



TIMBER ASSESSMENT

Southwest District

Charlotte Harbor Region

Big Cypress Region

Terra Ceia Preserve State Park

Big Cypress Region

Collier-Seminole State Park

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the DRP's statutory responsibilities and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of those communities specifically managed as early successional.

Collier-Seminole State Park (Collier-Seminole) is designated as a single-use park. As such, timber management is only permitted as a method of natural community restoration and maintenance rather than as an ongoing extractive activity. The feasibility of managing/harvesting timber at Collier-Seminole during the period covered by the UMP was considered pursuant to the DRP statutory responsibilities to analyze the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish natural characteristics to the degree practicable, except in those natural communities specifically managed for a structure that differs from that described in the timber assessment found at reference sites for those communities established by the Florida Natural Areas Inventory (FNAI). In the case of imperiled species, the management of certain natural communities may differ from standard treatments to provide optimum habitat conditions within the park.

Most natural communities evaluated at Collier-Seminole had overstory pine stocking levels within the range identified for corresponding FNAI Reference Sites. Conversely, hardwood overstory stocking levels were above the upper limits identified for corresponding FNAI Reference Sites. Overstory thinning is a management tool that may be utilized in areas which have overstocked conditions. However, the specific management goals and objectives for each natural community are detailed in the Resource Management Component. Activities related to stand improvement, including palmetto and midstory reduction, are ongoing in many areas, as well.

1. Management Context and Best Management Practices

Timber management at Collier-Seminole State Park (Collier-Seminole) is based on the desired future condition (DFC) of a management zone or natural community (NatCom) as determined by the DRP Unit Management Plans, along with guidelines developed by the FNAI. In most cases, the DFC will be closely related to the historic NatCom. However, it is important to note, that in areas where the historic community has been severely altered by past land use practices, the DFC may not always be the same as the historic NatCom. All timber management activities undertaken will adhere to or exceed the current Florida Silvicultural Best Management Practices (BMPs) and Florida Forestry Wildlife BMPs for State Imperiled Species. DRP shall take all measures necessary to protect water quality and wildlife species of concern while conducting timber management activities. DRP has contracted with a private sector, professional forest management firm to complete this timber assessment: F4 Tech.

2. Purpose of Timber Management Activities

Timber management activities may be conducted to help improve or maintain current conditions to achieve the associated DFC. Timber management will primarily be conducted in upland NatComs. Candidate upland NatCom types may include mesic flatwoods, wet flatwoods, sandhill, upland pine, and upland mixed woodland along with scrubby flatwoods, scrub, and altered landcover types such as successional hardwood forest and pine plantations. There will likely be no scheduled timber management activities in historically hardwood-dominated or wetland NatCom types, e.g., upland hardwood forest, hydric hammock, and slope forest. In some circumstances, timber management may include the harvesting and removal of overstory invasive/exotic trees. Descriptions of community types are detailed in the in the Resource Management Component.

3. Potential Silvicultural Treatments

Several silvicultural treatments may be considered and utilized over the next ten years. The various types of timber harvests may include pine thinning, targeted hardwood overstory removal, and clearcutting. Silvicultural treatments will be selectively implemented to minimize potential impacts to water and soil resources, non-target vegetation, and wildlife (see BMPs). Depending upon the condition and marketability of the timber being manipulated, it is possible to generate revenue from the harvest. It is also possible the timber removal could be a cost to DRP. In all decisions, the mission of preserving and restoring natural communities will be the guiding factor.

Thinning is conducted to reduce the basal area (BA) or density of trees/stems in a stand to improve forest health and growth conditions for residual trees. Allowing trees more room to grow has the potential to increase tree and forest vigor, which helps mitigate the potential for damaging insect and disease outbreaks. Most tree harvesting/removals also increase sunlight reaching the forest floor and fine fuels that facilitate consistent fire return intervals and responses, which can benefit groundcover vegetation abundance, species richness, and overall ecological diversity. The disruption of natural fire regimes and fire return intervals can often result in the need to remove undesirable or overstocked hardwood stems that currently occupy growing space in the canopy and sub-canopy. Clearcutting may be used to support restoration goals by removing off-site pine or hardwood species and is a precursor to establishing site-appropriate species. It can also be used to control insect infestations that are damaging or threatening forest resources and ecosystem conditions.

On occasion, salvage cuts may need to be conducted to remove small volumes of wood damaged by fire, wind storm, insect or other natural causes. The decision whether or not to harvest the affected timber will depend on the threat to the surrounding stands, risk of collateral ecological damage, and the volume/value of the trees involved. For example, small, isolated lightning-strike and beetle kills are a natural part of a healthy ecosystem and normally would not be cut. However, if a drought caused the insect infestation to spread, the affected trees and buffer zone might have to be removed to prevent significant damage.

4. Inventory Data and Potential Actions per Area of Interest or Management Zone

Collier-Seminole comprises 7,271 acres in Collier County. A total of 828 acres are associated with two (2) upland natural community (NatCom) types that are potential candidates for timber management. In July 2018, an inventory based on

field plots was conducted across and within these areas to quantify overstory, midstory and understory conditions. Various park-level and NatCom-level summary statistics can be found in the following tables.

This timber assessment was based on management zone and NatCom boundary GIS data provided by DRP in September 2018. It is not intended to be prescriptive. Stakeholders and DRP staff are encouraged to view this timber assessment and inventory data as supplemental information for future consideration. Given the dynamic nature of property ownership and land management activities at Collier-Seminole, together with the timeframe required to create or update a UMP, it is possible that some tabular data may be dated. Therefore, NatCom acreages and recent treatments that occurred after the September 2018 period may not be reflected in the following tables.

Table 1. General summary statistics for Collier-Seminole State Park

Number of Management Zones within the Park	18
Upland NatCom acres	1,022

Mesic Flatwoods (96.2 acres)

Longleaf (*Pinus palustris*) and south Florida slash pine (*Pinus elliottii* var. *densa*) are the preferred overstory pine species in the region. The FNAI reference site in this region for mesic flatwoods contains longleaf and south Florida slash pine at a basal area (BA) of 10 to 50 square feet per acre with non-pine at a density of 0 trees per acre (TPA). The following table shows the overstory condition for this natural community at Collier-Seminole and target overstory condition for mesic flatwoods in this region.

MZ ID	Mesic Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft2/ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft2/ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft2/ac)	FNAI Reference Condition Non-Pine TPA Range
CS-01	7.7	--	--	--	--	--	--	--	--	--
CS-02	2.6	--	--	--	--	--	--	--	--	--
CS-04	14.0	13.3	44.3	6.0	18.3	33.6	0.0	6.0	10 - 50	0 - 0
CS-05A	11.3	16.7	18.3	11.7	0.0	0.0	0.0	11.7	10 - 50	0 - 0
CS-06A	14.2	--	--	--	--	--	--	--	--	--
CS-06B	8.2	--	--	--	--	--	--	--	--	--
CS-06C	11.3	--	--	--	--	--	--	--	--	--
CS-07	10.6	5.0	12.1	3.7	5.0	9.2	0.0	3.7	10 - 50	0 - 0
CS-08	10.9	30.0	36.6	20.4	60.0	110.0	0.0	20.4	10 - 50	0 - 0
CS-09A	4.8	50.0	98.5	30.3	40.0	73.3	0.0	30.3	10 - 50	0 - 0
CS-11	0.6	--	--	--	--	--	--	--	--	--
Total	96.2									

Wet Flatwoods (731.6 acres)

Longleaf (*Pinus palustris*) and south Florida slash pine (*Pinus elliottii* var. *densa*) are the preferred overstory pine species in the region. The FNAI reference site in this region for wet flatwoods contains longleaf and south Florida slash pine at a basal area (BA) of 10 to 50 square feet per acre with non-pine at a density of 0 trees per acre (TPA). The following table

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Special Management Considerations

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Estero Bay Preserve State Park (Estero Bay) is designated as a single-use park. As such, timber management is only permitted as a method of natural community restoration and maintenance rather than as an ongoing extractive activity. The feasibility of managing/harvesting timber at Estero Bay during the period covered by the UMP was considered pursuant to the DRP statutory responsibilities to analyze the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish natural characteristics to the degree practicable, except in those natural communities specifically managed for a structure that differs from that described in the timber assessment found at reference sites for those communities established by the Florida Natural Areas Inventory (FNAI). In the case of imperiled species, the management of certain natural communities may differ from standard treatments to provide optimum habitat conditions within the park.

Most natural communities evaluated at Estero Bay had overstory pine stocking levels within the range identified for corresponding FNAI Reference Sites. Conversely, hardwood overstory stocking levels were above the upper limits identified for corresponding FNAI Reference Sites. The Timber Management Analysis found in Addendum __8__ provides additional details. Overstory thinning is a management tool that may be utilized in areas which have overstocked conditions. However, the specific management goals and objectives for each natural community are detailed in the Resource Management Component. Activities related to stand improvement, including palmetto and midstory reduction, are ongoing in many areas, as well.

**Florida State Parks
Timber Management Analysis**

**Addendum -----
Timber Management Analysis**

1. *Management Context and Best Management Practices*

Timber management at Estero Bay Preserve State Park (Estero Bay) is based on the desired future condition (DFC) of a management zone or natural community (NatCom) as determined by the DRP Unit Management Plans, along with guidelines developed by the FNAI. In most cases, the DFC will be closely related to the historic NatCom. However, it is important to note, that in areas where the historic community has been severely altered by past land use practices, the DFC may not always be the same as the historic NatCom. All timber management activities undertaken will adhere to or exceed the current Florida Silvicultural Best Management Practices (BMPs) and Florida Forestry Wildlife BMPs for State Imperiled Species. DRP shall take all measures necessary to protect water quality and wildlife species of concern while conducting timber management activities. DRP has contracted with a private sector, professional forest management firm to complete this timber assessment: F4 Tech.

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The disruption of natural fire regimes and fire return intervals can often result in the need to remove undesirable or overstocked hardwood stems that currently occupy growing space in the canopy and sub-canopy. Clearcutting may be used to support restoration goals by removing off-site pine or hardwood species and is a precursor to establishing site-appropriate species. It can also be used to control insect infestations that are damaging or threatening forest resources and ecosystem conditions.

On occasion, salvage cuts may need to be conducted to remove small volumes of wood damaged by fire, wind storm, insect or other natural causes. The decision whether or not to harvest the affected timber will depend on the threat to the surrounding stands, risk of collateral ecological damage, and the volume/value of the trees involved. For example, small, isolated lightning-strike and beetle kills are a natural part of a healthy ecosystem and normally would not be cut. However, if a drought caused the insect infestation to spread, the affected trees and buffer zone might have to be removed to prevent significant damage.

4. Inventory Data and Potential Actions per Area of Interest or Management Zone

Estero Bay comprises 10,405 acres in Lee County. A total of 914 acres are associated with four (4) upland natural community (NatCom) types that are potential candidates for timber management. In November and December 2018, an inventory based on field plots was conducted across and within these areas to quantify overstory, midstory and understory conditions. Various park-level and NatCom-level summary statistics can be found in the following tables.

This timber assessment was based on management zone and NatCom boundary GIS data provided by DRP in September 2018. It is not intended to be prescriptive. Stakeholders and DRP staff are encouraged to view this timber assessment and inventory data as supplemental information for future consideration. Given the dynamic nature of property ownership and land management activities at Estero Bay, together with the timeframe required to create or update a UMP, it is possible that some tabular data may be dated. Therefore, NatCom acreages and recent treatments that occurred after the September 2018 period may not be reflected in the following tables.

Table 1. General summary statistics for Estero Bay Preserve State Park

Number of Management Zones within the Park	68
Upland NatCom acres	914

Mesic Flatwoods (604.1 acres)

Longleaf pine (*Pinus palustris*) is the preferred overstory pine species in the region. The FNAI reference site in this region for mesic flatwoods contains longleaf pine at a

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basal area (BA) of 10 to 50 square feet per acre with non-pine at a density of 0 trees per acre (TPA). The following table shows the overstory condition for this natural community at Estero Bay and target overstory condition for mesic flatwoods in this region.

MZ ID	Mesic Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
EB-04	9.8	0.0	0.0	0.0	20.0	36.7	0.0	0.0	10 - 50	0 - 0
EB-05	29.4	0.0	0.0	0.0	2.0	3.7	0.0	0.0	10 - 50	0 - 0
EB-06	9.5	5.0	5.3	2.5	15.0	27.5	0.0	2.5	10 - 50	0 - 0
EB-11D	41.5	38.3	73.4	20.6	18.3	33.6	0.0	20.6	10 - 50	0 - 0
EB-12	5.3	--	--	--	--	--	--	--	--	--
EB-14A	43.0	--	--	--	--	--	--	--	--	--
EB-14B	27.3	--	--	--	--	--	--	--	--	--
EB-15	11.7	--	--	--	--	--	--	--	--	--
EB-16A	8.4	--	--	--	--	--	--	--	--	--
EB-16B	42.6	--	--	--	--	--	--	--	--	--
EB-17A	7.3	--	--	--	--	--	--	--	--	--
EB-18	2.9	--	--	--	--	--	--	--	--	--
EB-19	6.0	22.5	15.6	15.8	0.0	0.0	0.0	15.8	10 - 50	0 - 0
EB-22	6.6	20.0	19.8	13.1	0.0	0.0	0.0	13.1	10 - 50	0 - 0
EB-23A	20.1	4.0	4.2	2.5	0.0	0.0	0.0	2.5	10 - 50	0 - 0
EB-23B	4.9	33.3	74.0	21.1	0.0	0.0	0.0	21.1	10 - 50	0 - 0
EB-24	56.9	4.0	7.6	2.2	0.0	0.0	0.0	2.2	10 - 50	0 - 0
EB-25	8.1	--	--	--	--	--	--	--	--	--
EB-26A	79.6	4.7	9.9	2.6	0.0	0.0	0.0	2.6	10 - 50	0 - 0
EB-26B	14.4	--	--	--	--	--	--	--	--	--
EB-26C	10.0	--	--	--	--	--	--	--	--	--
EB-27A	5.3	16.7	41.8	8.8	16.7	30.6	0.0	8.8	10 - 50	0 - 0
EB-27B	24.0	2.0	3.1	1.1	0.0	0.0	0.0	1.1	10 - 50	0 - 0
EB-29	51.6	2.9	3.5	1.5	0.0	0.0	0.0	1.5	10 - 50	0 - 0
EB-30	32.4	2.0	1.2	1.3	4.0	7.3	0.0	1.3	10 - 50	0 - 0
EB-31	29.1	--	--	--	--	--	--	--	--	--
EB-32	4.8	--	--	--	--	--	--	--	--	--
EB-34	9.8	15.0	23.5	11.0	25.0	86.8	11.3	22.4	10 - 50	0 - 0
EB-42	1.9	--	--	--	--	--	--	--	--	--
Total	604.1									

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Scrub (7.9 acres)

Sand pine (*Pinus clausa*) is the preferred overstory pine species in the region. The FNAI reference site in this region for scrub contains sand pine at a basal area (BA) of 0 to 20 square feet per acre with non-pine at a density of 0 to 26 trees per acre (TPA). The following table shows the overstory condition for this natural community at Estero Bay and target overstory condition for scrub in this region.

MZ ID	Scrub (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
EB-23B	0.3	--	--	--	--	--	--	--	--	--
EB-24	1.2	--	--	--	--	--	--	--	--	--
EB-25	0.2	--	--	--	--	--	--	--	--	--
EB-26A	0.5	--	--	--	--	--	--	--	--	--
EB-28	5.7	--	--	--	--	--	--	--	--	--
Total	7.9									

Scrubby Flatwoods (99.3 acres)

Longleaf pine (*Pinus palustris*) is the preferred overstory pine species in the region. The FNAI reference site in this region for scrubby flatwoods contains longleaf pine at a basal area (BA) of 10 to 60 square feet per acre with non-pine at a density of 0 to 26 trees per acre (TPA). The following table shows the overstory condition for this natural community at Estero Bay and target overstory condition for scrubby flatwoods in this region.

MZ ID	Scrubby Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
EB-22	2.8	--	--	--	--	--	--	--	--	--
EB-23A	0.1	--	--	--	--	--	--	--	--	--
EB-23B	4.8	20.0	36.5	11.4	0.0	0.0	0.0	11.4	10 - 60	0 - 26
EB-24	2.9	20.0	27.0	11.6	0.0	0.0	0.0	11.6	10 - 60	0 - 26
EB-25	0.7	--	--	--	--	--	--	--	--	--
EB-26A	6.5	--	--	--	--	--	--	--	--	--
EB-26B	0.1	--	--	--	--	--	--	--	--	--
EB-28	80.6	5.3	8.5	2.5	0.0	0.0	0.0	2.5	10 - 60	0 - 26
EB-32	0.8	--	--	--	--	--	--	--	--	--
Total	99.3									

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Wet Flatwoods (203.1 acres)

South Florida slash pine (*Pinus elliottii* var. *densa*) is the preferred overstory pine species in the region. The FNAI reference site in this region for wet flatwoods contains south Florida slash pine at a basal area (BA) of 10 to 50 square feet per acre with non-pine at a density of 0 trees per acre (TPA). The following table shows the overstory condition for this natural community at Estero Bay and target overstory condition for wet flatwoods in this region.

MZ ID	Wet Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
EB-02	6.6	--	--	--	--	--	--	--	--	--
EB-03	18.7	--	--	--	--	--	--	--	--	--
EB-04	24.7	2.0	17.3	0.0	8.0	14.7	0.0	0.0	10 - 50	0 - 0
EB-06	2.4	--	--	--	--	--	--	--	--	--
EB-23A	21.3	4.0	12.2	0.9	84.0	154.0	0.0	0.9	10 - 50	0 - 0
EB-24	34.1	0.0	0.0	0.0	10.0	17.0	0.0	0.0	10 - 50	0 - 0
EB-30	69.3	0.7	1.7	0.3	34.3	62.9	0.0	0.3	10 - 50	0 - 0
EB-31	22.8	0.0	0.0	0.0	24.0	44.0	0.0	0.0	10 - 50	0 - 0
EB-44	1.0	--	--	--	--	--	--	--	--	--
EB-45	2.3	--	--	--	--	--	--	--	--	--
Total	203.1									

Special Management Considerations

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Fakahatchee Strand Preserve State Park (Fakahatchee) is designated as a single-use park. As such, timber management is only permitted as a method of natural community restoration and maintenance rather than as an ongoing extractive activity. The feasibility of managing/harvesting timber at Fakahatchee during the period covered by the Unit Management Plan (UMP) was considered pursuant to the DRP statutory responsibilities to analyze the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish natural characteristics to the degree practicable, except in those natural communities specifically managed for a structure that differs from reference site descriptions established by the Florida Natural Areas Inventory (FNAI). In the case of imperiled species, the management of certain natural communities may differ from standard treatments to provide optimum habitat conditions within the park.

Most natural communities evaluated at Fakahatchee had overstory pine stocking levels generally within the ranges identified for corresponding FNAI Reference Sites. Conversely, non-pine (hardwood) overstory stocking levels were generally above the upper limits identified for corresponding FNAI Reference Sites. The Timber Management Analysis found in Addendum __8__ provides additional details. Overstory thinning is a management tool that may be utilized in areas which have overstocked conditions. However, the specific management goals and objectives for each natural community are detailed in the Resource Management Component. Activities related to stand improvement, including palmetto and midstory reduction, are ongoing in many areas, as well.

Addendum _____ Timber Management Analysis

1. *Management Context and Best Management Practices*

Timber management at Fakahatchee Strand Preserve State Park (Fakahatchee) is based on the desired future condition (DFC) of a management zone or natural community (NatCom) as determined by the DRP Unit Management Plan (UMP), along with guidelines developed by the Florida Natural Areas Inventory (FNAI). In most cases, the DFC will be closely related to the historic NatCom. However, it is important to note, that in areas where the historic community has been severely altered by past land use practices, the DFC may not always be the same as the historic NatCom. All timber management activities undertaken will adhere to or exceed the current Florida Silvicultural Best Management Practices (BMPs) and Florida Forestry Wildlife BMPs for State Imperiled Species. DRP shall take all measures necessary to protect water quality and wildlife species of concern while conducting timber management activities. DRP has contracted with a private sector, professional forest management firm to complete this timber assessment: F4 Tech.

2. *Purpose of Timber Management Activities*

Timber management activities may be conducted to help improve or maintain current conditions to achieve the associated DFC. Timber management will primarily be conducted in upland NatCom types. Candidate upland NatCom types may include mesic flatwoods, wet flatwoods, sandhill, upland pine, and upland mixed woodland along with scrubby flatwoods, scrub, and altered landcover types such as successional hardwood forest and pine plantations. There will likely be no scheduled timber management activities in historically hardwood-dominated or wetland NatCom types, e.g., upland hardwood forest, hydric hammock, and slope forest. In some circumstances, timber management may include the harvesting and removal of overstory invasive/exotic trees. Descriptions of community types are detailed in the Resource Management Component.

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Thinning is conducted to reduce the basal area (BA) or density of trees/stems in a stand to improve forest health and growth conditions for residual trees. Allowing trees more room to grow has the potential to increase tree and forest vigor, which helps mitigate the potential for damaging insect and disease outbreaks. Most tree harvesting/removals also increase sunlight reaching the forest floor and fine fuels that facilitate consistent fire return intervals and responses, which can benefit

groundcover vegetation abundance, species richness, and overall ecological diversity. The disruption of natural fire regimes and fire return intervals can often result in the need to remove undesirable or overstocked hardwood stems that currently occupy growing space in the canopy and sub-canopy. Clearcutting may be used to support restoration goals by removing off-site pine or hardwood species and is a precursor to establishing site-appropriate species. It can also be used to control insect infestations that are damaging or threatening forest resources and ecosystem conditions.

On occasion, salvage cuts may need to be conducted to remove small volumes of wood damaged by fires, windstorms, insects, or other natural causes. The decision whether or not to harvest the affected timber will depend on the threat to the surrounding stands, risk of collateral ecological damage, and the volume/value of the trees involved. For example, small, isolated lightning-strikes and beetle kills are a natural part of a healthy ecosystem and normally would not be cut. However, if a drought caused the insect infestation to spread, the affected trees and a buffer zone might have to be removed to prevent significant damage.

4. Inventory Data and Potential Actions per Area of Interest or Management Zone

Fakahatchee comprises 79,754 acres in Collier County. A total of 5,990 acres are associated with two (2) upland NatCom types that are potential candidates for timber management. From May to June 2022, an inventory based on field plots was conducted across and within these areas to quantify overstory, midstory and understory conditions. Various park-level and NatCom-level summary statistics can be found in the following tables.

This timber assessment was based on management zone and NatCom boundary GIS data provided by DRP in June 2022. It is not intended to be prescriptive. Stakeholders and DRP staff are encouraged to view this timber assessment and inventory data as supplemental information for future consideration. Given the dynamic nature of property ownership and land management activities at Fakahatchee, together with the timeframe required to create or update a UMP, it is possible that some tabular data may be dated. Therefore, NatCom acreages and recent treatments that occurred after the June 2022 period may not be reflected in the following tables.

Table 1. General summary statistics for Fakahatchee.

Number of Management Zones within the Park	33
Upland NatCom acres	5,990

Mesic Flatwoods (167.7 acres)

South Florida slash pine (*Pinus elliottii* var. *densa*) and longleaf pine (*Pinus palustris*) are the preferred overstory pine species in the region. The FNAI reference sites in this region for mesic flatwoods contain south Florida slash and longleaf pine at a basal area (BA) of 10 to 50 square feet per acre with non-pine at a density of 0 trees per

acre (TPA). The following table shows the overstory condition for this natural community at Fakahatchee and target overstory condition for mesic flatwoods in this region.

MZ ID	Mesic Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
FS-B2	0.7	--	--	--	--	--	--	--	10 - 50	0 - 0
FS-C1	139.2	--	--	--	--	--	--	--	10 - 50	0 - 0
FS-C2	3.2	--	--	--	--	--	--	--	10 - 50	0 - 0
FS-C3	1.8	--	--	--	--	--	--	--	10 - 50	0 - 0
FS-E2	2.1	--	--	--	--	--	--	--	10 - 50	0 - 0
FS-E3	7.0	--	--	--	--	--	--	--	10 - 50	0 - 0
FS-E4	13.8	--	--	--	--	--	--	--	10 - 50	0 - 0
Total	167.7									

Wet Flatwoods (5,822.7 acres)

South Florida slash pine (*Pinus elliotii* var. *densa*) is the preferred overstory pine species in the region. The FNAI reference site in this region for wet flatwoods contains south Florida slash pine at a basal area (BA) of 10 to 50 square feet per acre with non-pine at a density of 0 trees per acre (TPA). The following table shows the overstory condition for this natural community at Fakahatchee and target overstory condition for wet flatwoods in this region.

MZ ID	Wet Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
FS-A1	26.6	--	--	--	--	--	--	--	--	--
FS-A2	4.4	--	--	--	--	--	--	--	--	--
FS-A3	12.8	--	--	--	--	--	--	--	--	--
FS-A4	103.7	--	--	--	--	--	--	--	--	--
FS-A5	160.7	28.3	62.1	15.6	62.5	137.0	9.4	25.0	10 - 50	0 - 0
FS-A7	52.0	40.0	93.6	22.9	90.0	231.2	51.6	74.5	10 - 50	0 - 0
FS-B2	28.2	10.0	10.2	6.3	153.3	386.1	11.7	18.1	10 - 50	0 - 0
FS-C1	7.1	--	--	--	--	--	--	--	--	--
FS-C2	67.5	32.1	49.0	20.3	110.7	263.7	18.0	38.3	10 - 50	0 - 0
FS-E1	390.0	17.9	45.9	9.4	79.9	179.4	5.0	14.3	10 - 50	0 - 0
FS-E3	321.7	11.3	21.4	7.0	86.4	215.5	14.3	21.3	10 - 50	0 - 0

MZ ID	Wet Flatwoods (Acres)	Current Average Overstory Conditions							Target Overstory Conditions	
		Pine BA (ft ² /ac)	Pine TPA	Pine Volume (tons/ac)	Non-Pine BA (ft ² /ac)	Non-Pine TPA	Non-Pine Volume (tons/ac)	Total Pine and Non-Pine Volume (tons/ac)	FNAI Reference Condition Pine BA Range (ft ² /ac)	FNAI Reference Condition Non-Pine TPA Range
FS-E4	509.7	7.8	13.4	4.9	106.6	246.6	18.8	23.7	10 - 50	0 - 0
FS-F01	450.9	20.7	32.2	12.9	96.3	182.2	13.0	25.9	10 - 50	0 - 0
FS-F02	83.5	16.9	27.8	9.7	93.1	199.0	42.2	51.9	10 - 50	0 - 0
FS-F03	362.8	22.6	53.7	12.1	84.9	197.9	26.6	38.7	10 - 50	0 - 0
FS-F04	100.4	18.3	29.6	11.5	105.0	223.5	24.3	35.8	10 - 50	0 - 0
FS-F05	806.5	22.9	46.0	12.9	70.8	133.3	0.8	13.7	10 - 50	0 - 0
FS-F06	1,531.0	23.3	44.8	13.3	74.0	171.4	14.6	27.9	10 - 50	0 - 0
FS-F07	331.4	19.6	41.6	11.1	67.1	180.7	25.5	36.6	10 - 50	0 - 0
FS-F08	22.3	8.0	21.6	3.9	78.0	167.1	19.7	23.5	10 - 50	0 - 0
FS-F09	364.8	18.6	43.8	10.2	128.0	312.6	34.4	44.6	10 - 50	0 - 0
FS-F10	84.9	11.7	13.1	8.1	171.7	473.5	67.1	75.2	10 - 50	0 - 0
Total	5,822.7									

Lovers Key State Park

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The long-term management goal for forest communities in the state park system is to maintain or re-establish natural characteristics to the degree practicable, except in those natural communities specifically managed for a structure that differs from reference site descriptions established by the Florida Natural Areas Inventory (FNAI).

The feasibility of harvesting timber at Lovers Key State Park (Lovers Key) during the period covered by this plan was considered in the context of the Division of Recreation and Parks' (DRP) statutory responsibilities and an analysis of the park's resource needs and values. Lovers Key is located in Lee County and is designated as a single-use park. As such, timber management is only permitted as a method of natural community (NatCom) restoration and maintenance rather than as an ongoing extractive activity. In the case of imperiled species, the management of certain NatComs may differ from standard treatments to provide optimum habitat conditions within the park. In some circumstances, timber management may include the harvesting and removal of invasive/exotic overstory trees. Please note that any NatCom acreage changes and NatCom treatments occurring after April 2023 are not reflected in this analysis. DRP has contracted with a private sector, professional forest management firm to complete this timber management analysis: F4 Tech.

Lovers Key is located on the Lee Island Coast within the city limits of Bonita Springs, roughly midway between Fort Myers and Naples and comprises 1,443 acres partitioned into 10 management zones. According to management zone and NatCom boundary GIS data provided by DRP in April 2023 and general desktop assessments of publicly-available aerial imagery, the only forested, upland potential candidate NatCom type for revenue generation and parcel enhancement through timber management would be maritime hammock (17 NatCom polygons; 32 acres ranging in size from 0.03 to 7.87 acres).

Maritime hammock is a hardwood-dominated NatCom type, which DRP does not manage for timber resources, e.g., harvesting, and standard silvicultural operations are not aligned with long-term NatCom and park management goals. The NatCom at the park is in an incipient phase. The long-term management goal is to remove exotic species and restore lands that were formerly mangrove swamp to a community that best approximates a maritime hammock (2005 Lovers Key UMP). Based on this information, it was concluded that timber management and attendant actions are not needed nor viable for restoring and maintaining forested natural communities at Lovers Key.

During the period of this UMP, active management of all forested NatCom polygons could be necessary and appropriate in the wake of natural disturbances such as hurricanes, droughts, insect/disease infestations, and invasive/exotic species outbreaks should such events pose a significant threat to forest resources and ecosystem conditions within the park.

Charlotte Harbor Region

Florida State Parks Timber Management Analysis

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of those communities specifically managed as early successional per the Florida Natural Areas Inventory (FNAI). The feasibility of managing/harvesting timber at Cayo Costa State Park (Cayo Costa) during the period covered by this Unit Management Plan (UMP) was considered in the context of the DRP's statutory responsibilities and an analysis of the park's resource needs and values. Cayo Costa is located in Lee County and is designated as a single-use park. As such, timber management is only permitted as a method of natural community restoration and maintenance rather than as an ongoing extractive activity. DRP has contracted with a private sector, professional forest management firm to complete this timber assessment: F4 Tech.

Cayo Costa is an island park accessible only by ferry or boat. It comprises 2,644 acres partitioned into 41 management zones. According to management zone and natural community (NatCom) boundary GIS data provided by DRP in April 2019, the only potential candidate NatCom type for timber management is mesic flatwoods (63 acres). Twenty three (23) mesic flatwoods polygons occur within four named management zones at Cayo Costa: CC-01 (44 acres), CC-02 (6 acres), CC-04 (1 acre), CC-06 (7 acres), and one unnamed/unmapped management zone (5 acres). These mesic flatwoods polygons are between 0.02 to 22.50 acres in size and only three polygons are > 6 acres (represent 38 of the 63 mesic flatwoods acres). Please note that NatCom acreage changes and NatCom treatments occurring after April 2019 are not reflected herein.

In a different setting and location, some of the larger polygons could be candidates for conventional timber management. However, in the case of Cayo Costa, it would be prohibitively expensive and fiscally unwise to transport/barge timber harvesting, skidding, loading, and transport equipment to and from the island to conduct a timber sale. Additionally, no timber markets are local to the State Park and therefore harvested timber products would not generate any revenue but, would instead represent additional costs related to disposal. Based on this information, it was concluded that timber management and attendant actions are not needed nor viable for restoring and maintaining mesic flatwoods polygons at Cayo Costa. During the period of this UMP, active management of this NatCom type and others could be necessary and appropriate in the wake of natural disturbances such as hurricanes, droughts, insect/disease infestations, and invasive/exotic species outbreaks should such events pose a significant threat to forest resources and ecosystem conditions on the island.

Central Gulf Region

Terra Ceia Preserve State Park

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The long-term management goal for forest communities in the state park system is to maintain or re-establish natural characteristics to the degree practicable, except in those natural communities specifically managed for a structure that differs from reference site descriptions established by the Florida Natural Areas Inventory (FNAI).

The feasibility of harvesting timber at Terra Ceia Preserve State Park (Terra Ceia) during the period covered by this plan was considered in the context of the Division of Recreation and Parks' (DRP) statutory responsibilities and an analysis of the park's resource needs and values. Terra Ceia is located in Manatee County and is designated as a single-use park. As such, timber management is only permitted as a method of natural community (NatCom) restoration and maintenance rather than as an ongoing extractive activity. In the case of imperiled species, the management of certain NatComs may differ from standard treatments to provide optimum habitat conditions within the park. In some circumstances, timber management may include the harvesting and removal of invasive/exotic overstory trees. Please note that any NatCom acreage changes and NatCom treatments occurring after June 2022 are not reflected in this analysis. DRP has contracted with a private sector, professional forest management firm to complete this timber management analysis: F4 Tech.

Terra Ceia comprises 1,948 acres (approximately 97% is classified as upland) partitioned into 40 management zones. According to management zone and NatCom boundary GIS data provided by DRP in June 2022 and general desktop assessments of publicly-available aerial imagery, the only forested, potential upland candidate NatCom types for revenue generation and parcel enhancement through timber management would be mesic hammock (23 NatCom polygons; 104 acres ranging in size from 0.4 to 19.3 acres), mesic flatwoods (one NatCom polygon; 4 acres), and maritime hammock (two NatCom polygons; 3 acres ranging in size from 0.5 to 2.9 acres). Terra Ceia also has a significant amount of area classified as ruderal – fallow agricultural lands (75 NatCom polygons; 654 acres ranging in size from 0.01 to 201.4 acres). As of 2010, restoration projects have been initiated on approximately 618 acres (94%) of ruderal uplands at Terra Ceia.

Even though DRP routinely manages mesic flatwoods via timber harvesting, the limited area represented by this NatCom type at Terra Ceia and it being located on the Punk Island tract (bordered by mangrove swamp on three sides; only access is through adjacent residential properties), render timber harvesting unfeasible. Mesic and maritime hammocks are hardwood-dominated NatCom types, which DRP does not manage for timber resources, e.g., harvesting, and standard silvicultural operations are not aligned with long-term NatCom and park management goals. Few timber markets are local to this park and therefore harvested timber products would not likely generate any revenue but, would instead represent additional costs related to disposal. Based on this information, it was concluded that timber management and attendant actions are not needed nor viable for restoring and maintaining forested natural communities at Terra Ceia.

During the period of this UMP, active management of all forested NatCom polygons could be necessary and appropriate in the wake of natural disturbances such as hurricanes, droughts, insect/disease

infestations, and invasive/exotic species outbreaks should such events pose a significant threat to forest resources and ecosystem conditions within the park.