Objective-based Vegetation Management

A program prospectus

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What is Objective-based Vegetation Management?

FWC is initiating an objective-based approach to habitat management on Trustees-owned lands where the FWC is designated lead manager. This approach will include plant community inventory and mapping, delineation of vegetation management units, determination of management objectives for those units, and regular plant community monitoring. Quantification of desired habitat conditions coupled with monitoring data provides natural area managers with enhanced decision support and accountability for habitat management treatments. Objective-based vegetation management (OBVM) constitutes a fundamental change from contemporary action-oriented habitat management where vegetation treatment intervals are pre-determined (e.g., prescribe burn every 3-5 years) to an outcome-oriented approach where desired habitat condition dictates treatment schedules.

Why this new program?

One of the guiding principals of the FWC is to make resource decisions based on the best available science.

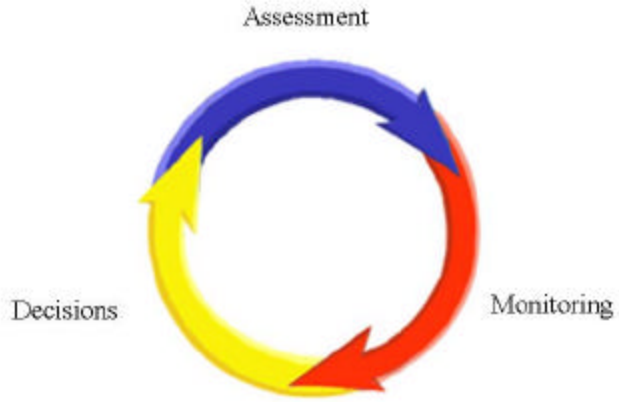
The goal of the FWC is to provide for healthy resources and safe, satisfied customers. Strategies developed to achieve this goal include developing fully integrated, leading-edge resource management programs. OBVM represents a tactic for implementation of this strategy and is consistent with the aforementioned guiding principal of the FWC.

Presently, the overall extent to which vegetation management is science-based is limited to the general understanding of disturbance-dependant plant communities. However, for some species, specific desirable plant community structure parameters have been quantified through science, although the extent to which quantified monitoring is employed to evaluate management effectiveness has been limited. Furthermore, accountability measures for most habitat managers are output-based, a fact that has not provided incentive to further science-based vegetation management.

OBVM as an adaptive management process

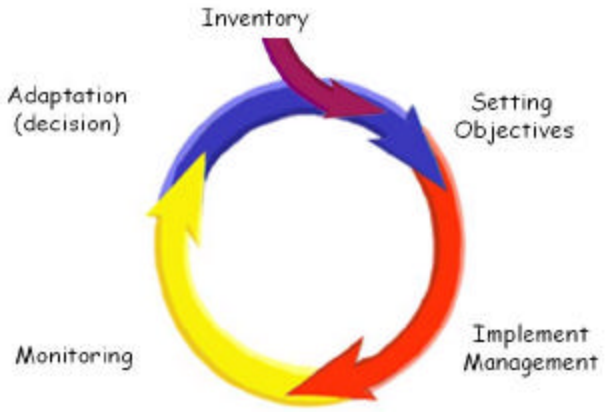
Adaptive management has received widespread attention over the past decade since its founders (e.g., Holling 1978 and Walters 1986) first put forth the concept. The term at least, currently appears in numerous management plans, although its implementation is seldom what its founders had intended. Implicit in virtually all interpretations of adaptive management is the notion of incorporating learning into management for the purpose of making better management decisions. This concept has obvious intuitive appeal, which perhaps explains why its namesake has received such wide recognition. A fundamental notion of adaptive management is that management actions can be viewed as experimental treatments in a research design setting; thus when combined with an effective monitoring program, can facilitating learning (Walters 1986, Lee 1993).

In its simplest form, adaptive management can be viewed as an iterative process of assessment, monitoring, and decisions. In this simple portrayal, the assessment phase includes such elements as defining the management problems and goals, setting measurable management objectives,



determining management options, assessing management risks, identifying key indicators, identifying hypotheses about system responses to management actions (including predictions), and identifying key uncertainties in existing knowledge. For OBVM, we use an expanded portrayal that explicitly identifies some steps that would have been implicit or assumed in some adaptive management programs. For example, we distinguish the initial inventory (which is not repeated at each iteration) from the setting of objectives. One reason for this is that the initial

inventory plays a major role and forms the basis from which objectives and other considerations are derived. Thus, for OBVM, the iterative process will include 5 primary phases, each of which are described below and will include some or all of the considerations of other adaptive management programs: (1) inventory, (2) setting management objectives, (3) implementing management actions (4) monitoring, (5) adaptation (i.e., decision).



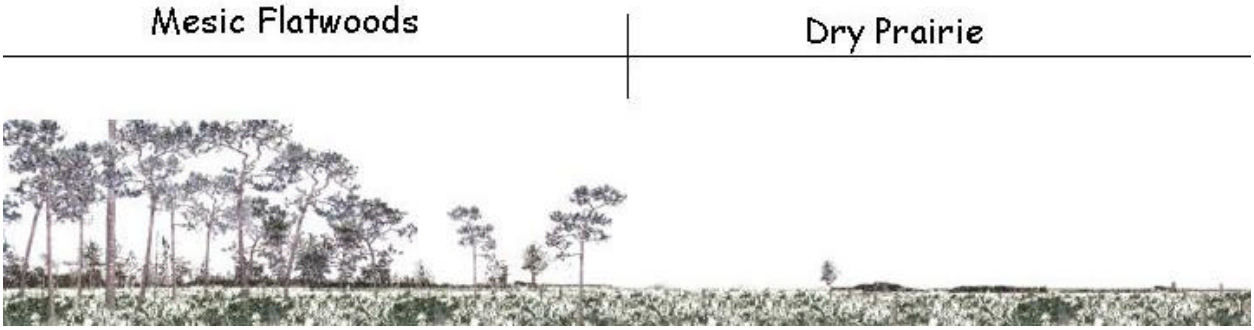
Another reason that we have portrayed the phases in this way is that each of these components has inherent value, even when considered independent of the other phases. For example, the inventory will be a valuable accomplishment, even if the OBVM program went no further. Similarly, having clearly defined objectives, an effective monitoring program, and a means for incorporating knowledge in to management decisions each are valuable accomplishments, regardless of the program as a whole. When considered in this context, the OBVM Program provides a means of making needed changes in a relatively risk-free setting.

The Steps of OBVM

THE INVENTORY

The first step in this program is to conduct an inventory of Trustees- owned lands. This inventory is already underway, and is based on the Florida Natural Areas Inventory (FNAI) plant community classification system. However, the FNAI plant community classification system currently provides only limited qualitative descriptions of plant communities, and preliminary discussions with FWC natural area managers indicate some concern over management objectives based on

structural attributes. Thus, we would envision an expanded update to the *Guide to The Natural Communities of Florida*, incorporating quantified structural parameters, possibly regionalized, for each plant community. This update could provide the guidelines necessary for rational, science-based area-specific vegetation management objectives. This expanded inventory, also would identify the criteria by which community types are distinguished, and would provide the basis for a "first cut" at delineating management units with a given wildlife management area (WMA) based on these plant community types. For example, attributes such as basal area might be used to distinguish between mesic flatwoods and dry prairie when pines are encroaching into the prairie type.

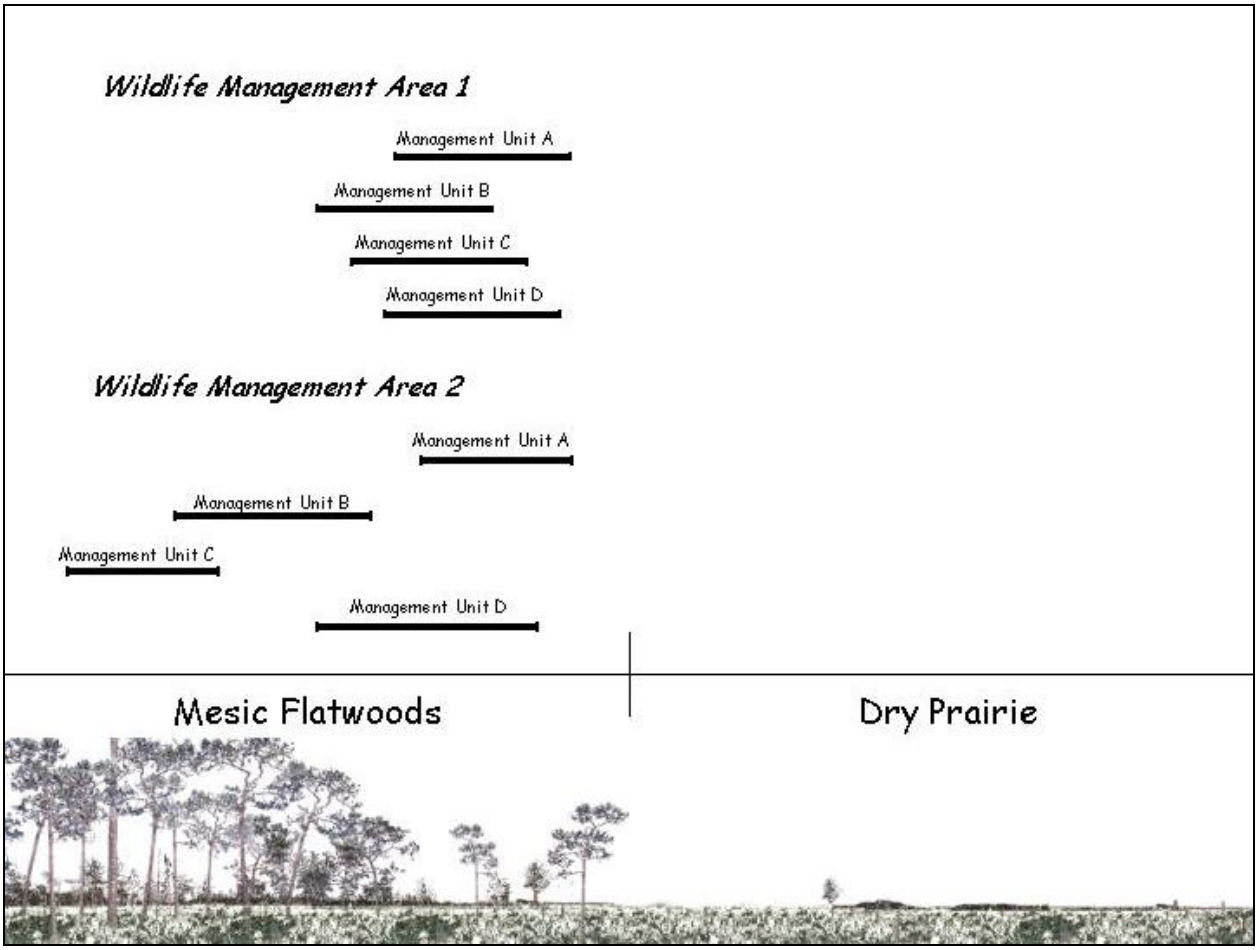


Structural attributes would be used to distinguish among plant community types and would set the "sideboards" within which more specific objectives would be identified.

Determining vegetation management units will most often require area managers to re-evaluate the way their area is currently subdivided (i.e., burn units). In addition to the plant community inventory data that is being compiled, a list of criteria for vegetation management unit delineation would facilitate a consistent approach to this step of the OBVM process.

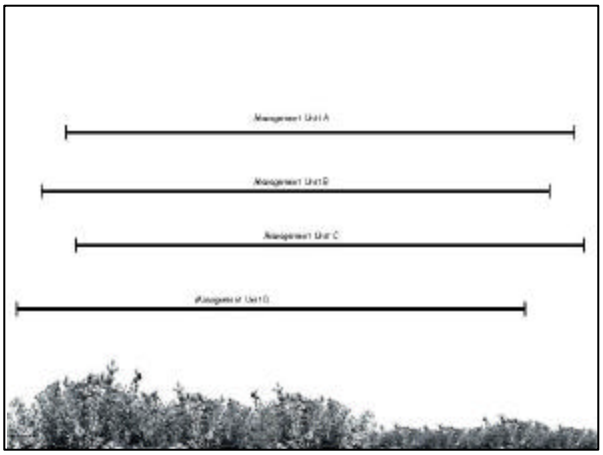
SETTING OBJECTIVES

Setting management objectives is probably the most critical step of the OBVM process. The specific objectives will also be based on structural attributes of the vegetation, and would represent targeted and measurable states of the plant communities. This approach does not abandon our previous emphasis on targeted wildlife species or other attributes of concern; rather it explicitly identifies the habitat condition that enables our goals, including targeted species, to be met. As such, the specific objectives should be based on the overall goals of the wildlife management area.



The desired attributes for each management unit on a given wildlife management area should reflect the goals of that area, but be within the structural attribute value range for the community type. For example, one management area (WMA 1) may explicitly be targeting an emphasis on early successional stage habitats, whereas another (WMA2) may have an emphasis on biodiversity and explicitly target having a mosaic of successional stages.

The objectives for a given unit must also consider how that unit fits within a broader context of spatial and temporal scales. For example, a WMA may be targeting a scrub habitat, and would like to have a mosaic of successional stages. This might be accomplished by having the objectives for any given unit sufficiently wide, using an additional criteria about the spatial and temporal distribution of the successional stages within the WMA. Such criteria might indicate that although a range of successional stages are acceptable, that not all units be at the same stage at the same time. This might enable individual management units to progress in succession, with a periodic schedule of management treatments such that units moving outside the desired condition (e.g., shrub height) be treated and set back to an earlier successional stage, while others are just moving into the stage preceding treatment.



The desired attributes (e.g., shrub height) for each management unit may be intentionally broad with an expectation that individual units will be at different successional stages.

The objectives for each management unit would be established with local area managers. Perhaps the first step would be to identify specific considerations including:

1. What are the overall goals for the WMA?
2. What listed species need to be considered?
3. Are there potential threats that need to be considered (e.g., invasive species)
4. Others?????

IMPLEMENTING MANAGEMENT ACTIONS

This phase is comprised of the ongoing management at each WMA. Specific management options are considered by local area managers and implemented to achieve the desired condition of each vegetation management unit. When there is uncertainty about the effectiveness of specific management options or regimes, then the monitoring phase, if properly designed, should help to reduce that uncertainty.

MONITORING

Monitoring is a critical step in the process because it allows the manager to assess the status of each unit relative to the stated objectives. This provides higher levels of accountability both internally and to our constituents, in addition to better support for management decisions and an improved potential to support and lobby for management funding.

Another important role of the monitoring is that it provides a link between the stated objectives and the overall goals of the WMA. With the exception of perhaps hunting regulations, management actions seldom affect the wildlife directly. By setting objectives based on the attributes of actively-managed plant communities, we target those structural parameters of the plant communities that most directly influence desired wildlife usage; thus, we target those aspects of the habitat that we believe will result in achieving our goals. In fact, most managers make this connection already, whenever they have a vision of what "desirable" habitat would look like. With OBVM, we are just making what has previously

been an implicit part of management explicit. The value of this comes from learning and information transfer. There is always uncertainly associated with management. Having an effective monitoring program will enable us to reduce those uncertainties, whether it be uncertainties associated with achieving our targeted values for plant community attributes, or whether the plant community attributes that we believe are desirable do in fact lead us to achieving our overall goals. Both will enable more effective management, especially if we are careful about how we design our monitoring program.

Implementing the monitoring associated with OBVM appears daunting when considering application on over a million acres of natural resource lands. Although the FWC intends to initially limit vegetation management objectives (desired condition) to three or fewer attributes and associated value ranges, the FWC must determine a cost and time efficient method for accessing under-story attribute values. However, we recognize from the outset that we will not be able to monitor everything that we would like. Logistic and financial constraints will always be present. Thus, careful consideration will need to be taken at the outset to ensure that we are monitoring the right attributes, and the right intensity to achieve reliable and useful information to guide our management programs into the future.

ADAPTATION (Decisions)

The values of an assessment include enhanced decision support for future management actions. It not only tells us where, when or how we need to apply management, but it gives us a basis for prioritizing management needs objectively. All of the knowledge about ecosystem and wildlife responses to management gained from this program would be virtually useless if it is not incorporated into the decision process. It is perhaps always implicit in the thinking of managers that the results of monitoring and assessments will be used to guide our management. This phase is simply making that process explicit, and identifying the process by which new information will be incorporated into management decisions. At this point, we have no particular approach in mind, but as the OBVM program progresses, we will develop the process by which information would be incorporated into management decisions. However, some considerations for this process might be: (1) Who is responsible for incorporating knowledge into the decision process: local managers, a review team including local managers, etc., (2) to what extent (if any) do we use predictive ecological models to guide our decisions, or do we rely on local empirical results? These and other considerations will be resolved as the project unfolds.