

COMMUNITY VIEWS OF FUELS MANAGEMENT: ARE NATIONAL FOREST LOCAL RECREATION USERS MORE SUPPORTIVE?

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Abstract.—Significant advances in social science-based wildfire research have occurred in the past five years. Managers, policy makers, and researchers have worked to better understand the perspectives of homeowners, residents, tourists, and recreationists on fire and fuels management and how to better involve them in the planning process. This research examines how the recreational usage of residents living near the Mark Twain National Forest influences levels of support for fuels management. Findings suggest cognitive factors that influence fuels support are different across recreation users and nonusers, but support itself was similar.

1.0 INTRODUCTION

Significant advances in social science-based wildfire research have occurred in the past five years (Jakes 2003, Cortner and Field 2004). Managers, policy makers, and researchers have worked to better understand the perspectives of homeowners, residents, tourists, and recreationists on fire and fuels management and how to better involve them in the planning process. Many of these studies aim to predict social acceptability of fuels management (McCaffrey 2002, Shindler et al. 2002, Shindler and Toman 2003, Blanchard and Ryan 2004). Shindler et al.'s research thus far has focused primarily on statewide citizen polling, whereas our research has looked more closely at the wildland-urban interface (WUI). The WUI is often attractive to residents, permanent and seasonal, for the nearby recreation

opportunities and natural, aesthetically pleasing setting that a forest can provide (Stewart and Stynes 1994, Monroe and Nelson 2004, Winter et al. 2005).

Past fire policies that called for minimal fuels reduction and full suppression have left many national forests with dangerous levels of flammable materials at a time when more residents are building homes near the forests. In response, forest policies have emphasized the need for greater efforts to reduce fuels and prepare communities for catastrophic wildfires. Recent research has aimed to assist resource managers in identifying fuel management approaches that yield desired benefits and are locally accepted and implemented. Our research has looked closely at local attitudes toward several fuel management approaches and support for their implementation.

Both nearby resident and recreation users are important publics for resource managers and community officials to engage in risk reduction efforts and fuels work. Residents need to practice defensible space around their homes and burn trash responsibly; recreation users need to follow recommended campfire use and be watchful of other activities that may cause fires (e.g., ATV use, cigarettes). In a summary of a series of wildfire studies that examined the role of recreation use in fuels management and wildfire prevention, Winter et al. (2005), concluded that recreationists made moderate behavior adjustments for wildfire risks or actual fires. Communication was found to be an important strategy for informing and educating recreation users on the risks of wildfire and fire-safe forest uses, as well as influencing the acceptability of fuels management in forest management. Building on the studies that Winter et al. examined, our research continues to examine recreation users who reside near a national forest. We expected to find that recreation users, through their visits and engagement with forest staff, would hold more positive attitudes toward fuels management and report higher levels of trust in forest managers implementing fuel programs than residents who are not actively recreating in the national forest.

2.0 METHODS

In this study, we assessed attitudes toward and intentions to support two fuels management approaches (prescribed burning and mechanical fuel reduction) in a six-county area of southern Missouri that included five forest ranger districts for the Mark Twain National Forest (MTNF) that were planning fuel reduction activities. This area can be characterized as a WUI composed of a hardwood forest, on a mix of federal and private land, that is populated primarily with permanent homeowners. The area has moderately frequent wildfires and use of prescribed burning. Mechanical thinning was more actively used during the time of this research because of a 2002 tornado that caused significant blown down fuels. A sample of residents was purchased from a commercial list broker and included 400 randomly selected individuals in each of the six counties (Carter, Howell, Iron, Oregon, Reynolds, Shannon). A preferred list would have been digitized or geocoded tax assessor records to restrict the sample to residents who lived in, or close to, WUI areas, but such a list was not available. Twenty-four hundred questionnaires were initially mailed with 274 questionnaires undeliverable. After three mailings, following Dillman's (2000) mail survey steps, 715 questionnaires were returned for an overall response rate of 34 percent. By county the response rates ranged from a low of 28 percent in the most urbanized county to 38 percent in the county with recent wildfires and prescribed burning. Data were weighted by population to account for the different population sizes in each of the six counties. A nonresponse effort was also implemented with a subsample (n=300) of those who had not returned a completed survey. The nonresponse survey was also mailed, but it was only two pages long. Slightly over 10 percent returned this survey and through t-test analysis with respondents we deemed nonrespondents were different only on their approval of prescribed burning.

The questionnaire employed scales with extensive reliability and validity testing with focus group sessions used to formulate relevant constructs and wording. Specifically, a modified theory of reasoned action framework (Ajzen & Fishbein 1980) and seven-point scales developed from that framework were employed. Belief outcomes, attitude, and intention to support are the main constructs of the cognitive-behavior prediction

model. Research (Vogt et al. 2005, Winter et al. 2004) on fuels has also shown the importance of trust and personal importance to be predictive of attitude and acceptance (or intent). The questionnaire has also been successfully applied in several other WUI areas (see Winter et al. 2002, Vogt et al. 2005). This analysis uses descriptive statistics and t-tests to determine whether recreation users differed from nonrecreation users.

In addition to replicating the reasoned action framework to predict acceptance of fuel treatments, we have also been interested in "discovering" other explanatory factors. During focus groups held in three communities near the MTNF, as well as during discussions with forest staff, recreation users appeared to be a strong constituency group with extensive hunting and fishing opportunities in the forest. Both the Forest Service planners and the authors were interested in how recreationists may differ in their support for fuels management. Given that recreationists, particularly those from local areas, can be expected to have had greater opportunity to be exposed to fuels treatments and informed of fuels planning, our hypothesis was that recreation users would hold more positive attitudes, indicate greater personal importance, and be more trusting and supportive of fuels management by the USDA Forest Service than those who do not use the forest for recreation purposes.

3.0 RESULTS

A large proportion (73%) of respondents used the forest for recreation purposes. Those who didn't (27%) cited age, poor health, a disability, lack of transportation, preference for other leisure activities, dislike for outdoor activities, no time to recreate in the forest, too far to travel, poor access to the forest, laws or too many restrictions (e.g., on ATV use), and preference for recreating on their own land.

Respondents to the survey were primarily male (Table 1), recreation users were even more likely to be male than nonrecreation users. Most (85%) respondents were permanent area residents, and recreation users were more likely to be permanent homeowners and renters than nonrecreation users. About one-third of households had someone with a respiratory ailment. About 80 percent of all respondents earned \$60,000 or less at a household

Table 1.—Demographic profile of respondents

	All respondents	Recreation users	Nonrecreation users	Significance test
Gender				$X^2=6.4$, $p<.05$
Male	72%	75%	66%	
Female	38	25	34	
Residency				$X^2=15.2$, $p<.01$
Permanent	85%	86%	80%	
Seasonal/vacation	2	2	3	
Renter	6	7	4	
Other	6	5	13	
Respiratory ailment in household	31%	30%	32%	NS
Income				$X^2=32.9$, $p<.001$
Less than \$20k	27%	21%	43%	
\$20k-\$40k	30%	30	27	
\$40k-\$60k	23%	25	18	
\$60k-\$80k	11%	13	6	
\$80k-\$100k	6%	7	3	
Over \$100k	4%	4	3	
Education level obtained	13 years	13.5	13.1	$t=2.3$, $p<.05$

NS=not significantly different

Table 2.—Cognitive elements of fuel management acceptance

(Mean scores reported)	All respondents	Recreation users	Nonrecreation users	Significance test
<u>Personal importance of:</u> ^a				
Prescribed burning	5.1	5.2	4.7	$t=3.5$, $p<.01$
Mechanical thinning	4.8	4.9	4.6	$t=2.3$, $p<.05$
<u>Attitude toward the use of:</u> ^b				
Prescribed burning	5.2	5.4	5.0	$t=2.3$, $p<.05$
Mechanical thinning	5.0	5.2	4.6	$t=4.0$, $p<.001$
<u>Approval of use of:</u> ^c				
Prescribed burning	5.1	5.2	5.0	NS
Mechanical thinning	5.1	5.1	5.0	NS

Scales

^a 1 equals not at all important and 7 equals extremely important

^b 1 equals extremely negative and 7 equals extremely positive

^c 1 equals strongly disapprove and 7 equals strongly approve

NS=not significantly different

level. Nonrecreation users were much more likely to live in households earning less than \$20,000 per year. On average, the education level of respondents was slightly more than high school level (13 years of formal education). Recreation users were slightly more educated than nonrecreation users.

Following the theory of reasoned action, selected cognitive elements were examined for recreation and nonrecreation users. Table 2 shows that the level of personal importance of prescribed burning ($p<.01$) and

mechanical thinning ($p<.05$) was higher for recreationists than for nonrecreationists. A similar result was found with attitude toward the use of prescribed burning ($p<.05$) and mechanical fuel reduction ($p<.01$), where those who used the forest for recreation were more positive than others.

Approval of the two fuel management approaches was relatively high (5.1 mean on a 7-point scale) and was shared, on average, by recreation and nonrecreation users. Acceptance, measured using a dichotomous scale,

Table 3.—Trust elements of fuel management acceptance

"I trust the government in..." (mean scores reported)	All respondents	Recreation users	Nonrecreation users	Significance test (independent-test)
Use of prescribed burning	4.8	4.9	4.4	t=3.0, p<.01
Notifying about prescribed burning	4.3	4.3	4.3	NS
Use of mechanical thinning	4.7	4.7	4.6	NS
"Gov't does a good job...."				
Managing public land	4.6	4.7	4.5	NS
Communicating about forest issues	4.1	4.1	4.1	NS
Protecting private property from wildland fires	4.9	4.9	4.8	NS

Scale: 1 equals strongly disagree and 7 equals strongly agree.; NS=not significantly different

of the two practices had similar results: for prescribed burning, 85 percent accepted its use in the local area; and 81 percent accepted use of mechanical thinning. Unlike attitudes and personal importance, there was no significant difference between recreation and nonrecreation users for either acceptance or approval of prescribed burning and mechanical thinning.

For trust in the U.S. Forest Service's implementing prescribed burning and mechanical fuel reduction programs on the MTNF, recreation users and nonusers hardly differed (table 3). The only difference noted was that recreation users were more trusting of the Forest Service using prescribed burning ($p<.01$). Overall, respondents rated the trust in the federal government's protecting private property from wildland fires the highest of the trust items.

4.0 DISCUSSION

Cognitively, residents who recreate in the MTNF have more favorable attitudes towards and place greater value on both fuel management approaches than residents who do not recreate there. However, these cognitions do not translate into recreationists' being more likely to approve of the use of either treatment method. Overall, both groups of residents living in the wildland urban interface of the Mark Twain National Forest appear to have strong support for the use of both prescribed fire and mechanical thinning techniques on public land (80% support).

Our hypothesis is thus only partially supported. While recreationists placed more value on and had more positive attitudes towards use of prescribed burning and mechanical fuels reduction, this finding does not appear to translate into their having higher approval levels than non-recreationists. In addition, recreationists were not consistently more likely to trust the Forest Service. However, given that prescribed burning can be a controversial practice, the fact that recreationists had greater trust in this area is not unimportant. The lack of major differences between the two groups may result from the fact that both groups live near the forest in what is a relatively rural landscape. Thus both groups may have fairly similar exposure to fire management issues and to National Forest personnel. It therefore would be worthwhile examining whether our initial hypothesis holds for recreational and non-recreational users from more urban areas that are less proximate to a National Forest.

5.0 CITATIONS

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