Acceptability of Smoke From Prescribed Forest Burning in the Northern Inland West: A Focus Group Approach

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ABSTRACT

Focus groups were used to gauge tolerance of smoke from broadcast prescribed forest burning in the wildland-urban interface of the northern Inland West. Focus group participants worked through issues surrounding prescribed burning as a management tool to determine if the origin of smoke made a difference in the acceptance of that smoke. Participant responses across five different population sectors suggest that prescribed forest burning could be applied as a forest management tool with a well-informed public and that establishing and maintaining a dialogue with the public may be the most important part of any fire prescription.

Keywords: focus groups, prescribed forest burning

Catastrophic forest fire and its relationship to forest fuel conditions in western forests may be the most visible and debated forest management topic in the nation. There is some disagreement about the role that a century of fire suppression, silvicultural practices, climate change, and other management activities have played in creating increased risk of larger and less controllable wildfires, yet there is agreement that fuel reduction actions are needed to mitigate this risk.

This issue is particularly prominent in the northern Inland West (i.e., eastern Washington, northern Idaho, and western Montana). Forest vegetation changes within the region are thought to be the result of 19th and 20th century management activities (Hessburg and Agee 2003) and the elimination of indigenous burning practices (Whitlock and Knox 2002). The risk of large wildfires in the region's forests has increased, as has the risk of life and property loss as the wildland-urban interface expands.

Prescribed broadcast burning has a role in fuel reduction efforts, and there is evidence that the use of prescribed burning is increasing in some landownership types (e.g., tribal lands) or in specific forest types (Carroll et al. 2004). A significant barrier to prescribed burning is smoke and the related air quality concerns, illustrated by the regional controversy over smoke from agricultural field burning (Wandschneider et al. 1998). Court cases challenging agricultural field burning practices have eliminated field burning on many farms in the region; Washington State banned bluegrass field burning in 1998. But while some challenge agricultural burning, others advocate more burning in the forests. This juxtaposition of issues raises the question of whether the social acceptability of smoke is related to its source or its purpose.

Current prescribed burning policies in the region focus on air quality. State smoke management plans enforce Environmental Protection Agency (EPA) National Ambient Air Quality Standards (EPA 1998) and were written to minimize smoke from outdoor burning and smoke's negative health effects. The plans have significantly affected prescribed burning and air quality in the region (Radke et al. 2001, Cook and O'Laughlin 2004).

Despite the smoke issues, prescribed forest burning has potential as a tool for hazardous fuel reduction in the region's forests. Because smoke from agricultural field burning is quite controversial, we set out to see how citizens in the region might react to smoke from prescribed forest burning. We also wanted to understand, broadly speaking, the trade-offs people were willing to make between esthetics or health concerns related to prescribed burning and improved forest conditions.

Background

There is a small but growing literature on the issues surrounding the social acceptability of prescribed burning. Among the issues are costs, fear of an escaped fire, esthetics, firefighting resources, proximity to developed areas, agency credibility and com-

munication efforts, and air quality and smoke (Winter et al. 2002, Carroll et al. 2004). Surveys conducted in the Blue Mountains of eastern Oregon and Washington found that the more people knew about mechanical thinning or prescribed burning, the more supportive they were of its use (Shindler and Toman 2003). The authors also found "Although smoke often evokes predictable reactions from citizen groups and politicians, more thorough preparation . . . may quell overreactions." Similar results linking knowledge about fuel reduction practices to support of such practices were found by Manfredo et al. (1990) in Montana and Wyoming and by Loomis et al. (2001) in Florida. Winter et al. (2002) also noted a link between support for fuel treatments and the perceived outcomes.

Despite this literature linking knowledge to acceptance, smoke remains one of the greatest barriers to prescribed burning in forests in or near the wildland-urban interface (WUI). Pyne et al. (1996) encapsulate this issue: "No other aspect of fire carries its effects so far from the site, no other is so visible to the public or threatens public health, no other is subject to such regulation by outside agencies, and no other so threatens to compromise programs of routine prescribed fire."

Regarding the Inland West generally, Hessburg and Agee (2003) state, "The question before public land managers and citizens is not whether there will be fire and smoke in their future, but how they might want their fire and smoke." This certainly applies to our study area.

Methods

A focus group approach was adopted to study the significance of smoke as a barrier to the increased use of prescribed burning in forests for fuel reduction and to examine the trade-offs people are willing to make between prescribed burning costs (in terms of health and safety) and improvements in forest conditions. There are many ways to assess what citizens think about an issue, but there is a lack of research-based knowledge about how they view the positive and negative aspects of prescribed burning. Surveys can be used but do not necessarily compel participants to evaluate the hard choices surrounding an issue. A well-run focus group creates an environment in which people face complexity, alternative perspectives, and the hard public policy choices that they might not have encountered otherwise. Focus

Table 1. Group descriptions.

Group name	Description	No. in group 1	No. in group 2
Urban	Citizens residing within Spokane County	10	12
Anti-smoke	Eastern Washington residents who do not agree with current agricultural field burning practices	10	13
Missoula	Town that recently experienced wildfire smoke cover for up to 6 months	10	10
Rural	People from areas outlying Spokane or reservations	12	12
Native American	Members of the Colville Confederated, Spokane, and Kalispel Tribes, all with reservations in the eastern Washington area	6	13

groups also raise participants' consciousness through group interaction and produce greater insight into attitudes and perceptions of participants (Krueger 1994). Participants must face an issue head-on, casting aside what Yankelovich (1991) suggests are the most common forms of resistance to "working through" an issue: denial, avoidance, procrastination, wishful thinking, and mental laziness.

Focus groups such as those reported here allow participants the chance to work through an issue and not simply reach hurried or shallow conclusions. Participants are "pushed" to weigh future consequences or interactions between competing and complementary choices. Through group discussion, ideas are developed that may not have been developed or expressed otherwise (Krueger 1994). Thus, participant responses are not necessarily independent and are often offered in the context of the group discussion (Edmunds 1999).

Focus groups are not a substitute for real world public deliberation, yet they can imitate the kind of working through that can happen in public decisionmaking forums. The results of well-run focus groups have the potential to be both richer and more "real world" than surveys or individual interviews.

A focus group consists of a moderator and a group of participants. In our case, each focus group had six to 13 participants, with the participants representing five categories of citizens for whom the smoke issue had high salience. The categories were (1) urban, (2) anti-agricultural smoke, (3) residents of a community (Missoula) that had experienced a recent smoky wildfire, (4) rural, and (5) Native American (Table 1). Participants were selected to belong to one of the predefined stakeholder "types." The stakeholder types were selected by the researchers based on our understanding of the smoke issue in the region. We purposely chose

groups for whom we believed the smoke issue would be salient and who would be likely to hold the most divergent opinions on the subject. It is important to note that we were not attempting to represent, in a statistical sense, the population of the region. Rather we saw this as an "experiment" to see how very different groups might work through this issue. Although there was, hypothetically, some chance for overlap between groups (i.e., Native American anti-smoke activists), in the end, the groups chosen were quite distinct from each other.

Focus groups were conducted in the greater Spokane, WA and Missoula, MT areas between Oct. 2003 and Jan. 2004. Two focus groups were held for each of the five population types, for a total of 10 focus group sessions, which were recorded on video and later transcribed.

The sessions were conducted by a professional moderator in specially designed focus group facilities. Sessions began with a general discussion concerning quality of life in the area and gradually narrowed to issues surrounding forest health and fire risk reduction, prescribed burning, and the acceptability of smoke from prescribed fires. This format allowed participants to draw their own conclusions about prescribed burning and smoke issues. Participants were told that no consensus was needed and no particular outcome was expected. The moderator introduced topic areas and then allowed the groups to explore the ideas and trade-offs at length.

Focus Group Results

Forest Conditions and Reducing Fire Risk. To set the context for prescribed burning, each group discussed current forest conditions and fuel reduction strategies. Most participants recognized problems with the current state of forests in the region: "There are very few hillsides now that you can climb up. . . . Now you have logs and dead trees

and it's a mess. If there's a fire, I guarantee it's going to be a big one" (Native).

Harvesting was the most-mentioned fuel reduction method by all but the Native groups, followed by thinning and chipping. Thinning (no distinction was made between precommercial or commercial thinning) was a desired preventive measure. Despite the labor and costs, some believed that thinning would be less expensive than fighting a wildfire. A combination of thinning and prescribed burning emerged as the most practical fuels reduction approach because current forest conditions would not permit prescribed burning alone.

Broadcast Versus Slash Pile Burning. Participants did not initially distinguish between slash pile burning and prescribed broadcast burning; the moderator did so, defining prescribed broadcast burning as follows: "Controlled application of fire to vegetative fuels in either their natural or modified state, under planned weather and fuel moisture conditions, confining the fire to a predetermined area to accomplish certain objectives including silviculture, wildlife habitat management, and fire hazard reduction" (SCFC 1998).

The Native American groups best understood prescribed broadcast fire coming into the exercise, the rural groups had some understanding of the practice, while the other groups had little detailed knowledge. A Native American detailed his grandfather's burning practices: "Just setting a fire and letting it go. That fire might get a foot and a half maybe two feet high, if that. Then after that the fire would go out. . . . He said 'Now, when this is dead out, and the ash is going to still be there, we've put something back into the ground. We didn't take it all. So when the rains do start coming, that ash is going to help hold that soil there so when the grass starts growing, then I've got something for my livestock out here. . . . '"

Once the distinctions between prescribed broadcast burning and slash pile burning were clarified, the remainder of the discussion focused on smoke.

Wildfire Smoke Versus Prescribed Burning Smoke. Most reported that they had never differentiated between smoke sources when thinking about wildfires and prescribed burning. However, once the distinction was suggested, many participants reached the conclusion that prescribed fires now lead to less smoke from large wildfires later. By the end of the discussion, a majority of each group thought they would be less

opposed to prescribed fire if it reduced the number of wildfires and thereby the overall amount of smoke: "If it is a prescribed burn, there's the possibility for intelligent smoke management . . . it is an inexact science, but at least it's better than not having any control over it [smoke]. . . . " (anti-smoke).

Within the urban and anti-smoke groups, a minority of participants believed that any type of human-imposed actions in the forest would have a greater negative effect than letting nature run its course.

Field Burning Versus Prescribed Burning. Agricultural field burning was generally seen as acceptable by all but the anti-agricultural smoke groups for three main reasons: (1) field burning contributed to farmers' incomes and provided jobs, thus contributing to the region's economic base; (2) smoke was a part of life in the northern Inland West; and (3) agricultural fields were a natural resource and benefited from burning.

Anti-smoke groups thought field burning only had one positive effect—to increase a farmer's revenue. The negative health effects from smoke were seen to affect many more citizens.

Participants, even those opposed to field burning, were more receptive to smoke from prescribed forest burning because such burning had a number of positive effects for everyone in the region: "You are burning the forest so it can renew itself and be better for everyone and if you are burning grass for next year's seed for sale, then that's just individual profit" (Native).

Can We Live Smoke Free? A majority of participants from all groups thought smoke was a part of life in the region, anti-smoke groups being the exception. From naturally occurring forest fires to field burning, area residents were accustomed to smoke: "I know I have it [asthma] and I know that smoke affects it. . . . I live with it. I can't expect the whole world to change just because I have asthma. I have to adapt to the fact that I live where I live and there's smoke" (rural).

Many thought there was little they could do about smoke generally, but were in favor of anything that might reasonably be done to reduce the amount they were forced to breathe. Yet most participants did not object to smoke from any source even though it was unpleasant. Those who did object to smoke made a clear distinction between sources. Opposition to smoke from the anti-smoke groups was source based; they op-

posed field burning but most expressed tolerance for prescribed forest burning: "I don't think about them the same at all. . . . Forest burning is one thing that I think I could accept and I can't accept field burning" (anti-smoke).

Similarities Across Groups. As noted above, all group members expressed general acceptance of prescribed burning smoke so long as the forest would benefit. However, such smoke was at best tolerated; it was certainly seen as more acceptable than smoke from field burning even among those (the clear majority) who did not particularly object to field burning. Participants wanted more information on prescribed burning, and with more discussion they tended to express more tolerance of smoke: "The discussion on why we would have prescribed burns definitely made me look at the subject differently. I really never thought about it at all" (anti-smoke).

Many participants thought prescribed fire was needed in the forest to reduce fuel loading, wildfire risk, and potential property loss from wildfires, but most disliked the idea of a prescribed burn being conducted near their homes. They accepted using prescribed fire in remote, unsettled areas, but thought that burning in the WUI posed unacceptable risks.

Differences Across Groups. Not surprisingly, the urban groups were the least familiar of any with the concept of, and issues surrounding, prescribed burning and the WUI. For them, wildlife problems were seen, for example, as a more likely interface issue. When the discussion turned to air quality and smoke, fireplaces or industrial stacks emerged as the most likely sources of smoke. When the discussion focused on forest or field burning and smoke, the urban group members generally expressed willingness to live with it: ". . . the only thing you can do about it is either live with it or move. . . . I choose to live in this area and I know that agricultural burning happens, forest fires happen. There have been days when I cannot leave my house. But it's one of those things" (urban).

As noted above, agricultural field burning was unacceptable to anti-smoke groups, but they were willing to accept prescribed forest-burning smoke. Distinguishing between smoke sources increased the expressed tolerance of prescribed burning by these groups.

The Missoula focus groups were tolerant of prescribed forest burning smoke be-

cause they had been "smoked in" by wildfire smoke the previous summer. They viewed prescribed burning as an effective fuel reduction technique that reduced catastrophic wildfire risk and smoke.

Rural groups expressed opinions similar to the Native groups on current forest conditions, but differed on prescribed burning. The rural groups were more concerned with the escaped fire risk associated with prescribed burning than the Native groups. They also seemed to have a stronger financial sensitivity than all other groups, expressing the conviction that fuel reduction activities must "pay their way out of the woods."

Discussion

It is important to point out that this study was not an attempt to directly measure the acceptability of smoke from prescribed burning. Rather, it is better thought of as an "experiment" in public deliberation on the issue. The results suggest that if the rich discussion that took place in the focus group room could be replicated in the "real world," broader acceptability of smoke from prescribed burning might well result. Second, it is also important to keep in mind the fact that acceptability is always time and place specific (Yankelovich 1991). This points to the need for ongoing dialogue and deliberation on such issues.

Beyond these general points, there are several lessons for managers. First, developing a dialogue with the public may be the most important part of any fire prescription. Participants were more tolerant of prescribed forest burning when they understood the reasons for and the process of prescribed burning. This observation is consistent with hazard communication research—it is not enough to tell people what you are going to do or what you expect them to do, you must also tell them why the action is being taken and the expected impacts.

Second, focus groups can be a tool for understanding what the public thinks about a management action and for the public to work through their beliefs and feelings about an action. This observation supports Yankelovich's (1991) statement that "Emotional resolution means that people have to confront their own ambivalent feelings, accommodate themselves to unwelcome realities, and overcome their urge to procrastinate and avoid the issue." Or as one anti-smoke activist said, "I felt my opinion changing as I learned more, and that made me mad."

Third, the focus groups demonstrated that people can broaden their views about issues and that civic discourse is a means to accomplish this. If managers seek to broaden public perceptions about prescribed burning, it may be best to link prescribed burning to improved forest conditions and describe why prescribed burning may be better than other forest management options. In the end, however, in a democratic society it is the public that must come to judgment about what is acceptable at any given time and place.

Fourth, managers may be able to build better public understanding of prescribed burning by describing, at least in a broad sense, the trade-off between less smoke from prescribed burning now versus more smoke from wildfires later. Managers can have a dialogue with the public about methods that decrease the amount of and impacts from prescribed burning smoke, thereby setting the stage for a greater understanding of and potentially greater acceptance of prescribed burning.

Finally, developing collaborative efforts for fuels management programs that include prescribed burning can help managers and the public (1) understand what local residents find acceptable at any given place and time when the alternatives and trade-offs are well understood, and (2) what policy makers believe the public thinks is acceptable. These goals may be attained through public forums with community or neighborhood meetings involving relevant stakeholders. With smoke being a question of "when" instead of "if," it is crucial to look at the social aspects of prescribed burning in the development and implementation of burning policies.

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Recommendations for Public Involvement. The following are a series of recommendations concerning public involvement and prescribed forest burning developed by the professional facilitator who conducted the focus groups.

1. Optimize the Terminology. Broad-based public support would undoubtedly require more people to have better, specific knowledge of prescribed broadcast burning. Before any successful education can begin, the terminology used in describing the concepts to the public must be optimized. Terminology suitable for forestry professionals is not necessarily the best terminology for the general public. Proper terminology for the general public must be succinct, easily understandable, and not easily confused. Determining which terminology would be most appropriate is well beyond the scope of this research. While many participants had trouble envisioning prescribed burning as a tool for returning forests to a more natural state, perhaps they would have found it easier to envision it as a tool for conditioning forests to withstand and benefit from future natural fires.

2. Identify the Absolute Essence of the Concept. Stewardship forestry is a very complex subject, and although it is reasonable and desirable to educate the public about the complexity of the topic, gaining their support for prescribed burning will require condensing key points to be as succinct, intuitive, and pertinent as possible. People never support that which they do not understand and prescribed broadcast burning would be no exception.

3. Develop Appropriate Visual Support Materials. While it will be important to develop very concise text that conveys the concept of prescribed burning, the best "crash course" educational materials would undoubtedly include a combination of text and images. A successful educational program requires good visual aids. Gathering and inventorying all video, audio, still photography, and graphic design work that could be used as educational tools would be well worth the effort. After examining the available materials, it would probably be necessary to develop some specifically for use in educating the public.

4. Develop an Inventory of Successful Prescribed Broadcast Burns. Most of the focus groups expressed comments indicating that some participants were not entirely convinced that prescribed broadcast burns could be consistently carried out with success. Any living examples of the beneficial effects of prescribed burns (and the fact that they did not escape the boundaries) that could be easily witnessed by the public (either in-person or through media) would be invaluable in both educating them and gaining support.

5. Future Research: Develop and Test the Terminology. Quantitative (survey) research can be used to determine which combinations of terms and messages will be most easily understood, least confusing, and will resonate best with subsets of the general public. It is always a good idea to simultaneously test and determine the most effective terminology and messages that could be used in opposition to one's own campaign.

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