owner

Staff:

• Alan Davis	Land Planning Coordinator, FFS
• Brian Camposano	Forest Management Assistant Bureau Chief, FFS
• Stephen Stipkovits	Forester, FFS
• Gary Brannock	OPS Park Ranger, FFS
• Patti Anderson	Land Planning Assistant, FFS

Guests:

- Adam Steele
- Beth Jackson
- Brendan Lohri
- Cameron Gordon
- Christopher Ortiz
- Jenna Taylor
- Jim Duby
- Lt. Robert Smith, Jr.
- Valerie Anderson
- Michael Raymond

Virtual Public Meeting Start Time: 10:30 A.M.

- Mr. Davis opened the meeting by introducing himself and explained the purpose and statutory framework for the Charles H. Bronson State Forest 10-Year Land Management Plan process. He explained that the Plan is not an annual work plan or detailed operational plan but provides general guidance for management of Charles H. Bronson State Forest for the next 10-year period. It also outlines the major concepts that will guide management activities on the state forest.

- Mr. Davis advised compliance with the Florida Sunshine Law reminding MPAG members to not discuss the draft outside of the public meetings until the plan is submitted to the Acquisition and Restoration Council (ARC) for consideration. He stated that the meetings are recorded, and minutes taken.
- Mr. Davis stated both 10:30 A.M. and 1:00 P.M. MPAG meetings are open to the public and proper notice was given. The meetings were advertised to the public through local newspaper (Orlando Sentinel, March 1, 2021), Florida Administrative Register, FFS webpage, as well as posted on the kiosks at the Forest. The meetings were announced at the Orange County Board of County Commissioners on March 9, 2021 and the Seminole County Board of County Commissioners meeting on March 23, 2021. He noted that the draft goes through various approvals before and after the day's meetings but that the FFS Director assumes final authority on changes to the draft.
- Mr. Davis encouraged MPAG members to hear the public's ideas/concerns during that time. He advised that at the MPAG Workshop meeting following the hearing there would be an opportunity to discuss their thoughts on input shared by the public. Mr. Davis then stated that after a PowerPoint presentation there would be a question and answer session where guests were welcome to speak or ask questions.
- Mr. Davis requested the individual MPAG members introduce themselves.
- Ed Young stated that he announced the MPAG meetings at Seminole Soil and Water Conservation District's March 9, 2021 meeting.
- Mr. Davis then asked the advisory group to elect an MPAG chairperson. By negative response consensus, Sean Gallagher was appointed chairperson. Mr. Davis then introduced Brian Camposano, Forest Management Assistant Bureau Chief. Brian Camposano announced the meeting minutes were being taken and explained the technical logistics and how to use the webinar tools to share comments, then asked if there were any technical questions. An attendee asked Brian if he would be visible. He answered that he would not be visible due to technical assist mode but said MPAG members may turn on their cameras should they choose. Commissioner Dallari's assistant stated the Commissioner was experiencing technical difficulties but could hear the meeting by phone.
- Mr. Davis then confirmed that there were no attendees present at the in-person venue. He then introduced Forester Stephen Stipkovits who presented a PowerPoint presentation of the 2021 10-year plan. Following the presentation, Mr. Davis asked if there were any questions. No questions followed.
- Mr. Davis read aloud the email received from Ms. Jenna Taylor of the Florida Trail Association:
  - The Florida Trail Association (FTA) would be supportive of the following items:
    - The proposed reroute of the Florida National Scenic Trail (FNST) utilizing the existing white trail while allowing the orange to remain for the future utilization of a loop trail. Page 28, Item B.2.
    - The installation of a water source at Joshua Creek Trailhead. Page, 28 Item B.1.
    - The installation of a vault toilet at Joshua Creek Trailhead. Page 28, Item B.1.
    - The installation of additional primitive campsites. Page 29, Item B.6.
  - The FTA would request the following:
    - Input on any kiosk panels installed at the Joshua Creek Trailhead. The FNST has standard panels for the state and can create a local panel about the region. Page 28, Item B.3.
    - When able, FTA staff should be contacted regarding prescribed burns so hikers may be alerted to conditions. Page 32, Item B.6.
- Mr. Davis read aloud the email received from Mr. Chuck Brown:
  - The current state for pedestrian and bicycle access to the forest via the Curryville Road is unusable.
  - Curryville Road access to forest by pedestrian and cyclists is unusable. Signage suggests parking at Chuluota Wilderness Area (CWA). No signage to direct users to a suitable path to the forest.
  - Paths in the western portion of CWA are sandy and not suitable for bicycles.
  - The eastern portion of the CWA is typically encumbered with water and mud. Unblocking the existing pedestrian portal at the end of Curryville Road is the most expedient solution.
  - Bald Eagle Nests, page 172. The map is missing nest SE901. The nest at SE037 is no longer present. There may be others shown on the map that are no longer present. There may also be new ones that are yet undocumented.

- Mr. Davis then invited public comments.
- Jim Duby (Program Manager, Seminole County Natural Lands Program) addressed the comment about bike access at the CWA. The county entered into cross-access agreement intended for equestrian access and no bike access. Mr. Duby asked if Sean or Stephen could confirm. Sean Gallagher replied that there was no cycling access in the original Land Management Plan and that FFS is reconsidering the situation for this Plan.
- Beth Jackson (Program Supervisor, Orange County Environmental Protection Division) for bike access, will that allow motorized bikes. Sean Gallagher said E-bikes are permitted. Mr. Davis said further discussion will be invited at the MPAG Workshop Meeting at 1:00.
- Ed Young received a comment from Kenine Smith quoting, "The gate off Curryville Road is not open to hikers/equestrians; CWA is not always well maintained to meet up with the Bronson Trail (open for years but not now)." Mr. Davis acknowledged the comment and indicated discussion at the Workshop Meeting.
- Cameron Gordon (President, Mosquito County Hunt Club) stated that the hunting community appreciates the biodiversity and excellent management of the CHBSF, thanking its staff and stakeholders. Florida Chapter Back Country Hunters and Anglers successfully hosted a recent hunt and social event and asked if it were possible to increase small-game hunt times and frequency? Sean Gallagher stated that hunting guidelines are determined by FWC and deferred to Bryan Ames. Mr. Ames stated there are two small-game seasons on CHBSF: 12/12 – 12/20 and 1/9 – 1/15. However, requests for hunt review may be submitted to Andrea Bullock-Walker at Hunting and Game Management (FWC).
- Mr. Davis then thanked everyone for their participation and acknowledged addressing the comments at the 1:00 P.M. Workshop Meeting and adjourned the public hearing.

Virtual Public Meeting End Time: 11:14 A.M.

Management Plan Advisory Group Workshop Meeting
Little Big Econ State Forest
10-Year Land Management Plan

March 29, 2021
1:00 P.M.

Meeting Minutes

MPAG Members Present:

• Sean Gallagher	Orlando District Manager, Florida Forest Service (FFS)
• Bryan Ames	Biologist, Florida Fish and Wildlife Conservation Commission (FWC)
• Graham Williams	Land Manager, St. Johns River Water Management District
• Ed Young	Group 4 Supervisor, Soil and Water Conservation District
• Crenel Francis	Easement Program Coordinator, Natural Resources Conservation Service
• Eric Hennig	Private Property Owner
• Emily Bonilla	Commissioner, Orange County Board of Commissioners
• Bob Dallari	Commissioner, Seminole County Board of Commissioners

MPAG Members Not Present:

• Seth Boulware	Private Property Owner

Staff:

• Alan Davis	Land Planning Coordinator, FFS
• Brian Camposano	Forest Management Assistant Bureau Chief, FFS
• Stephen Stipkovits	Forester, FFS
• Gary Brannock	OPS Park Ranger, FFS
• Keith Rowell	Land Programs Administrator, FFS
• Patti Anderson	Land Planning Assistant, FFS

Guests:

- Jenna Taylor
- Jim Darby
- Melanie Brodhead
- Adam Steele

Virtual Workshop Meeting Start Time: 1:00 P.M.

- Mr. Davis opened the meeting noting the review of the public hearing. A sound check was conducted of MPAG members present.
- Meeting Minutes will be emailed to MPAG members and approved via negative response. Sunshine Laws remain in effect and MPAG appointment will terminate upon draft submittal to ARC.
- Mr. Davis noted the page-by-page review process to address or discuss comments. He then asked if there were any comments regarding the public input made during the hearing. Mr. Ames noted concerns brought up regarding difficulty in parking at the CWA and having to hike through to reach the trailhead and recommended installing a corral-board fence. He also noted Beth Jackson's concerns over E-bikes.
- Mr. Davis then read aloud the written and oral comments made during the hearing and noted that the small-game hunting topic raised in the hearing was resolved. MPAG consensus was given via negative response. Bryan Ames said he had emailed the hunting group a contact at Northeast Regional office of FWC.

- Mr. Davis began the page-by-page review repeating that the FFS Director assumes final authority on changes to the draft.
- Page 5. GOAL 2. Public Access and Recreational Opportunities. Bryan Ames requested opening the donated 117-acre Barker parcel to the WMA. Eric Hennig, hearing that public access would be restricted, asked for clarification of the intended use of the Barker parcel as stipulated in the lease agreement. Sean Gallagher responded that the FFS field staff intended to hold the parcel out of the WMA for Operation Outdoor Freedom use and there was no intent to restrict public access otherwise. Mr. Davis stated the issue would be brought to the Director. Graham Williams asked if the bicycle use and new trailhead comments taken at the hearing should be listed in Goal 2. Mr. Davis noted that they will be discussed in the Existing or Planned Recreation sections. Sean Gallagher concurred.
- Page 11. Table 3. Parcel Acquisition. Alan Davis asked that a comment be added to Table 3 Parcel Acquisition to discuss possibility of designating the Barker parcel for either WMA or OOF.
- Page 12. 4. Revenue Producing Activities. Graham Williams noted the future bid for one of the cattle leases has been bid. He also asked if District acquisitions Turkey Creek Tract and Lee Ranch Tract were both called Turkey Creek. Stephen Stipkovits confirmed that the entire are is called Turkey Creek by FFS. Regarding apiary leases, Bryan Ames recommended posting a kiosk map with the hive locations. Mr. Davis suggested further discussion by FFS management for a kiosk map and/or exhibits map.
- Page 13. 2. Improvements. Mr. Williams recommended including existing bridges in the list of improvements as significant infrastructure. Sean Gallagher noted that the bridges were installed by the WMD and may be accounted for in the Plan.
- Page 22. Table 5. Rare, Endangered and Threatened Species. Stephen Stipkovits asked to address Mr. Brown's eagles' nests comments. Eagle nest locations are provided on an FWC map. FFS will request a current map.
- Page 28. 1. Public Access and Parking. Mr. Davis requested language for assessing the need for a trailhead at the Curryville Road entrance. Sean Gallagher proposed language to be considered (parking being inclusive of trailhead assessment). Mr. Williams asked if the term "multi-use" includes bicycles at Turkey Creek. If so, perhaps add language to specify various types of bikes.
- Page 28. 2. Recreational Trails. Sean Gallagher recommended replacing "Joshua Creek Tract" with "CHBSF" indicating assessment of the entire forest and updating the route description. Sean explained that existing trails are for hiking and equestrian only and noted recent discussions around opening existing trail routes to popular gravel cycling as opposed to off-road mountain biking. Commissioner Bonilla commented that bicycling may be difficult on trails with equestrian use. Sean explained that the existing equestrian trails follow along forest road which are semi-improved lime rock-capped or hard-packed, grass-covered with no notable impact having been observed. Given the improved condition of the road, bicycling is not expected to cause impact. Sean invited discussion of Beth Jackson's comments concerning E-bikes presumptively being battery powered dirt bikes. He has researched and acceded FFS 51 rules and with the understanding that they are powered with self-propulsion. Mr. Williams shared that unless plans are outside of FFS rules, E-bikes need not be specified in the plan.
- Page 28. 3. Environmental Education. Written comments from Jenna Taylor were reviewed. FFS will work with FTA to obtain a regional Florida National Scenic Trail kiosk panel (sign).
- Page 32. 6. Adjacent Neighbor Contacts. Written comments from Jenna Taylor requested adding FTA to the contacts noted in section VI.B.6. The FTA will be placed on the Forester's prescribed burns contact list.
- Page 34. Mr. Williams requested changing cattle lease to read present tense.
- Page 35. Mr. Ames observed a non-native invasive species plant on the Joshua Creek Tract near the Barker Tract gate; collected a sample and sent it to an herbarium and documented with field experts. The species was added to Table 6.
- Page 52. K. Sandhill (Natural Community) Mr. Ames stated that his field searches for rare plants produced 7 rare, previously unknown and highly pyrogenic species in the sandhill community (Wet flatwoods, too) which were subsequently geo-referenced, and botanist verified. He commended FFS fire management activities for helping restore the species and their habitats. The species were added to the section.

- Page 55. N. Wet Flatwoods (Natural Community) Mr. Ames listed other plant species to add to the section. He also recommended use of i-Naturalist as an information resource.
- Exhibits G and S. Mr. Ames believes neither Florida Forever projects are relevant to CHBSF. Stephen, Brian Camposano, and Alan Davis noted that the Maytown Flatwoods Florida Forever Project is the nearest project as specified in the plan text. FFS will consider the projects' relevance. Suggestion of an apiary location map was restated. FFS will consider adding sites to the Recreation, Facilities and Infrastructure Map and a kiosk map after assessing the number of locations, location movement if applicable, seasonality, etc.
- Exhibit D. Mr. Williams suggested adding the list of facilities from Page 13 to the Recreation, Facilities and Infrastructure Map.
- Mr. Davis reiterated that the FFS Director will view the changes to the plan and is the final authority on their acceptance. He then took a roll call consensus of the MPAG members. All members approved.
- Mr. Davis thanked the group for their time and participation. He noted that the minutes will be emailed to the members and approved via negative response, and that the submittal deadline for the August 13, 2021 ARC Meeting is May 5, 2021. He then adjourned the Workshop Meeting.

Virtual Workshop Meeting End Time: 2:27 P.M.

3/11/2021

Comments from Chuck Brown concerning the undated draft of the TEN-YEAR LAND MANAGEMENT PLAN FOR THE CHARLES H. BRONSON STATE FOREST. Document

Chuck Brown
Orlando, Florida

The current state for pedestrian and bicycle access to the forest via the Curryville Rd. is unusable. Currently signage suggests parking at the Chuluota Wilderness Area. There is no signage to direct users on a suitable path to the forest. Paths within the western portion of Chuluota Wilderness area are sandy and not suitable for bicycles. The eastern portion of the Chuluota Wilderness area is typically encumbered with water and mud. Unblocking the existing pedestrian portal at the end of Curryville Rd is certainly the most expedient solution.

Bald Eagle Nests, page 172. The map is missing nest SE901. The nest at SE037 is no longer present. There may be others shown on the map that are no longer present. There may also be new ones that are yet undocumented.

From: Jenna Taylor
Sent: Wednesday, March 24, 2021 4:33 PM
To: Stipkovits, Stephen <Stephen.Stipkovits@fdacs.gov>
Subject: Re: Public notice for the virtual public meeting about the Charles H. Bronson State Forest 10 year Management Plan

Hello,

The FTA would be supportive of the following items:

- The proposed reroute of the FNST utilizing the existing white trail while allowing the orange to remain for the future utilization of a loop trail. (Page 28. Item B-2)
- The installation of a water source at Joshua Creek Trailhead. (Page 28 Item B-1)
- The installation of a vault toilet at Joshua Creek Trailhead. (Page 28 Item B-1)
- The installation of additional primitive campsites (Page 29. Item B-6)

The FTA would request the following:

- Input on any kiosk panels installed at the Joshua Creek Trailhead. The FNST has standard panels for the state and can create a local panel about the region. (Page 28. Item B-3)
- When able, FTA staff should be contacted regarding prescribed burns so hikers may be alerted to conditions. (Page 32. Item B-6)

Thank you!

Jenna

Exhibit V

Charles H. Bronson State Forest
Summary Budget

	CHARLES H. BRONSON STATE FOREST MGT. ONLY 19-20 EXPENDITURES	Percentages Based on Total Dollar Amount of Expenditures	Assessed Needed Funding Based Upon LMJAC Resource Management
Resource Management	$ 12,481	25.50%	$ 51,763.63
Exotic Species Control	$ 780	3.46%	$ 7,023.61
Prescribed Burning	$ 7,572	3.73%	$ 7,571.70
Cultural Resources Management	$ 20	0.09%	$ 182.70
Timber Management	$ 1,829	8.11%	$ 16,462.86
Hydrological Management	$ 149	0.66%	$ 1,339.76
	$ -		$ -
OTHER RESOURCE MANAGEMENT	$ 2,131	9.45%	$ 19,182.99
Listed Species Management	$ -		$ -
Forest Pest and Disease	$ -		$ -
Plant Conservation Program	$ -		$ -
State Forest Research Projects	$ -		$ -
Boundary Surveys for State Forests	$ -		$ -
Other Activities Also Include:	$ -		$ -
Liaison Community Meetings / Boundary Line Maintenance / Forest Inventories and Various Other Activities / Wildfire Suppression on State Forests			
			$ -
Administration	$ 1,389	6.16%	$ 12,504.47
Central Office Headquarters	$ 1,389	6.16%	$ 12,504.47
District/Regions	$ -		$ -
Units/Projects	$ -		$ -
	$ -		$ -
Support	$ 11,396	50.53%	$ 102,573.19
Land Management Planning	$ 476	2.11%	$ 4,283.19
Land Management Reviews	$ 3,608	16.00%	$ 32,479.14
Training/Staff Development	$ 2,028	8.99%	$ 18,249.22
Vehicle Purchase	$ 178	0.79%	$ 1,603.66
Vehicle Operations and Maintenance	$ 3,875	17.18%	$ 34,874.48
	$ -		$ -
OTHER SUPPORT	$ 1,231	5.46%	$ 11,083.51
State Forest Land Acquisition Support			$ -
Other Support Activities Also Include:	$ -		$ -
Computer Maintenance / Radio Maintenance / Technical Support / Management of Apiary and Cattle Leases / State Forest Leases, Lease Amendments, Easements and Other Various Activities	$ -		$ -
			$ -
Capital Improvements	$ 4,820	21.37%	$ 43,379.95
New Facility Construction	$ 1,191	5.28%	$ 10,718.12
Facility Maintenance	$ 3,629	16.09%	$ 32,661.84
			$ -
Visitor Services/Recreation	$ 2,772	12.29%	$ 24,948.04
Information/Education	$ 787	3.49%	$ 7,084.51
Operations	$ 1,985	8.80%	$ 17,863.53
			$ -
Law Enforcement	$ -	0.00%	$ -
Total	$ 22,553	100.00%	$ 202,995

Exhibit W

Arthropod Control Plans
Orange and Seminole Counties

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

NICOLE "NIKKI" FRIED
COMMISSIONER

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Section 388.4111, F.S.
Telephone: (850) 617-7995

Return to:
Mosquito Control Program
3125 Conner Blvd, Bldg 6,
Tallahassee, Florida 32399-1650

For use in documenting an Arthropod Control Pan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein. Fill this form out if control work is necessary or planned.

Name of Designated Land:

Charles H. Bronson State Forest.

Is Control Work Necessary: X Yes ☐ No

Only in the event of an emergency declaration following hurricanes and tropical storms that would create breeding habitats for large numbers of emerging mosquitoes.

Location:

Areas of Charles H. Bronson State Forest that lie within Orange County.

Land Management Agency:

Florida Department of Agriculture and Consumer Services.

Are Arthropod Surveillance Activities Necessary? X Yes ☐ No
If "Yes", please explain:

Regional mosquito surveillance would be conducted prior to any applications.

Which Surveillance Techniques Are Proposed?

Standard CDC mosquito traps.

Please Check All That Apply:

☐ Landing Rate Counts	☐ Light Traps	☐ Sentinel Chickens
☐ Citizen Complaints	☐ Larval Dips	X Other

If "Other", please explain:

Standard CDC mosquito traps.

Arthropod Species for Which Control is Proposed:

In the event of an emergency declaration, treatment would be necessary for the following species of mosquitoes that are known vectors of disease and have a range of that includes Charles H. Bronson State Forest: *Aedes atlanticus, Aedes canadensis, Aedes fulvus pallens, Aedes infirmatus, Aedes mitchellae, Aedes sollicitans, Aedes taeniorhynchus, Aedes triceriatus, Aedes vexans, Anopheles Atropos, Anopheles crucians complex, Anopheles perplexens, Anopheles punctipennis, Anopheles quadrimaculatus, Anopheles walker, Coquillettidia perturbans, Culex erraticus, Culex nigripalpus, Culex pilosus, Culex quinquefasciatus, Culex restuans, Culex salinarius, Culex coronator, Culex interrogator, Culex territans, Culex cedecei, Culex melanoconion, Culex peccator, Culiseta inornata, Culiseta melanura, Mansonia dyari, Mansonia titillans, Ochlerotatus signifera, Psorophora ciliata, Psorophora columbiae, Psorophora ferox, Psorophora howardii.*

Proposed Larval Control:

Proposed larval monitoring procedure:

Are post treatment counts being obtained: ☐Yes X No

Biological Control of Larvae:

Might predacious fish be stocked: ☐ Yes X No

Other biological controls that might be used:

Material to be Used for Larvaciding Applications:

N/A

(Please Check All That Apply:)

☐ Bti

☐ Bs

☐ Methoprene

☐ Non-Petroleum Surface Film

☐ Other, please specify:

Please specify the following for each larvacide:

Chemical or Common name:

☐ Ground ☐ Aerial

Rate of application:

Method of application:

Proposed Adult Mosquito Control:

Aerial adulticiding	X Yes	☐ No	**Aerial adulticiding will be conducted only in the event of an emergency declaration following hurricanes and tropical storms that would create breeding habitats for large numbers of emerging mosquitoes.**
Ground adulticiding	☐ Yes	X No	

Please specify the following for each adulticide:

Chemical or common name:

Dibrom

Rate of application:

0.66 oz/acre

Method of application:

Aircraft

Proposed Modifications for Public Health Emergency Control: Arthropod control agency may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture.

Proposed Notification Procedure for Control Activities:

Orange County Mosquito Control will notify Florida Forest Service prior to any applications.

Records:

All State required application records are maintained by Orange County Mosquito Control.

Are records being kept in accordance with Chapter 388, F.S.:

X Yes ☐No

Records Location:

2715 Conroy Road, Orlando Florida 32839

How long are records maintained:

3 years, minimum.

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

None.

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed:

No.

Include proposed operational schedules for water fluctuations:

N/A

List any periodic restrictions, as applicable, for example peak fish spawning times.

N/A

Proposed Modification of Aquatic Vegetation:

None.

Land Manager Comments:

Arthropod Control Agency Comments:

Arthropod control would only be necessary in the event of an emergency declaration following a tropical storm or hurricane.

Signature of Lands Manager or Representative — Date 7/29/19

Signature of Mosquito Control Director / Manager — Date 6/18/19

PUBLIC WORKS DEPARTMENT

WATERSHED MANAGEMENT DIVISION

SEMINOLE COUNTY

February 21, 2019

Patti Anderson
Land Management Plan Coordinator- Florida Forest Service
Florida Department of Agriculture and Consumer Services
3125 Conner Boulevard
Suite I-262, Mail Stop C-25
Tallahassee, FL 32399-1650

RE: Arthropod Control Plan- Little Big Econ and Charles Bronson State Forests

Dear Patti Anderson,

Seminole County Mosquito Control Program will not be conducting arthropod control activities for Little Big Econ and Charles Bronson State Forests. As result, no Arthropod Control Plan will be required.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

Gloria Eby
Principal Environmental Scientist/Mosquito Control Director
Lake Management & Mosquito Control Programs
Seminole County Watershed Management Division
200 W. County Home Road, Sanford, FL 32773
407-665-2439
407-665-5600 (fax)
geby@seminolecountyfl.gov

Exhibit X

Mitigation Bank Map

Florida Forest Service

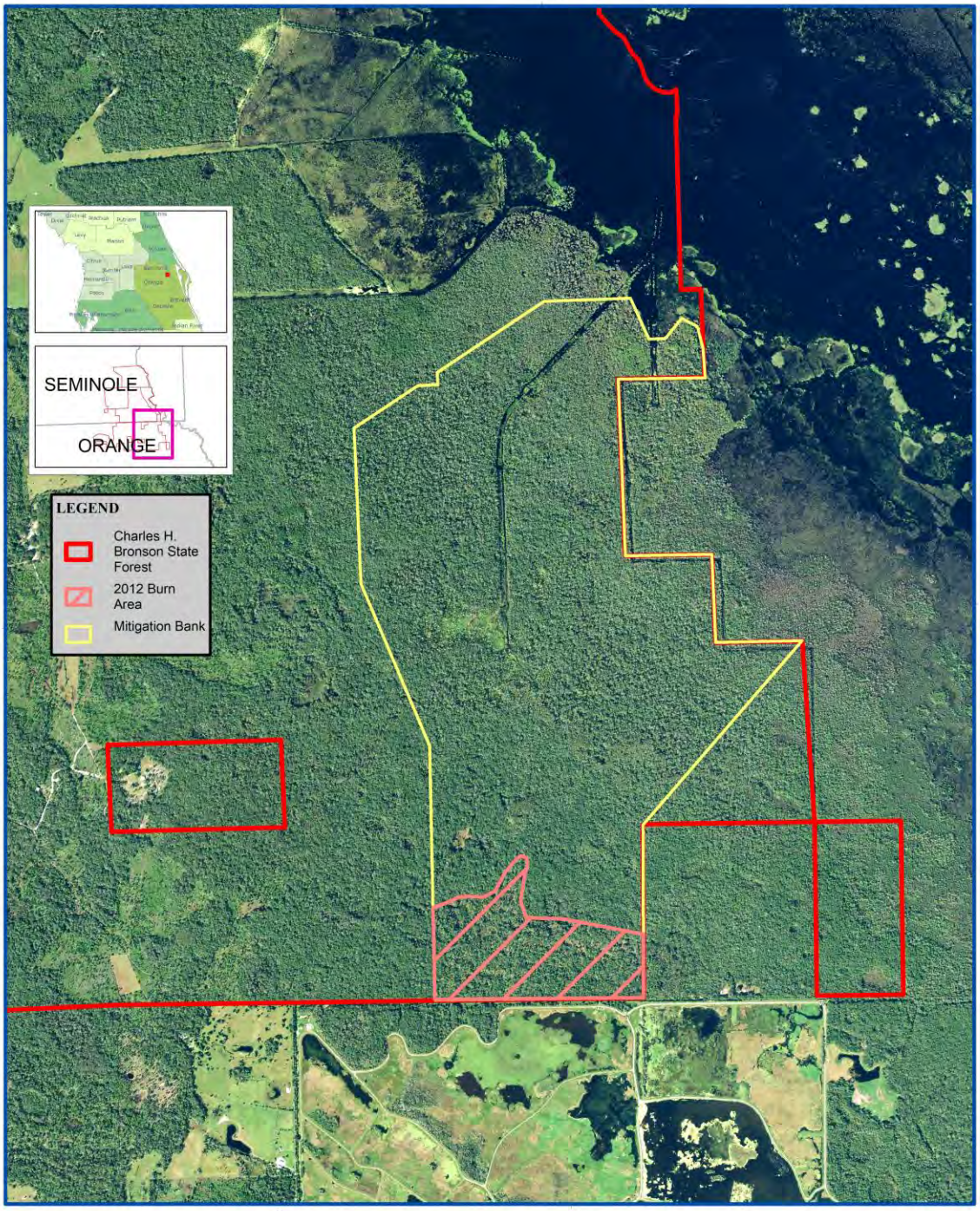
Charles H. Bronson State Forest

Mitigation Bank Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

DISCLAIMER:
[illegible]

Managed Area boundaries courtesy of the Florida Natural Areas Inventory formerly called Defense Sites (FNDS) from the US Army Corps of Engineers



Map Month/Year: December 2020