Objective Based Vegetation Management (OBVM) Program Overview

- Division of Habitat and Species Conservation
- Wildlife and Habitat Management Section

Objective Based Vegetation Management (OBVM) Program Overview (continued)

- Natural Community basis
- Desired Future Conditions (DFC)
- Measure progress

What is OBVM?

- A Natural Community (NC) monitoring program
- Measures core structural attributes as a way to quantify status of the NC
- Science-based land management decision support tool

What is the purpose for OBVM?

Purpose – to provide consistent, long-term monitoring of managed natural communities

- Quantify the current structural condition of the NC
- Quantify changes in structural condition over time
- Measure progress towards desired conditions
- Provide data on the overall effects of management and prompt discussion

What are the uses for OBVM?

- Quantifies the overall condition of the NC as expressed by the core attributes

  "This proportion of my NC has these attributes in this condition"

- Provides area managers data to allow adaptive management

- Provides administrators information on the overall effect of management (accountability)

<u>Important</u>: OBVM data does NOT look at all aspects or components of a NC, just specific core attributes. A discussion of results with onsite managers is important for data interpretation.

Questions that the data are well suited to answer

- Is greater than 50% of the community Within DFC by attribute?
- Is the condition of one attribute potentially affecting another/other attributes?
- Is there a structural layer consistently out of DFC that we should target for management?

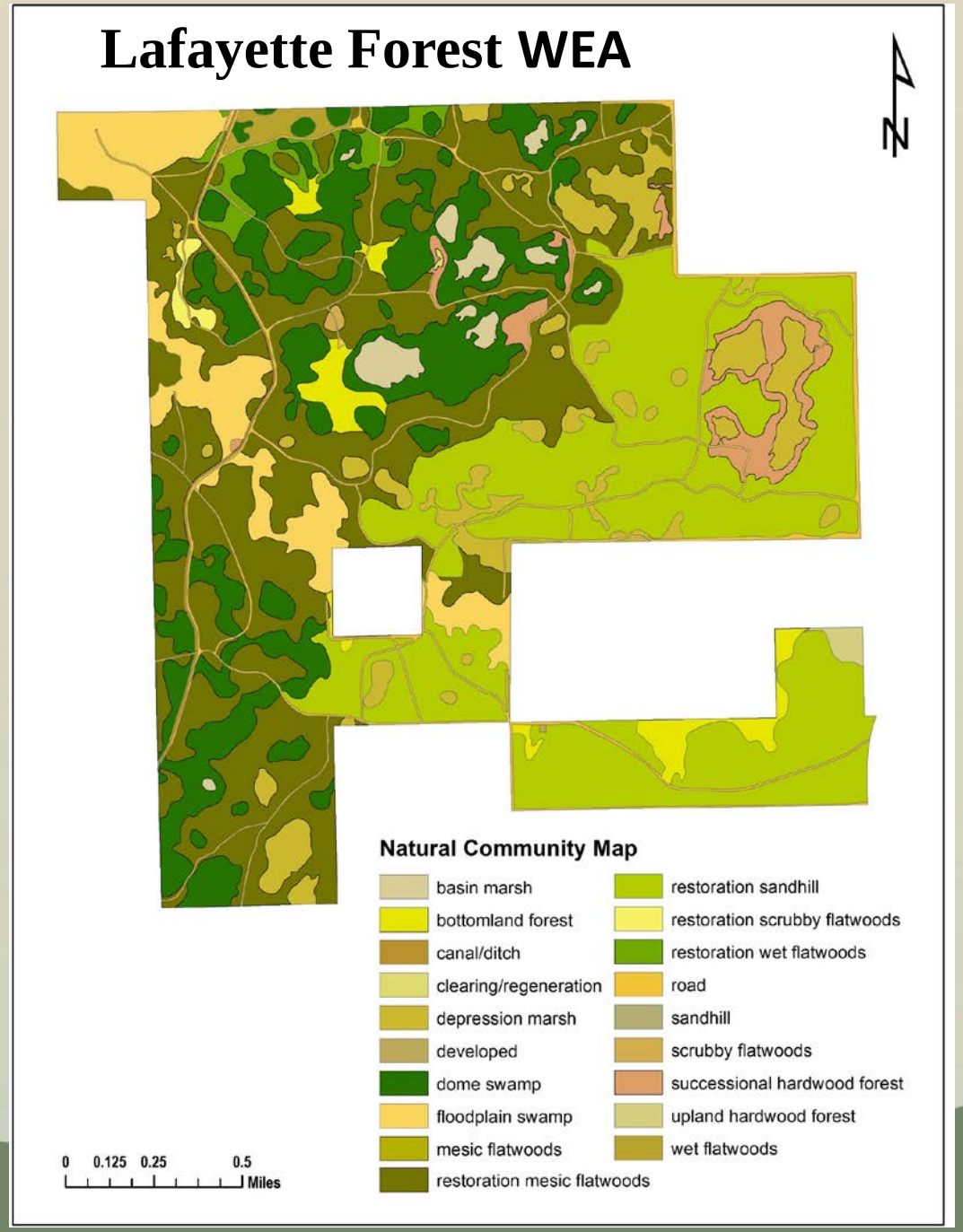
<u>Important</u>: OBVM provides information on the number of points within the DFC. It does not tell us if, at any 1 point (or unit), you have made progress. It tells us if management is making progress at moving more points to within the DFC at the NC level.

Core Attributes

LAYER	ATTRIBUTE	ALIAS	UNITS
Over-story	Basal Area of Pine	BP	ft^2/acre
Over-story	Non-Pine Stem Density >4 in DBH	NPD	count/7m radius
Mid-story	Sub-canopy Stem Density 2-4in DBH	SUBCAN	average count/$4m^2$ quadrat
Mid-story	Maximum Shrub Stem DBH (<2 in)	DBH	average maximum DBH in inch/$4m^2$ quadrat
Mid-story	Shrub Stem Density >3 ft	STEMS	average count/$4m^2$ quadrat
Mid-story	Average Maximum Shrub Height	SHBHT	average maximum height in ft/$4m^2$ quadrat
Groundcover	Shrub Cover <3 ft	SHBCOV	average % cover/$4m^2$ quadrat
Mid-story	*Serenoa repens* Petiole Density >3 ft	SERPET	average count/$4m^2$ quadrat
Mid-story	Average Maximum *Serenoa* Height	SERHT	average maximum height in ft/$4m^2$ quadrat
Groundcover	*Serenoa repens* Cover <3 ft	SERCOV	average % cover/$4m^2$ quadrat
Both Mid-story & Ground	FNAI Total Shrub Cover	FNAISHRCOV	% cover <2” DBH/$4m^2$ quadrat
Groundcover	Herbaceous Cover	HERBCOV	average % cover/$1m^2$ quadrat

Natural Community Mapping

- Contract with FNAI
- All lead areas are mapped
- Recertification mapping on a 5-year cycle



Reference sites

- FWC worked with FNAI
- Identified representative sites for managed NC's
- Collected data using the OBVM Standard Operating Procedure
- Used data to inform DFC

Florida Natural Areas Inventory
Dry Prairie Reference Natural Communities

Metric	2014 Kissimmee Prairie Preserve State Park	2015 Myakka River State Park	2016 Three Lake Wildlife Management Area	Recommended Range for Dry Prairie
Basal Pine (ft^2/acre)	0	0	0	0
Non-Pine Density (>4" DBH)	0	0	0	0
Sub-Canopy Stem Density (avg. count 2-4" DBH stems)	0	0	0	0
Max. Shrub Stem DBH (avg. max. shrub DBH <2")	0	0	0	0
Shrub Stems (avg. stem density >3 ft ht.)	0	2.3	0	0
Average Maximum Shrub Height (avg. ht. in ft.)	1.5	2.3	1.2	< 2
Shrub Cover (avg. % cover; <3 ft)	19	16.6	4.1	5-30
Serenoa repens Petioles (avg. petiole density, >3 ft ht.)	0	0	0	0
Average Maximum *Serenoa* Height (avg. ht. in ft.)	1.8	1.8	1.8	≤ 2
Serenoa repens Cover (avg. % cover,<3 ft)	17.9	14.6	14.2	5-20
FNAI Shrub Cover (%; < 2" DBH)	39.3	32.3	18.3	15-40
Herbaceous Species Cover (avg. % cover)	56	27	65.1	≥ 20

FNAI DFC attributes table

Parameter	Mesic Flatwoods (Northern Florida)	Mesic Flatwoods (Peninsular Florida)	Wet Flatwoods (herb based)	Scrubby Flatwoods	Sandhill	Scrub	Upland Pine	Dry Prairie	Wet Prairie	Alias
Basal Area of Pine (sq ft per acre)	20-80	10-50	10-50	10-60	20-60	≤ 20	30-80	0	0	BP
Non-Pine Stem Density (>4" DBH)	0	0	0	< 1	< 3	< 0.5	< 1	0	0	NPD
Subcanopy (2-4" DBH)	0	0	0	0	0	0	0	0	0	SUBCAN
Maximum Shrub DBH (<2" DBH)	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5	0	< 0.25	DBH
Shrub Stem Density >3 ft	≤ 1	≤ 1	≤ 1	< 4	< 2	1-5	≤ 1	0	< 0.5	STEMS
Average Maximum Shrub Height (ft)	< 2	< 2	< 3	< 3	< 3	< 5	< 3	< 2	< 2	SHBHT
Shrub Cover (%; <3 ft')	≤ 30	≤ 30	≤ 10	10-40	≤ 16	20-40	≤ 16	5-30	≤ 5	SHBCOV
Serenoa repens Petiole Density >3 ft	0	0	0	0	0	0	0	0	0	SERPET
Average Maximum *Serenoa* Height (ft)	< 3	< 3	< 3	< 3	< 3	< 3	< 3	≤ 2	< 1	SERHT
Serenoa repens Cover (%; <3 ft)	10-30	10-30	≤ 10	5-20	≤ 10	≤ 10	≤ 1	5-20	≤ 2	SERCOV
FNAI Total Shrub Cover (%; >2" DBH)	10-50	10-50	0-20	20-60	0-20	20-60	0-20	15-40	0-10	FNAISHRCOV
Herb Cover (%)	≥ 15	≥ 15	≥ 40	1-10	≥ 15	≤ 10	≥ 25	≥ 20	≥ 70	HERBCOV

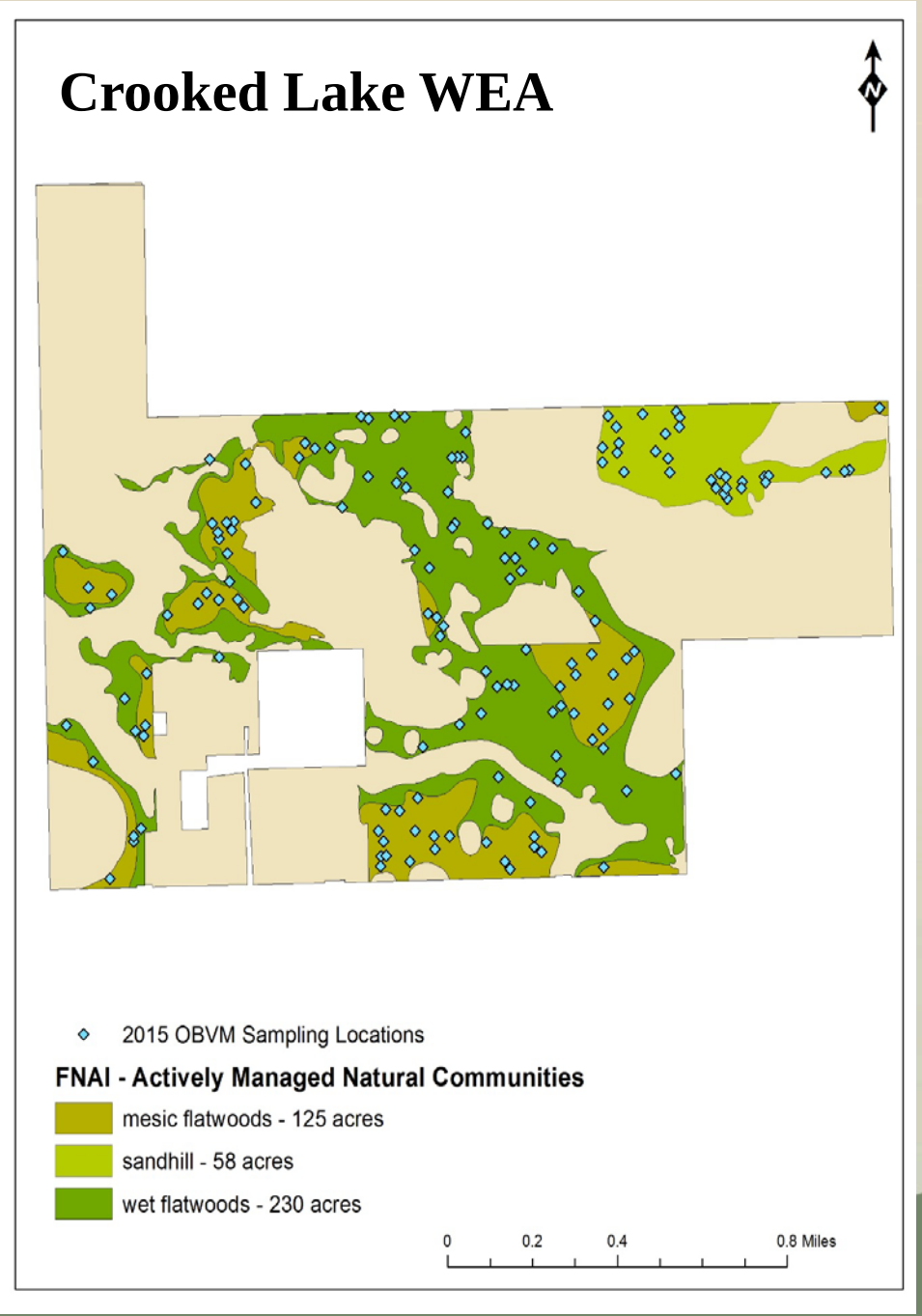
Attribute DFCs, based on OBVM data collected at Reference Sites

OBVM methods

- Monitor actively managed NCs
- For each area, monitor every 5th year (spreads out cost, ensures all areas are monitored – allows time for habitat response)
- Typically, 60 points per NC
- Most areas have multiple actively managed NCs

OBVM monitoring point placement

- Polygons for each actively managed NC
- 60 points in each NC with 120 or more acres, regardless of total size
- Fewer sampling points are placed in NCs will less than 120 acres within a managed area



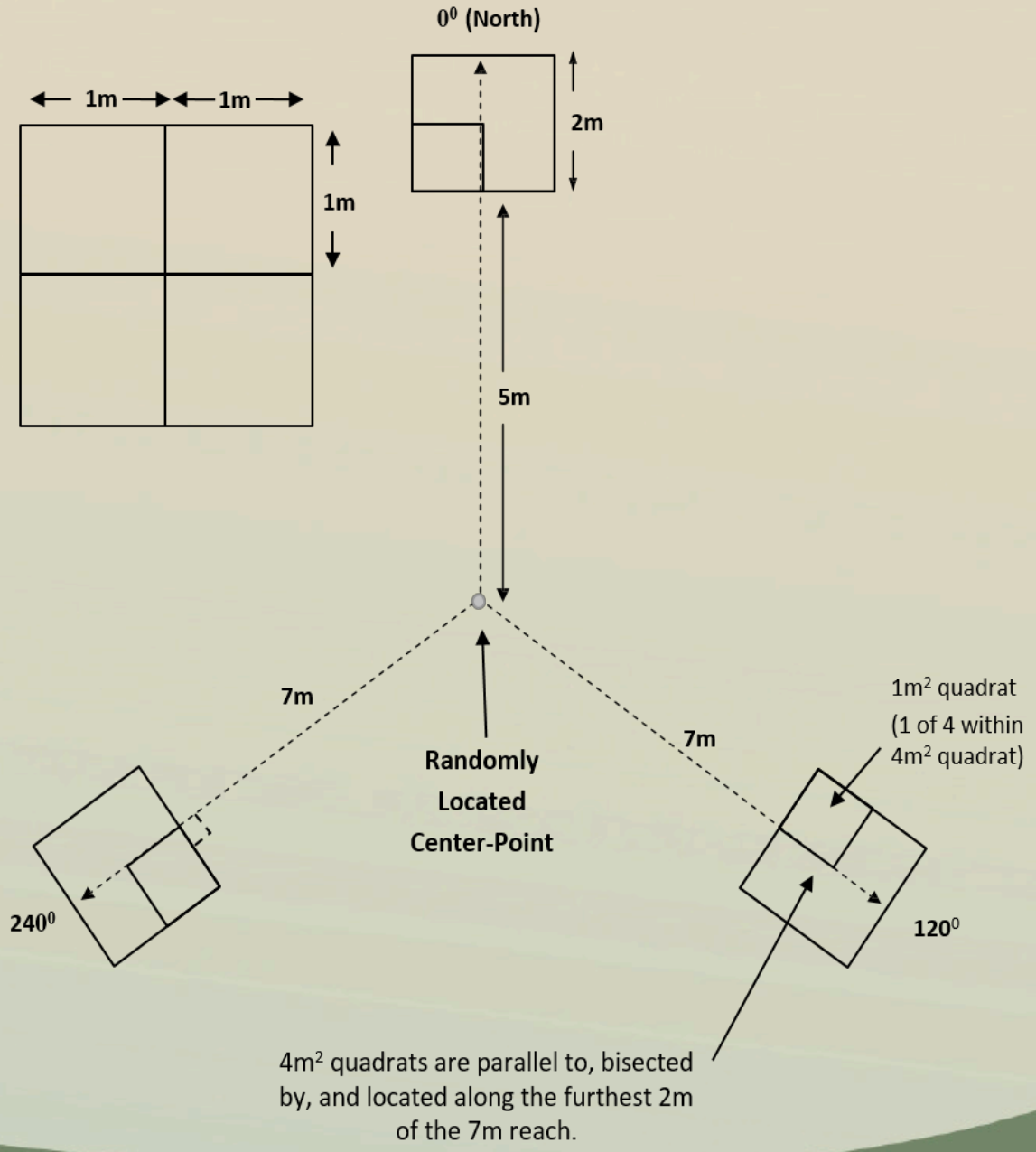
OBVM sampling station layout

- **Canopy level attributes** are counted at the center point. Basal Pine using a 10X prism; non-pine density is a count of stems that occur at any point within the 7-meter radius of the OBVM sampling station.

- **Mid-story or shrub layer attributes** will be sampled within the $4m^2$ quadrats *then averaged*: Sub-Canopy, Max. Shrub DBH, Shrub Cover, Shrub Stems, Avg. Max. Shrub Height, *Serenoa* Cover, *Serenoa* Petiole Density, Max. *Serenoa* Height, and FNAI Shrub Cover as well as a list of all woody species occurring in the $4m^2$ quadrat will be recorded.

- **Ground cover attributes** are sampled at the left, $1m^2$ quadrat nearest the center, then averaged: Percent Herbaceous Cover.

- Species lists are recorded at all levels for each point. Possible wealth of information.



The canopy and larger mid-story components:

- Basal Pine
- Non-Pine Stem Density (>4” DBH)
- Sub-Canopy Stem Density (2–4” DBH)
- Maximum Shrub Stem DBH (<2” DBH)

In a typical upland ‘Actively managed Natural Community’:

- pine density will be modest
- density of larger and mid sized hardwoods will be low

The canopy and larger mid-story (continued):

Within DFC:

- Basal Pine
- Non Pine Density
- Sub-Canopy
- Max Shrub DBH

Note: there is sparse non-pine density, even though DFC = 0

The lower mid-story layer:

- Shrub Stem Density and *Serenoa* Petiole Density (>3 feet)
- Average Maximum Shrub Height and Average Maximum *Serenoa* Petiole Height (ft.)
- FNAI Total Shrub Cover measures the percent cover of all shrubs, of any height, that are less than 2” DBH

In a typical ‘Actively managed Natural Community’:

- The shrub and *Serenoa* layer should be light, low growing, with few larger shrubs and *Serenoa*.
- Because values from 3 quads are averaged, it is ok if some shrubs/*Serenoa* are above 3 feet, provided this does not occur in all 3 quads.
- Shrub cover and *Serenoa* cover, because it is measured below 3 feet, can be influenced by excessive shrub or *Serenoa* height or density

The lower mid-story layer (continued):

- Shrub stem density and *Serenoa* petioles are only counted above 3 feet
- Max shrub height and Max *Serenoa* height (averaged)
- Shrub cover (%) and *Serenoa* cover (%) are measured below 3 feet by looking down on the quadrat
- FNAI Total Shrub Cover (%) measures the cover of all shrubs, of any height, that are less than 2” DBH

The groundcover layer:

- Shrub Cover (%; <3 feet)
- *Serenoa* Cover (%; <3 feet)
- FNAI Total Shrub Cover (% cover; <2’ DBH) includes groundcover and shrubs
- Herbaceous Cover (% cover)
  - Provides a preponderance of forage for wildlife and fine fuels for prescribed fires.
  - Herb cover is simple enough to maintain if found in good condition.
  - But slow to restore to desired condition (often 25 to 50% cover) if the herb cover has been lost due to alteration of the original community or fire exclusion.

The groundcover layer (continued):

Shrub and *Serenoa* cover (%)

- Only measured below 3 ft.

Herbaceous cover (%)

- Height is not a consideration with herb cover.
- % Cover is measured when looking directly down on the quadrat.

OBVM Data Analysis

- Data Analysis is a binary evaluation, each point is either within the DFC or not. This allows for the desired statistics with the sample size regardless of acres.
  - Proportion of points within the DFC
  - Significantly greater than 50% of points within DFC range
  - Significant difference in attribute condition between OBVM sampling periods. Time and sampling point location are variables
  - Note: we are not comparing if an average height or percent cover changed, just if the proportion of points within has changed

Sample size and ability to determine difference

Sample Size	Detectable Effect Size (P Value)	What Does This Mean for the Test's Power?
30	0.20	.50 +/- .20 cannot be differentiated from .50
45	0.16	.50 +/- .16 cannot be differentiated from .50
60	**0.14**	**.50 +/- .14 cannot be differentiated from .50**
85	0.12	.50 +/- .12 cannot be differentiated from .50
115	0.10	.50 +/- .10 cannot be differentiated from .50

Note that statistical rigor increases very little if greater than 60 points are sampled, whereas the cost of monitoring would increase greatly.

Example OBVM data table showing the attributes sampled in **Mesic Flatwoods** at **Babcock/Webb WMA**

Mesic Flatwoods (peninsular Florida) DFC Attributes	Sampling Year	Desired Future Condition (DFC)	Below DFC	Within DFC	Above DFC	In 2018 is Attribute >50% Within DFC
Basal Pine (ft^2/acre)	2018	10-50	38%	54%	8%	No
Non-Pine Density (> 4" DBH)	2018	0	n/a	100%	0%	**Yes**
Sub-Canopy Stem Density (avg. count 2-4" DBH stems)	2018	0	n/a	98%	2%	**Yes**
Max. Shrub Stem DBH (avg. max. shrub DBH < 2")	2018	< 0.5	n/a	100%	0%	**Yes**
Shrub Stems (avg. stem density > 3 ft ht.)	2018	≤ 1	n/a	90%	10%	**Yes**
Average Maximum Shrub Height (avg. ht. in ft.)	2018	< 2	n/a	90%	10%	**Yes**
Shrub Cover (avg. % cover; < 3 ft)	2018	< 30	n/a	100%	0%	**Yes**
***Serenoa repens* Petioles (avg. petiole density, > 3 ft ht.)**	2018	0	n/a	90%	10%	**Yes**
Average Maximum *Serenoa* Height (avg. ht. in ft.)	2018	< 3	n/a	97%	3%	**Yes**
***Serenoa repens* Cover (avg. % cover,< 3 ft)**	2018	10-30	67%	30%	3%	No
FNAI Total Shrub Cover (%; <2" DBH)	2018	10-50	33%	64%	3%	**Yes**
Herbaceous Species Cover (avg. % cover)	2018	> 15	8%	92%	n/a	**Yes**

Example OBVM data table showing the attributes sampled in **Upland Pine** at **Joe Budd WMA**

Scrubby Flatwoods DFC Attributes	Sampling Year	Desired Future Condition (DFC)	Below DFC (%)	Within DFC (%)	Above DFC (%)	In 2017 is Attribute >50% Within DFC	Significant Change between Years (Two-Sample Test; P < 0.14)
Basal Pine (ft^2/acre)	2012 / 2017	30-80	7 / 8	53 / 65	40 / 27	**Yes**	**Yes (+)**
Non-Pine Density (> 4" DBH)	2012 / 2017	< 1	n/a	43 / 42	57 / 58	No	None
Sub-Canopy Stem Density (avg. count 2-4" DBH stems)	2012 / 2017	0	n/a	95 / 95	5 / 5	**Yes**	None
Max. Shrub Stem DBH (avg. max. shrub DBH <2")	2012 / 2017	< 0.5	n/a	93 / 93	7 / 7	**Yes**	None
Shrub Stems (avg. stem density > 3 ft ht.)	2012 / 2017	≤ 1	n/a	35 / 75	65 / 25	**Yes**	**Yes (+)**
Average Maximum Shrub Height (avg. ht. in ft.)	2012 / 2017	< 3	n/a	60 / 83	40 / 17	**Yes**	**Yes (+)**
Shrub Cover (avg. % cover; < 3 ft)	2012 / 2017	≤ 16	n/a	38 / 55	62 / 45	No	**Yes (+)**
***Serenoa repens* Petioles (avg. petiole density, > 3 ft ht.)**	2012 / 2017	0	n/a	95 / 100	5 / 0	**Yes**	**Yes (+)**
Average Maximum *Serenoa* Height (avg. ht. in ft.)	2012 / 2017	< 3	n/a	* / 100	* / 0	**Yes**	n/a
***Serenoa repens* Cover (avg. % cover,< 3 ft)**	2012 / 2017	≤ 1	n/a	83 / 87	17 / 13	**Yes**	None
FNAI Total Shrub Cover (%; <2" DBH)	2012 / 2017	0-20	n/a	**	**	**	n/a
Herbaceous Species Cover (avg. % cover)	2012 / 2017	≥ 25	98 / 90	2 / 10	n/a	No	**Yes (+)**

*Data was not collected / no trends available ** New attribute / started collecting in 2018

Summary of the OBVM program

- OBVM is part of a Comprehensive Management Approach
- Science-based land management decision support tool
- Provides long-term monitoring
- Provides area managers data to allow adaptive management
- Provides administrators information on the overall effect of management