

Scrub management workshop: Balancing the needs of species in scrub*

1/30/2014

SUMMARY

Conserving the full suite of species characteristic of scrub requires planning at regional scales and managing for variability at local scales. Considering the regional context of a property for different species can help guide local management actions. At the local scale, spatial and temporal variability in management actions creates a mosaic of habitat conditions important for conserving the full suite of scrub species on a property. The desired variability on any given property will depend on the species present and the property's regional context for those species. Recognizing that variability can be challenging to achieve, there is a need for species experts and land managers to work cooperatively to create site-specific plans and realistic management recommendations that take into account regional priorities and the current constraints faced by land managers.

FULL TEXT

Introduction to the workshop

Land managers charged with conserving imperiled species in scrub receive multiple and sometimes conflicting management recommendations from various species experts. Additionally, translating the recommendations received from different species experts into management actions can prove difficult given operational constraints. There is a need to identify these conflicts, identify potential solutions, and provide unified recommendations to land managers. A group of ten species experts and land managers met on January 30th, 2014, for a workshop to discuss these issues.

Balancing species needs in scrub

Balancing the needs of different species in scrub can be challenging. For example, sand skinks require longer fire return intervals to allow for accumulation of litter, but scrub plants often do not do well with litter. Suggested fire return intervals for scrub-jays and scrub lizards overlap, but their needs are somewhat different. Scrub lizards prefer more frequent fire, whereas scrub-jays are more tolerant of slightly taller habitat and can be harmed by repeated fires at the low end of the suggested fire return interval. Carnivores such as bears require patches of mature scrub for den security and resting sites. Balancing the needs of different species has become more difficult with increased habitat loss and fragmentation.

The 2009 FWC/FNAI Scrub Management Guidelines attempted to help land managers achieve the habitat needs of most scrub species by using the Florida scrub-jay as an umbrella species for scrub and by emphasizing pyrodiversity. Workshop participants noted that the umbrella concept has been successful at encouraging management of scrub, and it works well in some areas. One participant stated that scrub-jays represent "the top of the bell curve" for the distribution of fire return intervals or structural variables in scrub, and most scrub species benefit from similar management actions. However, participants cautioned that no species in scrub is a true umbrella species. Participants were more comfortable thinking about scrub-jays as a "focal, ambassador, or indicator" species in scrub, and they noted that there is a need to consider other indicator species on either end of the spectrum of fire return intervals. One attendee described these other indicator species as "nudge species" that can be used to shift the desired distribution of fire return intervals or structural variables on properties identified as important for those species. As one participant noted, "scrub-jays are a leaky umbrella, but we can plug the holes."

*This workshop was organized by Matthew Corby (St. Johns River Water Management District) and Craig Faulhaber (Florida Fish and Wildlife Conservation Commission) as part of a project for the Florida Natural Resources Leadership Institute.

The need for scale dependent management and variability

Balancing the needs of different species in scrub (i.e., “plugging the holes”) requires planning and management at both the regional and local scales (“Think globally, act locally,” as one participant quipped). At regional scales, it is important to consider the size of different properties and how each property fits into the larger context for particular species. For example, some areas may not be large enough to support viable populations of scrub-jays but may be critically important to certain plants. Other areas may play a role in landscape connectivity. Each property has its niche. Identifying properties that are particularly important to certain species can lead to adjusting the desired distribution of fire return intervals or structural variables to benefit those “nudge” species. Participants noted some examples of formal processes for evaluating the regional context for individual properties and species, including the [State of the Scrub](#) report by Turner and colleagues (2006) and the Florida Fish and Wildlife Conservation Commission’s Wildlife Conservation Prioritization and Recovery program. Participants emphasized that management plans should address the regional context of a property for different species.

At the local scale, balancing the needs of different scrub species requires both spatial and temporal variability in management actions (i.e., “pyrodiversity”) and a recognition that no single strategy works for all properties. Participants emphasized that patchiness, intensity, and time since fire are thought to be more important than seasonality of fire in scrub.

Spatially, it is important to create a mosaic of scrub conditions across the landscape. Historically, species were able to track changes in suitable habitat across the landscape. As habitat patches become smaller and more fragmented, there is a need to maintain a mosaic of habitat conditions either within or among management units on a property. Determining the species present on a property and the regional context of a property can determine what type of mosaic is needed. For example, insects and plants often require fine-scale patchiness, whereas black bears require patchiness at larger scales. On properties with large management units, it may be necessary to achieve mosaics *within* units. On other properties, smaller burn units can create a mosaic *among* units on the landscape.

Temporal variability is another important component of the mosaic. Participants suggested varying fire return intervals rather than using a fixed fire return interval for a unit. For example, as noted above, burning too often on the low end of the suggested fire return interval for scrub-jays can be detrimental to the species. “Varying the variability” is key; no prescription should become routine. Attendees also noted the importance of using habitat structure rather than fire return interval to determine when to burn, given the variability in how fast scrub grows both among and within properties. Structural variables important to different scrub species include average shrub height, litter, open sand, spatial configuration, and availability of mature patches.

Achieving the mosaic

Managing with variability was a key theme of the discussions about how to balance the needs of different scrub species. However, species experts need to consider constraints faced by land managers to provide useful recommendations and to collaboratively develop effective, site-specific management actions.

Operationally, spatial and temporal variability can be difficult to achieve. One participant expressed difficulty in achieving a mosaic within a burn unit in some coastal sites. Others noted that managers may be reluctant to leave unburned patches that can reignite, resulting in escaped fires. The already-

narrow burn window on some properties may close if managers wait for the right conditions to facilitate a mosaic burn. Frequent staff turnover can prove problematic, because it helps to have staff who know the history of the property.

Maintaining a mosaic among units can be problematic as well, as managers prefer to have blackened areas downwind to be able to burn in conditions under which scrub will light. Not being able to “burn into the black” requires more time and effort for managers. Also, managers prefer to burn on the lower side of the suggested fire return interval for safer burns, which can have negative impacts on species over the long term.

Attendees noted some factors that can help managers maintain mosaics. Mosaics within a unit may become easier to achieve as management transitions from restoration to maintenance (i.e., after multiple burns). Manipulating fuels with mechanical treatments and using different ignition techniques can help as well. Tracking the history of management actions can help promote variability, preserve the continuum of management, and understand the long-term implications of management choices despite staff turnover. Management plans should explicitly encourage variability. Additionally, there often is an operational disconnect between written burn objectives and actions taken by burn personnel on the day of the burn. Better statement of goals and oversight by burn manager may alleviate some of these issues and discourage personnel from lighting unburned patches within units.

One concern discussed by participants was that the way land managers are evaluated may provide a disincentive to creating a mosaic. Attendees noted that land managers often are evaluated based on the number of acres burned rather than the ecological outcome of the burn. Participants expressed that success should be judged based on the outcome of fires, not just on number of acres. One suggestion included evaluating success based on deviation from a desired distribution of fire return intervals on a property. The desired distribution could be site-specific, with input from species experts. For example, “nudge species” (e.g., sand skinks, some rare plants) could be used to shift the desired distribution on a particular property.

Scrub management and potential take of protected species

Attendees noted that some land managers are concerned about investigations, liability, and public outcry due to potential incidental take of listed species from scrub management actions. This issue needs to be addressed so that land managers do not have a disincentive to conduct management actions that would benefit populations of listed species.

The presence of bald eagle nests can be particularly challenging to land managers in scrub. Bald eagles and their nests are federally protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, as well as by state rule (FAC 68A-16.002). The presence of bald eagle nests limits the window for burning around the nest tree during their nesting season (1 Oct – 15 May). This can lead to the accumulation of high fuel loads under the nest tree, thereby endangering the nest tree when fires do occur. Also, the presence of eagle nests can reduce the ability to burn adjacent management units due to smoke management concerns.

A potential solution to the challenges posed by eagle nests is the development of minimization measures (similar to BMPs) that would allow land managers to conduct prescribed fires in areas with eagle nests during the nesting season without risk of liability. The key is developing minimization measures that reduce the potential for “take” or disturbance to the greatest degree practicable but are

not too onerous for land managers to implement. One participant noted that there is a lack of research to determine the overall impact of nesting-season burns on breeding bald eagles.

Awareness of biases in scrub management

A land manager in the workshop suggested that managers be conscious of potential biases when managing scrub, noting that “we ride waves of what is popular” in the land management community, in the public eye, or based on historical inertia. There could be a tendency to focus on species that we know the most about or to let potential funding sources choose what receives attention.

Information needs in scrub management

Filling information gaps would help both species experts and land managers tasked with conserving species in scrub. For establishing regional priorities, there may be a need to collect and organize existing data. At local scales, managers require more information on species’ management needs and the potential impacts of different management actions on species. For example, little is known about the ecology of the blue-tailed mole skink. Also, we need additional data on the impacts of pine harvests and the timing and type of mechanical treatments on sand skinks. Additional information on the effects of time of year for mechanical treatments and follow-up prescribed fires and the amount of time between mechanical treatments and fire would be helpful for various species. There is a need for more data on the short- and long-term effects of different types of mechanical treatments (e.g., bio-fuel harvest) used as fire surrogates in areas that cannot be burned.

The interaction between scrub and adjacent natural communities requires further attention. For example, some scrub species also use southern ridge sandhill, and managers may need to consider both natural communities when establishing priorities and planning management actions. Ecotones between natural communities could prove important to different species. For instance, sand skinks were considered an ecotonal species historically. It may be important to evaluate how current management regimes affect ecotones, and it may be important to restore or maintain connections between scrub and adjacent natural communities.

One participant noted that the goal is healthy populations of species, not necessarily the maximum density of any given species. One challenge is that we do not know what constitutes a minimum viable population for many species.

Participants also expressed a desire for additional resources for land managers, including forums for communication. Other attendees noted that the Southern Fire Exchange and regional scrub and uplands working groups are good sources of information for both land managers and species experts. Others suggested a website, database, or listserv to increase the effectiveness of existing working groups. One attendee noted that agency travel restrictions restrict the ability of land managers to take advantage of working groups.

CONCLUSIONS

- Local planning efforts for imperiled scrub species should consider the regional context of a property for those species.
- Spatial and temporal variability are key components of management at local scales.
- Management should be adaptive: good management is a moving target, and there may be different methods to achieve the same result.
- Achieving variability can be challenging, necessitating development of realistic, cooperative solutions by land managers and species experts.

Appendix 1. List of participants*

Name	Affiliation	Role
Reed Bowman	Archbold Biological Station	Participant
Kevin Enge	Florida Fish and Wildlife Conservation Commission	Participant
Walter McCown	Florida Fish and Wildlife Conservation Commission	Participant
Earl McCoy	University of South Florida	Participant
Samantha McGee	Florida State Parks	Participant
Todd Mecklenborg	U.S. Fish and Wildlife Service	Participant
Eric Menges	Archbold Biological Station	Participant
Steve Morrison	The Nature Conservancy	Participant
Henry Mushinsky	University of South Florida	Participant
Michelle van Deventer	Florida Fish and Wildlife Conservation Commission	Participant
Matthew Corby	St. Johns River Water Management District	Co-facilitator
Craig Faulhaber	Florida Fish and Wildlife Conservation Commission	Co-facilitator

*John Ramsay of Ocala National Forest intended to participate but was unable to attend.