Research Summary

Prescribed Fire: The Influence of Site Visits on Citizen Attitudes

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ABSTRACT: This research employed a panel design to measure the effect of site visits on public perceptions of prescribed fire. On-site survey questions were devised to compare answers to a mail questionnaire previously completed by the same respondents. Questions were designed to examine how site visits influence public opinion and affect acceptance of forest practices. Open-ended questions were also used to capture initial reactions to the treated sites and allow individuals to identify site factors of greatest concern to them. Although site visits did not increase treatment acceptability ratings, responses indicate that remaining fuel levels and evidence of treatments are important factors influencing treatment support. Additional benefits of site visits are described.

KEY WORDS: attitude, evaluation, fuel reduction, site visit

Information programs on the role of fire in forest ecosystems over the past 20 years have been credited with substantially increasing the public's understanding of and support for the use of prescribed fire (Shelby & Speaker, 1990). Although this association is generally accepted (e.g., Carpenter et al., 1986; McCool & Stankey, 1986), only a limited number of studies have provided empirical evidence of such an effect as a result of specific forms of information exchange (Loomis et al., 2001; Nielsen & Buchanan, 1986; Taylor & Daniel, 1984).

Although the use of field visits and related outreach methods (i.e., demonstration areas, interpretive trails, guided field trips) has increased in recent years, relatively little research has been conducted on the usefulness of these activities. In Oregon, Brunson (1991) compared evaluations of treated stands from site visits and slides and found that less intensive alternative harvests were preferred over traditional practices when evaluated on-site but not when compared using slides. He hypothesized that the site visits provided for a more effective evaluation of the "real" on-the-ground outcomes (Brunson, 1991). Similarly, both Gobster (1996) and Mugica and Vicente De Lucio (1996) argued that field visits integrated with educational materials about research programs can help land managers demonstrate the ecological merits of sites that may otherwise not be high in scenic quality.

The purpose of this project is to test the effectiveness of an emerging outreach program, field visits to treated sites, on citizens' opinions about the use of prescribed fire. We expect that visits to treated forest sites may increase public acceptance by providing a meaningful context in which to observe treatment outcomes. Furthermore, engaging people in these settings can provide a richer understanding of what citizens see, feel, and think is important regarding fire management decisions.

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Methods

The data presented here derive from a larger research project in which we developed and distributed a mail questionnaire to a random sample of individuals from the Blue Mountains region of northeastern Oregon. We then recruited a subset of 30 individuals who had completed the mail questionnaire to serve as a panel for on-site visits to more closely evaluate treatment outcomes. We compared data captured on-site with the panel's previsit attitudes and preferences.

Project researchers transported participants to two treatment locations and then walked into the forest to observe sites treated with prescribed fire (one from the current season, one from the previous year). Adjacent untreated sites were used as a control at each location. Prior to the first stop, we distributed a questionnaire consisting of both closed and open-ended questions. Upon arriving at each location, we asked participants to record their initial reactions to the treated sites. We then told them when each site was treated and the specific treatment objectives. They rated (a) the appearance of the site, (b) the factors influencing their reaction, (c) the effectiveness of the treatments for reducing fuel loads, and (d) whether the objectives were achieved. At the conclusion of the trip, participants responded to eight sets of opposing statements about the use of prescribed fire that had been devised along semantic differential models and used in the original mail-out questionnaire. We paired responses to replicated questions over the separate data collection points to identify any changes in attitudes.

Results

Initial Reactions

Initial reactions to treated sites primarily focused on the theme of residual fuel. The majority of individuals criticized the sites because the burns were not intense enough and did not seem to produce effective results. Major factors of influence, as noted by participants, were the considerable amount of fuel remaining on the ground and relatively little evidence of the use of fire. Representative responses include:

> Still a lot of small tree branches that were cut on the ground. Looks like a lot of potential problems with fuel for fire. Doesn't look like anything was burnt.

> Does not appear to have been burned. No burnt logs or limbs. Appears to have lots of fuel on the ground for fire (piles of limbs and branches from past trees that have been cut).

Opinions About Prescribed Fire

Responses from both the mail and on-site surveys are compared in Table 1. For presentation purposes the we arranged statements with the affirmative on the left side of the table and opposing statements on the right. Although paired *t*-tests were run for the full 5-point scale, responses have been collapsed here to three categories (agree, neutral, agree).

There were no significant differences between responses to the mail and the on-site questionnaires. Responses to the first six sets of statements show moderate to strong acceptance of prescribed fire as a management tool. A high percentage of respondents agreed that prescribed fire is effective at decreasing wildfire risks and reducing forest fuels. There was also general acceptance of potential impacts to scenic beauty, recreation, and wildlife habitat, with a smaller majority also showing acceptance of smoke impacts. However, although not significant, responses to the final two items potentially raise red flags for fire managers. Initially about one quarter (27%) of participants were worried about

TABLE 1. Public Attitudes and Acceptance of Prescribed Fire

Prescribed fire		Agree (%)	Neutral (%)	Agree (%)	
Decreases the chance of high-intensity wildfires	Mail On-site	73 83	20 3	7 13	Has little overall effect on wildfire intensity or frequency
Effectively reduces the amount of excess fuels in the forest	Mail On-Site	67 73	10 10	23 17	Causes more damage than benefits provided from reducing fuels
Causes only short-term damage to scenic beauty	Mail On-Site	73 80	13 7	13 13	Causes long-term damage to scenic beauty
Has acceptable short-term effects on recreation use	Mail On-Site	77 77	13 17	10 7	Has unacceptable long-term effects on recreation use
Creates acceptable changes in native wildlife habitat	Mail On-Site	60 77	23 13	17 10	Causes unacceptable damage to critical wildlife habitat
Smoke levels are acceptable if it means a healthier forest	Mail On-Site	57 60	27 23	17 17	Results in smoke that decreases air quality to unacceptable levels
Is of little or no threat to nearby property and forest land	Mail On-Site	43 43	30 13	27 43	Is a big threat to nearby property and forest land
I trust the Forest Service to implement a responsible and effective prescribed fire program	Mail On-Site	43 53	27 17	30 30	I do not trust the Forest Service to implement a responsible and effective prescribed fire program

Note. No significant differences in responses between the mail and on-site questionnaires.

threats to property and forestland; after the site visits the number increased to 43%. Responses to the last set of statements are particularly noteworthy; nearly one third of respondents (30%) indicated they do not trust the agency to implement an effective prescribed fire program, whereas the number who do trust the agency rose from 43% to 53% on the site visits. These latter numbers, although still relatively low, are at least moving in a positive direction. The increase seems to come from those who were previously neutral, suggesting site visits may have potential for increasing agency credibility among undecided residents. However, more research would be necessary to substantiate this assertion.

Site Visit Influence on Opinions of Treatment Use

We asked participants after they viewed the sites to make a judgment about the use of prescribed fire as a management tool; responses are displayed in Table 2 and compared with those from the mail survey. Interestingly, responses remained relatively constant throughout the study period; no significant differences were identified after the site visits. Overall, all participants indicated support for at least some use of prescribed fire.

TABLE 2. Prescribed Fire Policies

The use of prescribed fire in the Blue Mountains . . .	Mail (%)	On-site (%)
. . . is a legitimate management tool that the Forest Service should have the discretion to use for improving forest conditions.	43	53
. . . should be used sparingly by the Forest Service and only in carefully selected areas.	53	47
. . . creates too many impacts and should not be considered as a management alternative.	3	0
. . . is unnecessary and should not be utilized.	0	0

Note. No significant differences in responses between the mail and on-site questionnaires.

We also asked participants to offer a self-assessment of the influence of site visits on their opinions toward prescribed fire use. Interestingly, although judgments reported in Table 2 did not change, 53% of respondents indicated that prescribed fire was now more acceptable as a result of seeing treatments on-the-ground (13% indicated it was less acceptable and 30% said their opinion was unchanged).

Discussion

Several interesting points emerge from these findings. First, initial reactions suggest that respondents wanted visual evidence that the treatments had been successful in reducing fire risk. It seemed that for many, visual evidence of the presence of fire was proof that something had been accomplished. This may be counterintuitive for managers who usually think the public does not want to see scarred trees or charred vegetation (Mount, 1996) and suggests that although people do not want overly destructive impacts (i.e., death of large diameter trees), they expect some signs of the use of fire.

Another point is the failure of the site visits to lead to significantly improved ratings of treatment outcomes or overall opinions about their use. A few observations may help explain these findings. First, we acknowledge that the small sample size hindered the investigation and its ability to find significant differences in response rates. Second, most participants already had a high degree of familiarity with prescribed fire; indeed, over half had previously viewed treated sites. It is likely that site visits would be more effective with people who are inexperienced with this fuel reduction tool. Third, the already high acceptability ratings from the mail survey suggest that a significant increase in the second survey would be difficult to obtain. A final reason may have been the absence of on-site interaction with resource professionals. Although site visits allow citizens to observe unfamiliar or new management activities, research suggests that their effectiveness can be greatly enhanced when coupled with opportunities for discussion and interaction with agency personnel (Lauber & Knuth, 1997). Such situations can be effective not only at reducing uncertainty with treatment outcomes but also at building relationships of trust between citizens and resource professionals.

Interestingly, although empirical ratings of specific prescribed fire outcomes and its use did not change, many respondents reported that prescribed fire was now more acceptable as a result of the site visits. In essence, people now believe their support for the treatments is greater having seen them

first-hand. Given the already high familiarity with prescribed fire it may be that participants were simply reacting positively to being asked their opinions about the treatments. Thus, site visits may not only offer a mechanism for public education but also provide a method for managers to be more inclusive by offering a means for meaningful interaction with citizens. Considerable research indicates that perceptions of an open and fair planning process often are as important to public support as the ultimate decision outcome (summarized in Shindler et al., 2002).

Conclusion

The premise behind this research was that site visits would result in increased citizen understanding and acceptance of treatment implementation. Although the findings do not support this hypothesis outright, they offer a few hints as to how field visits may be used (and improved) as an outreach methodology. First, these data provide an important cautionary note about the degree of preparation necessary before taking citizens to treated sites. Proper site selection seems essential; that is, sites should be selected that best illustrate the objectives of interest. If other objectives are also involved (i.e., retaining understory components in addition to reducing standing fuel loads), consideration should be given to appropriate methods for presenting these multiple objectives. Second, providing for interaction with resource professionals is likely to enhance the value of field visits. These visits are sure to stimulate questions among the participants and offer a potentially beneficial opportunity to discuss objectives and outcomes in a tangible, real-world setting.

Finally, this study points to the limited work that has been conducted on emerging, and potentially powerful, forms of information exchange. Various strategies for communicating with citizens are being developed and research can play an important role in evaluating the learning that occurs when individuals are exposed to these outreach activities.

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