

A Survey of Land Managers on Wildland Hazardous Fuels Issues in Florida: A Technical Note

Leslie Wolcott, Joseph J. O'Brien, and Kathryn Mordecai

ABSTRACT

Due to a rapidly expanding human population in Florida, fire management has become hampered by urban encroachment, smoke management issues, and forest fragmentation. For these and other reasons, fire has been excluded from many stands, resulting in the buildup of dangerous fuel loads. These fuel loads have begun to result in recurrent destructive wildfires. Already, different communities are responding to these dangerous fuel loads in various ways. As part of a larger project to synthesize best management practices for hazardous fuel management in pine flatwoods and pine rocklands in Florida, a survey was distributed to a variety of land managers in Florida to investigate fuel management practices already in place. This note summarizes responses to this survey.

Keywords: hazardous fuels treatments, Florida, pine flatwoods, pine rocklands, prescribed burning

Subtropical pine flatwoods are savannah-like forests dominated by *Pinus elliottii* (both var. *elliottii* and var. *densa*) and *Pinus palustris* and cover approximately 5.7 million ac in peninsular Florida (Kautz et al. 1993). Toward the southern tip of Florida, pine rocklands become the dominant pine forest type, differing from flatwoods mainly in substrate and understory plant composition. Pine flatwoods are an important source of timber, and both forest types provide habitat for a variety of important wildlife as well as endangered species. Both ecosystems are fire-dependent ecosystems. Fire frequency is high, with fires typically occurring every 2–8 years. Fire management in Florida has become hampered by urban encroachment, smoke management issues, and forest fragmentation. For these and other reasons, fire has been excluded from many stands, resulting in the buildup of dangerous fuel loads. These fuel loads have begun to result in recurrent destructive wildfires.

Due to the demographics and landownership patterns in the coastal plain of the southeastern United States, mitigating hazardous fuel accumulation in flatwoods and pine rocklands will require a diverse toolkit of treatment options. The appropriate balance among cuttings, mechanical fuel treatments, herbicides, and prescribed fire is often unclear. Although a considerable amount of research has been conducted on fuel treatment options in pine flatwoods, little research has been done on what practices land managers are actually applying.

As part of a larger project to summarize best management practices (BMP) for hazardous fuels, we conducted a survey of land managers affiliated with federal, state, county, or private lands. This report details the results of this survey, and offers important information about fuel reduction strategies currently practiced in Florida.

Methods

The survey was facilitated through the use of Zoomerang, an online survey management program (MarketTools, Inc. 1999). Our objective was to determine current management techniques used by land managers to mitigate hazardous fuels and to collect data about the ecosystems, fire history and ecology, and management patterns on the land parcels over which they have jurisdiction. Land managers were individually invited to participate through workshops, e-mail, phone calls, and a link on our website. Of 52 surveys submitted, 44 were fully completed and 8 were partially completed; all submitted survey results are discussed.

Results and Discussion

Eighty-four percent of respondents said that they had a hazardous fuel problem, which we defined in the survey question as “excessive live and dead trees and other vegetation and organic debris that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.” A follow-up question asked respondents to rate their hazardous fuel problem on a scale of 1–5, with 1 being minor and 5 being the most severe. Three percent rated it as a “minor problem,” 46% said “requires attention,” 32% said “major problem,” 8% said “severe problem,” and 11% said “very severe problem.”

Respondents managed anywhere from 5 to 1.5 million ac, with an average of approximately 130,000 ac. They listed a wide range of ecosystems in which they managed hazardous fuels. The most prevalent was pine flatwood (80% of respondents) followed by marsh and hardwood hammock, both identified by 50% of respondents, then scrub pine (44%), swamp (30%), high pine sandhill (30%), and dry prairie (30%). Twenty-six percent of respondents identified pine rocklands as areas in which they managed fuels, and 10% identified other ecosystems. Because various fuels require different

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Joseph J. O'Brien (jjobrien@fs.fed.us), US Forest Service, Southern Research Station, 320 Green Street, Athens, GA 30602. Leslie Wolcott and Kathryn Mordecai, US Forest Service, Southern Research Station, 320 Green Street, Athens, GA 30602.

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management techniques, we asked respondents what kinds of fuels were present in the land they managed. Almost all respondents (94%) dealt with saw palmetto, and 83% of respondents reported young pines and forest floor/duff. Grasses, palms, ladder fuels, and other shrubs were all present in the areas managed by more than 70% of respondents. Gallberry/fetterbush and wiregrass also had high responses, with 63% and 61% respectively, and coarse woody debris, logging slash, and crown fuel all affected at least one-third of respondents.

When asked about nonindigenous invasive species, the two most prevalent species reported were cogongrass (*Imperata cylindrica*) and climbing fern (*Lygodium spp.*). Other, less prevalent, species were punk tree (*Melaleuca quinquenervia*) and Burma reed (*Neyraudia reynaudiana*). Only 3 respondents said that they had no exotic and invasive species that created a fuel problem. A useful followup for this question would be to find out what percentages of land are affected by each of these invasive species and where those lands are.

Respondents were asked to choose all of the factors that hindered use of prescribed fire. The highest-ranking hindrance (86%) was smoke management. The second was the wildland–urban interface; it is more difficult to conduct prescription burns in residential areas. Other hindrances included lack of personnel and equipment (40%), lack of public acceptance of fire (24%), lack of institutional support (18%), fear of litigation (16%), laws/regulations (11%), and lack of money (2%).

Prescribed Burning

Ninety-one percent of managers reported that they used prescribed fire to treat hazardous fuels. Of those, 43% treat 75–100% of their fuels with prescribed burning and 87% used prescribed burning for 25% or more of their hazardous fuel treatment. In addition, when asked to rate all fuel management techniques against each other, 90% of managers ranked prescribed burning as “very useful.”

When asked “In what types of fuels do you use this method? Is it effective for these fuels?” respondents listed a wide range of ecosystems in which they used burning. The general consensus was that it was somewhat to very effective in managing fuels, and many listed palmetto or pine flatwoods systems as the areas in which they used prescribed burning. When asked how frequently they needed to burn to effectively control fuels, the average response was 3 years, although responses ranged from 1 to 15 years. However, when asked earlier in the survey “What is the current fire return interval on the land you manage?” 53% said 2–4 years, whereas 51% said 4–8 years. Respondents noted that prescribed burning was both the cheapest and the most ecologically beneficial and sustainable way to manage fuels.

Mechanical Fuel Reduction

Seventy-eight percent of respondents used some type of mechanical fuel treatment. Fifty percent of respondents used chopping, 47% used chipping, and 72% used mowing to manage fuel. Several respondents also noted that they used hydroaxing. Of those who used chopping, 88% used it for less than 25% of their land. The dominant species listed by respondents for this method was palmetto, especially when overgrown or particularly dense. Shrub fuels were also listed as a target for chopping treatments. Estimated cost per acre for chopping ranged from \$35 to \$1,000. Respondents noted that this is particularly effective in urban environments.

Of those who used chipping, 67% used it on 25% or less of their fuels, 27% on 25–50%, and 7% on 50–70% of fuels. Chipping was used in conditions similar to those for chopping; it was used for a wide range of fuel types, including palmetto, pine flatwoods, and pine rocklands, as well as in the creation of fuel breaks. Treatment cost ranged from \$35 to \$3,000/ac. Generally, respondents suggested that chipping was repeated every 4–5 years or followed by fire to maintain effective fuel control. “Pros” for chipping included its effectiveness in preparing areas for prescribed burning and the low level of disturbance and low cost. “Cons” included the mechanical problems with chipping machines, wildlife mortality, and creation of an artificial duff layer that may cause problems with prescribed burns.

Of respondents who said that they used mowing to manage fuels, 91% used this method on 25% or less of their land. Mowing was used on a wide variety of areas, including edges, grasses, dense shrubs, palmetto, gallberry, and flatwoods. Several managers mentioned the use of mowing in maintaining fuel breaks. Treatment cost per acre ranged from \$35 to \$500. Managers repeated treatments anywhere from every 2 months to once every 3–5 years; several combined mowing with prescribed burning. “Pros” for mowing included ease of execution, usefulness in grassy areas, the possibility of less damage than chopping, its use in wildland–urban interfaces, and opening of the ground to light. “Cons” included expense, the effect of downed fuels on flame height and temperature in prescribed burns, and mechanical problems with mowers.

Herbicide

Forty-one percent of survey respondents used herbicide to manage hazardous fuel. Fifty-nine percent of those who used herbicide used it on 25% or less of their land, and no one reported using it on more than 75% of land managed. When asked about the type of herbicide used, many respondents replied that they used glyphosate, imazapyr, and triclopyr. The estimates on cost per acre varied widely; responses ranged from \$68/ac to numbers in the low thousands of dollars per acre. Most needed to repeat herbicide treatments 1–2 times a year to manage fuels effectively. “Pros” listed for herbicide included prevention of regrowth by eliminating the hazardous fuels source and effectiveness for edges and small target areas.

Grazing

Only 15% of respondents used grazing for fuel management. Of those, 4 people used grazing on 25% or less of their land, and 33% used grazing on 50–75% of their land. Eighty-three percent of respondents said that they used cattle for grazing (often leasing out grazing rights); one respondent planned to use goats.

Manual Methods

Forty-six percent of respondents used manual (hand clearing) fuel removal. Of those, 82% used hand clearing on 25% or less of their land, 1 respondent used hand clearing for 75–100% of their land, and 12% used hand clearing on 25–50% of their lands. Land managers responded that they used hand clearing on a wide range of species and fuel types.

Summary

It is clear that the BMP will depend heavily on available resources and the size of the property to be managed. However, our survey

highlights some trends in the hazardous fuel management communities of Florida. Treatments tend to be combinations of management techniques. Many respondents first reduced the hazard of the fuels (for example, removing ladder fuels) and then used prescribed burning to treat the dead fuels. Others adjusted management techniques according to the ecological sensitivity of the area to be managed. It is clear that prescribed burning will continue to be a major player in hazardous fuel reduction but also that other alternatives must be available.

One of the most important questions we asked in this survey was "From which of the following categories would you like to have more information?" Answers to this could help us and future investigators in developing educational materials to better serve our constituency. The most popular option was a cost-benefit analysis of

management options, followed by fire ecology, fuel management options, materials for educating the public about fuel management, and information about the fire history of a region. Future surveys could also take into account the general population and members of the public who should have a voice in deciding the fates of Florida's public trust lands. However, these data are an important first step in the larger project of providing a comprehensive BMP manual for hazardous fuel management in Florida.

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