

PRESCRIBED FIRE: WHAT INFLUENCES PUBLIC APPROVAL?

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Abstract.—Except in remote areas, most prescribed fires will have some effect on members of the public. It is therefore important for land managers to work with the public before, during, and after a prescribed burn. To do this effectively, managers need to have an accurate idea of what people do and do not think about prescribed fire and they need to understand what shapes those opinions. This paper summarizes findings from recent research studies on the social acceptability of prescribed burns and identifies the key factors that people consider in forming their opinions of prescribed fire. Results indicate that there is a fairly high level of public acceptance for use of prescribed fire and that smoke, concerns about escape, and trust are key issues shaping that support. In addition, there is a clear link between understanding of the purpose and intended benefits of prescribed fire and approval of its use. The lesson for managers who wish to introduce prescribed fire in their communities is that they are most likely to gain public support if they: 1) increase familiarity with the practice; and 2) work to build trust between officials from the implementing agency and the public

INTRODUCTION

I think what happens when we have prescribed burns is the majority of the people say “Well, that’s something that has to be done.” And there’s a minority of the people that complain about it, but they get their names in the paper.²

(Hamilton focus group participant)

Prescribed burning is a key tool for managers working to reduce fuel loads or restore fire adapted ecosystems. Yet it can also be a problematic practice that the public may not accept or support. Since prescribed fires in all but the most remote areas will have some effect on members of the public, it is important for managers to work with the public before, during, and after a prescribed burn. To do this well, it is useful to have an accurate idea of what people do and do not think about prescribed fire and what shapes those perceptions. As the introductory quote suggests, public views of prescribed fire are generally more sophisticated and less negative than managers might expect.

This paper will discuss findings from recent studies (most sponsored by the National Fire Plan) about the social acceptability of prescribed fire, the key variables that influence approval or disapproval, and the roles that those variables play in shaping opinion. Basic

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information about these studies is summarized in Table 1. Some of the studies have been completed while others are still in progress; information about them is drawn from published articles, project reports, and, in one case (See Table 1, McCaffrey 2005), directly from focus group transcripts. Although there is local variation in forest composition in the study areas³, the findings are reasonably consistent across diverse ecosystems and different regions of the country. This paper should therefore provide managers with a sense of the basic dynamics that shape public opinions of prescribed fire to help guide development of programs that fit local circumstances.

APPROVAL

Prescribed burning is a largely acceptable practice with roughly 80-90% percent of respondents across studies finding it an appropriate management tool (Bright and Carroll 2004; Cortner et al. 1984; McCaffrey 2002; Shelby and Speaker 1990; Shindler et al. 1996). In those surveys that explored strength of support, roughly 30 percent of respondents gave strong approval for use of

²All quotes are taken from participants in a series of focus groups held to examine public views of various aspects of fire management (McCaffrey 2005, Table 1.). A total of fifteen focus groups were held in five different fire prone locations in the Western United States. Focus groups were made up of randomly selected local members of the public and were transcribed verbatim.

³Only the California and Missouri sites of the Winter et al. 2005 study included some oak woodlands.

Table 1.

Study	Where	Who	Method
Blanchard & Ryan 2002	Within a two mile radius of Myles Standish State Forest in Massachusetts	Seasonal and year round residents	Mail survey
Bright and Carroll 2004	Front Range, Colorado, Southern Illinois, Chicago Metropolitan area	Residents near National Forests and random Chicago households	Mail survey
Brunson and Evans 2005	Wasatch, Utah, and Salt Lake counties	Residents (including 113 who had been answered the same survey two years earlier)	Longitudinal mail survey
McCaffrey 2005	Flagstaff, AZ; Boulder, CO; Hamilton, MT; Reno, NV; San Bernardino, CA	General members of the public	Focus groups
Shindler et al. 2003	Forest communities adjacent to National Forests in Wisconsin, Michigan, and Minnesota	Residents	Mail survey
Weisshaupt et al. 2005	Missoula, MT; Spokane, WA	Native Americans, urban and rural residents and an anti-smoke group	Focus groups
Winter et al. 2005, 2004, 2002	California, Florida, Michigan and Missouri	Homeowners near forested lands	Focus groups and mail survey

prescribed burning and another 50 percent gave qualified approval (Blanchard 2003; Brunson and Evans 2005, Shindler and Toman 2003, Shindler et al. 2003; Winter et al. 2005).

SMOKE

Smoke is often considered a major barrier to use of prescribed fire. This is a reasonable expectation given that smoke is a health problem for roughly 30 percent of study households (Blanchard 2003; McCaffrey 2002; Shindler et al. 1996; Winter et al. 2005). However, in their four state study, Winter et al. (2005) found that smoke was significantly related to prescribed fire attitudes in only one site, Missouri, where the belief that prescribed burning meant more smoke now and less later was positively related to approval. In general, people appear to understand that no smoke is an unrealistic option: they will be exposed to smoke, either from a wildfire or from a prescribed burn, and so long-term trade-offs will need to be made. One way to manage the health issues is to provide adequate warning of a prescribed burn allows those with health issues to make arrangements.

I think they would (tolerate smoke), if it is communicated ahead of time so that asthmatics could stay inside; like we do now when they broadcast something that there's a wildfire. You can plan ahead.
(Reno focus group participant)

Maybe if it had advance notice, they would know for how long it would take and what the purpose was.
(Boulder focus group participant)

Focus groups in Washington found that, although people often don't differentiate, the source of the smoke can influence approval (Weisshaupt et al. 2005). Members of an anti-smoke group remained opposed to smoke from agricultural burning because all benefits went to the farmer but were more open to smoke from prescribed fire because the benefits of burning accrued to all. Many participants, including those in the anti-smoke group, were willing to make trade-offs between some "managed" smoke now in return for less smoke from future wildfires.

Topography is a local variable that can influence acceptability of prescribed fire due to smoke concerns.

People who live in areas prone to inversions or in valleys that “collect” smoke from other areas are more sensitive to smoke issues and may find prescribed fire less acceptable. This dynamic is demonstrated by the following excerpt from a Reno focus group.

Ann: *I don't think very many people would tolerate it. My Grandma, she has problems like that. When there's smoke, she can't tolerate it. A lot of people can't tolerate it.*

Barbara: *And we are in a valley, so it all just sits here.*

Carl: *Inversion.*

Carol: *Even when they do a controlled prescribed burn in Yosemite, it still comes here.*

But individuals in these areas also may recognize that topography means they have little control over the smoke from wildfires but some control over that of prescribed fire, as in Hamilton.

Come August the whole valley is going to be filled with smoke anyway. If they can do something productive and burn away some of that slash that might slow down the fire a bit, then I'm all for it.

CONTROL

Concern over a burn getting out of control is another major issue. Early studies found that fear of a prescribed burn escaping influenced approval (Cortner 1984; Shelby and Speaker 1990). Seventy percent of the respondents in Shindler et al.'s study (2003) indicated they were moderately to greatly concerned about such a possibility. Winter et al. (2005) found that the belief that prescribed fire would lead to uncontrolled fires was negatively related to acceptance, the only outcome belief significant across all four study sites.

In Utah, Brunson and Evans (2005) compared responses from individuals surveyed in 2001 and again in 2003 after an escaped burn (Cascade II) occurred in the area.

They found that, after the escape, respondents expressed significantly increased concern (from 19 to 44 percent) about a prescribed fire taking place within 10 miles of their home suggesting that the escape may have led some people to have lower confidence about the ability to keep a prescribed fire under control. Notably, although almost half of the respondents stated that they held a more negative view of prescribed fire after the escape, in reality, when compared with responses from before the escape, their judgements of the acceptability of prescribed fire had not changed significantly. What had changed was an increased concern about the health impacts of smoke and decreased belief that smoke could be managed acceptably. Even with these changes only 13 percent thought smoke made prescribed fire not worth using.

Part of the issue with concerns about escaped burns is that they are what grabs people's attention, not the successful burns—this creates a rather small sample upon which people base their opinions. In the series of focus groups throughout the West (McCaffrey 2005, Table 1), conversations about prescribed fire usually started with an instant negative reaction related to escapes but, in several cases, discussion then evolved around the question of how many problem burns there actually were in a given year compared to non problem burns. When people concluded that escapes were a very small percentage of total burns they were much more comfortable with them. They suggested that more effort needs to be made to publicize *all* prescribed burns to provide some perspective on the relative number of escaped burns.

I think we need to know more. Just like John said, if 90% of them are successful, we need to know about it. But we just hear about the ones that aren't. (Reno focus group participant)

The only time you hear it is always the bad fires. I think that they (prescribed burns) are helping us a lot. I would say approximately 5% goes out of hand. (San Bernardino focus group participant)

TRUST

Trust in the agency administering the burn is the remaining key variable that shapes public acceptance

of prescribed fire. As one Reno focus group member said when asked whether people would tolerate more prescribed burning: “more if you trust the guy that starts it.” Winter et al. (2005) found that trust in government was a significant predictor of intention to approve prescribed burning in all four study sites. In Missouri, which had the highest trust levels of the four states, trust also had the largest effect on attitudes. Perhaps the most important impact of the escaped burn in Utah was not its effect on public views of prescribed burning but on trust levels which decreased significantly for both the U.S. Forest Service and the Bureau of Land Management but not for state, county, or local government agencies, with the local rural residents showing lower trust levels than the metropolitan sample (Brunson and Evans 2005). For three of their study sites (California, Florida, and Michigan), Winter et al. (2004) examined what elements were associated with trust and found that the strongest association for all three sites involved views on agency competence.

OTHER VARIABLES

A variety of other issues such as past experience, wildlife concerns, and aesthetics are thought by many managers to influence approval of prescribed fire. However, results from the referenced studies do not show as strong or as consistent an effect as smoke, control, and trust. Most studies found no significant relationships with these three variables and those that did did not necessarily find a dependable effect. For instance, in terms of experience, Blanchard and Ryan (2004) found that individuals with past personal experience of wildland fire had a higher level of support for use of prescribed fire than those who had not. Conversely, Winter et al. (2005) found that past experience with wildland fire or prescribed fire was not a significant explainer of attitude.

Studies that explored how concerns about wildlife shaped acceptability also showed mixed results. Almost half of Shindler et al.’s (2003) respondents expressed at least moderate concern about loss of wildlife and fish habitat from a prescribed burn but 68 percent also thought it improved wildlife habitat. Winter et al. (2005) found that belief that prescribed fire improved wildlife conditions was positively related with approval

in two of their sites: California and Michigan. In terms of aesthetics, while 42 percent of respondents in Minnesota, Wisconsin, and Michigan expressed at least moderate concern about scenic quality, only 14 percent felt prescribed fire impacts on scenic quality were unacceptable (Shindler et al. 2003). Winter et al. (2005) found a weak association between aesthetics and approval for the California site and no association for the other three sites.

Finally, one item to consider that was examined in only one of the studies (Winter et al. 2005) is the belief that use of prescribed fire reduces firefighting costs in the long run—which was positively related with attitudes in California, Michigan, and Florida.

UNDERSTANDING

The most consistently found relationship in the studies is the concept that familiarity with a practice leads to acceptance. That knowledge and familiarity with a practice is associated with increased support for fuels management practices fits with findings from earlier wildfire studies (Carpenter et al. 1986; Gardner and Cortner 1988; Loomis 2001; McCaffrey 2002). More recent studies have also found a strong link between knowledge and support for a treatment method, whether prescribed fire or thinning. Shindler et al. (2003) found that support for both treatment methods was significantly associated with the respondent’s natural resource knowledge—the greater the knowledge the greater the support as well as the greater the confidence in the U.S. Forest Service. Of the three states surveyed, Minnesotans were the best informed and the most tolerant of fuel treatments while Michiganders were least informed and least supportive. In Massachusetts, Blanchard and Ryan (2004) found knowledge levels to be the most significant factor determining support for prescribed fire; with a higher level of knowledge of prescribed burning significantly associated with increased support for its use as well as lower concern with related risks. Those with some knowledge of prescribed burning were less likely to think it was too dangerous a practice to be used, to be concerned about prescribed burning near a home, and to be concerned about smoke, appearance, and the effects on animals and their habitat.

In Florida, the state in the Winter et al. study (2005) where prescribed fires were most common, respondents had the highest approval rate for prescribed burning and, as previously discussed, also had the highest level of trust in government agencies doing prescribed burning. They also were more likely to think that prescribed burns restored more natural conditions and improved conditions for wildlife. In the Washington focus groups, tolerance for prescribed burning increased, particularly amongst members of the anti-smoke group, as participants learned new information about the practice during discussion (Weisshaupt et al. 2005).

Understanding the ecological benefits of prescribed burning appears to be particularly important in shaping approval. Carpenter et al. (1986) reviewed three previous studies and found that acknowledgement of beneficial effects was the most “pervasive” influence in approving various fire management methods. More recently, Winter et al. (2005) found that belief that prescribed burning restored wildlands was positively associated with attitudes toward prescribed fire in Missouri as well as in Michigan (albeit at a weaker level), while, as indicated earlier, beliefs that prescribed fire improved wildlife conditions was positively associated with attitude toward the practice in California and Michigan.

Understanding ecological benefits can also make smoke less of a concern. In the Washington State focus groups, participants became more tolerant of smoke from a burn as they understood the beneficial effects of prescribed fire (Weisshaupt et al. 2005). Shindler found that 2/3 of respondents in Oregon agreed that smoke was acceptable if it helped forest health (Shindler et al. 1996). As one Hamilton focus group participant responded when asked if people would tolerate smoke from increased use of prescribed burns: “I think most people would tolerate it, if they think, they knew it was good.”

CAVEATS

Results from the referenced studies thus indicate that, at a general level, there is a fairly high level of public acceptance for use of prescribed fire and that smoke, control and trust are key issues shaping that support. However, several caveats are important to keep in mind in applying this knowledge.

Local context matters

Local context, such as history and cultural practices, needs to be taken into account as it can have a significant effect on specific attitudes. For instance, Winter et al. (2002) found two exceptions to the general pattern of around 30 percent strong approval for prescribed burning: in Florida 40 percent were extremely positive about prescribed burning whereas in Michigan a mere 10 % were extremely positive. This last is generally attributed to a 1980 prescribed fire that escaped and killed a firefighter, destroyed 44 houses, and is still discussed. Trust in government was also much lower in Michigan where only 27 percent of respondents trusted the government to make proper decisions about use of prescribed burning, as compared to 55 percent in Florida and 46 percent in California.

Avoid Preconceived Notions

It also is important to be careful of preconceived notions. Bright and Carroll’s (2004) study found very few significant differences between three groups often thought to hold different views: homeowners near National Forests along the Front Range of Colorado (classic wildland-urban interface or WUI) and Southern Illinois (very rural) and residents of the Chicago Metropolitan region. For all three groups, the most important factor in positive support for prescribed fire was if there was a recent history of fire and the second most important factor was if the burn was in a remote areas. The only major difference between the locations was in how primary use of the forest shaped acceptability. Illinois residents from both locations found prescribed fire more acceptable if the primary use of the land was commercial, while Front Range residents found it more acceptable if the primary use was recreational. However, primary use was less important in shaping acceptability than current conditions and forest location. The fact that such disparate areas have largely similar views is one example of how dichotomies, such as urban-rural and WUI versus non-WUI, can be misleading in terms of understanding public beliefs on fire management.

There also may be expectations that various socio-demographic characteristics, such as income or age, will be associated with specific attitudes. Although some

studies have found socio-demographic variables that were tied to attitudes, there has been no clear or consistent pattern.

Understanding is a two way street

Finally, the fact that there is a clear link between familiarity with a practice and acceptance does not mean that increasing acceptance of prescribed fire is simply a case of providing information. Shindler's survey of Wisconsin, Minnesota, and Michigan showed that the most trustworthy and most helpful methods of information dissemination were guided field trips and interaction with agency personnel. Such interactive methods are most effective at changing attitudes and behavior as they allow people to question and clarify new information (Monroe et al. 2005). Manager's in turn can learn through this process about key public concerns and issues and tailor their management efforts to account for them.

CONCLUSION

Contrary to the expectations of many managers, prescribed fire is a largely acceptable practice where objections to sensitive issues such as smoke and loss of control can potentially be overcome with dialogue as understanding of purpose and benefits increases tolerance. Thus managers introducing prescribed fire as a new tool may not have immediate acceptance but likely can look forward to increased public acceptance and support as people become more familiar with the practice. However, this increased acceptance is not automatic. Trust in agency implementation is also important. Even with good knowledge, low trust levels will likely mean low tolerance for prescribed fire. Fortunately, the very dialogue that agencies engage in to build knowledge bases can also help build relationships and trust.

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