No Sparks Fly: Policy Participants Agree on Thinning Trees in the Lake Tahoe Basin

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This article reports an analysis of mail-in questionnaires of policy participants in the Lake Tahoe Basin. The results show all stakeholder affiliations are concerned about the severity of fire risk relative to other important issue areas in the Basin, support thinning trees to reduce fire risk, and are skeptical that thinning trees will have adverse effects on scenic resources in the Basin. Support for thinning trees is strong among stakeholders with pro-development beliefs and with advanced degrees but is minimally influenced by owning property in the Basin.

Keywords: policy participants; Lake Tahoe Basin; forest management; thinning trees; fire risk.

Despite years of fire suppression, fire is introducing itself back into forests. Some of the results have been catastrophic. Threats to human lives, property damages, and firefighting costs have put forest fire management at the top of the agenda in many areas of the United States. Decision-makers have explored strategies for reducing risks of wildfire, such as forest thinning or prescribed burning (Winter and Fried 2000). It is now broadly recognized that, in order for new forest fuel reduction strategies to be implemented successfully, they must be socially acceptable (Manfredo et al. 1990, Lichtman 1998). If formal changes in forest fire management are disconnected from what is socially acceptable, the likelihood of conflict increases, leading to higher costs of making and implementing policy.

We assume with Zaller (1992) that civic engagement ranges from “policy participants” to the “attentive public.” Policy participants are both knowledgeable about, and regularly attempt to influence, policy. In the context of forest fire management, policy participants include government agency officials, interest group leaders, private-sector leaders, scientists, and journalists. While not typically considered policy participants, scientists and journalists are included in this civically engaged group because they regularly provide and frame information (Sabatier and Zafonte 1999). In the middle is the “attentive public” that stays reasonably informed about, and occasionally participates in, public policy debates. In the context of forest fire management, the attentive public includes some homeowners and recreationists. Because the attentive public is relatively informed and involved, they broadly frame the boundaries of acceptable policy (Key 1966). Their influence, however, must be put in perspective because they have neither time nor inclination to attend many meetings or to read stacks of reports. Consequently, they receive and follow cues from like-minded policy participants to form their opinions (Zaller 1992). On the lower end of civic engagement is the “unattentive public.” The unattentive public is largely indifferent about politics, is minimally receptive to cues from policy participants, and, consequently, is not influential in making or implementing policy (Zaller 1992).

A wealth of research has demonstrated that policy participants have the biggest influence in making and implementing policy and in framing the opinions of the attentive public (Mazmanian and Sabatier 1980, Zaller 1992). Thus, if practitioners want to develop strategies and deploy tactics to increase the chances of successfully making and implementing forest fuel reduction strategies, identifying policy participants’ beliefs is of utmost importance.

To date, the opinion research on forest fire management strategies has used samples of recreationists, homeowners, or the public in general—thereby involving an unclear combination of the unattentive public, attentive public, and policy participants. This previous research has found mixed to moderate support for prescribed burning and/or mechanical treatment (Manfredo et al. 1990, Shindler and Reed 1996, Winter and...

We add to the public opinion research on forest fire management by providing the first study of policy participants’ perceptions regarding thinning forests to reduce fire risk. This analysis of data collected in the Lake Tahoe Basin (LTB) attempts to explain the views of policy participants in three critical dimensions: (1) beliefs about fire risk; (2) preferences to cut trees to reduce fire risk; and (3) beliefs about the adverse effects on scenic resources from thinning forests.

**Forest Fire Management in the Lake Tahoe Basin (LTB)**

Prior to Euro-American settlement, forest fires in the LTB were frequent and low in intensity (Manley et al. 2000). Euro-American explorers established a trading post in the Basin in 1851. Over the next 70 years, two-thirds of the LTB’s forests were clearcut, largely to build the Virginia City silver mines. In the beginning of the 20th century, the local economy shifted from resource extraction to summer tourism, and fire suppression management became the norm. The LTB extended into a year-round resort in the 1960s. By the end of the 20th century, the LTB’s population reached 60,000 permanent residents and several hundred thousand visitors (Kauneckis et al. 2000). While people come to the LTB to ski, hike, and gamble, it is the LTB’s stunning landscape and cobalt blue waters that have made it a world-class resort.

After nearly a century of fire suppression, forest fires are expected to be more intense and to cause greater ecological and economic damage than prior to Euro-American settlement. The risk of a catastrophic fire destroying the entire LTB, however, is low because of topography, wind patterns, and considerable fire suppression resources. Nonetheless, the wildland-urban interfaces on the south and north shores present the highest risk of severe losses because of the concentration of high-value properties surrounded by dense vegetation (Manley et al. 2000). Given the importance of the scenic resources to the LTB’s economy, one of the biggest concerns for local decision-makers are adverse visual effects of forest fuel reduction strategies on the LTB’s landscape.

**Methodology and Hypotheses**

We used three techniques to create the sample of the LTB’s policy participants in natural resource management. First, we identified important agencies and interest groups based, in part, on our previous research on LTB natural resource management dating back to 1984. We asked each agency or interest group for names and addresses of their senior staff and governing board members. Second, we gathered the names of members of various advisory committees in the Tahoe Regional Planning Agency and other important administrative agencies. Third, we used a snowball sampling technique to complement our sample based on suggestions from our stakeholder advisory committee. The stakeholder advisory committee added additional names and interest groups that we then pursued to complete our list. In the winter of 2001/02, we mailed 657 questionnaires and 365 were returned (56% response rate).

We place respondents into six stakeholder organizational affiliations: local governments/public utility districts (n = 55), regional governments (n = 71), state/federal governments (n = 84), environmental interests (n = 28), scientists (n = 38), and business/property rights groups (n = 77). An “others” category includes journalists and citizens-at-large (n = 12). It is important to note that respondents are placed in these affiliations because of their primary affiliation in connection to natural resource management in the LTB. We characterized respondents who belong to multiple organizations according to their more fundamental organizational affiliation. For example, a local government planner on a regional government board or representing a public utility district would be coded as a “local government/PUD” because we assume he or she is there primarily to represent the perspectives of local government.

We test four hypotheses. First, one of the fundamental principles in the analysis of natural resource policy is that stakeholders must perceive a problem before they are willing to support a change in existing rules (Ostrom 1990). Thus, stakeholders will have to perceive fire risk to be motivated to support fuel reductions. Our Relative Fire Risk Severity Hypothesis holds that stakeholders who perceive fire as a relatively significant risk compared to other problems will be more supportive of thinning forests than stakeholders who do not perceive fire as a severe risk.

Second, one of the biggest factors determining support for new policies is the aggregated benefits and costs to individuals (Ostrom 1990). New forest fuel reduction strategies are most likely to protect property owners on the wildland-urban interface. Because 87% of the LTB is publicly owned (Nechodom et al. 2000) and most private property is on the wildland-urban interface, the majority of fuel reduction costs would fall on government agencies, while the benefits would accrue to private property owners. Our Property Owner Hypothesis states that stakeholders who own property will be more supportive of thinning forests than stakeholders without property.

Third, the complexities of fire ecology and forest fuel reduction strategies require that stakeholders have the abilities to understand environmental information, to think critically, and to exercise independent judgment. These abilities have been shown to correlate with formal education (Eckersley 1989). Therefore, we speculate in our Advanced Degree Hypothesis that stakeholders with advanced degrees will be more supportive of thinning forests than stakeholders without an advanced degree.

Our fourth hypothesis involves the constraining effects of general beliefs on forest fire management. Researchers recognize that policy participants have belief systems in which general beliefs constrain specific policy preferences (Weible et al. 2004). Our survey develops a “Pro-development Beliefs” scale (α = 0.79), which is derived from three questions (each measured on a seven-point agree/disagree scale): (i) “We cannot afford to let policies claiming to promote environmental quality prevent continued economic development in the Basin” (factor loading = 0.87), (ii) “There is too much concern for restricting growth in the Basin and not enough concern for encouraging it” (factor loading = 0.83), and (iii) “Protection of water quality requires that regulations be rigorously enforced, even when they create hardships for property owners” (reversed in the scale, factor loading = 0.81). This measure of beliefs has been consistently important over four surveys spanning three decades in the LTB (Sabatier et al. 2003). Stakeholders with strong pro-development beliefs will be more likely to support forest thinning because they tend to place less emphasis on preserving natural environments compared to the economic benefits of reduced fire risk. In our Pro-development Beliefs Hypothesis, we hypothesize that stakeholders with strong pro-development beliefs will be more supportive of thinning forests than stakeholders without strong pro-development beliefs.
Data Analysis

We present the data analysis in three parts. The first provides a descriptive analysis of our dependent variables, sorted by stakeholder affiliations. The second is a description of the three independent variables by stakeholder affiliations. The third uses ordinary least square regression to explain variation in the dependent variables evaluated against the independent variables.

Dependent Variables. The first dependent variable is the relative severity of fire risk compared to other problems in the LTB. Stakeholders were asked to score 13 issue areas on a scale from 0 to 100, with 0 = not a serious problem at all and 100 = an extremely serious problem (Figure 1). The severity of fire risk ranks third out of the 13 issue areas in the 2001/02 survey, behind degradation of water quality and traffic congestion.

To compare how respondents scored fire risk in relation to the 12 other issue areas, and to control for the possibility that respondents interpreted severity on the 0–100 scale differently, we created a “Relative Fire Risk Severity Score.” The relative fire risk severity score is an individual’s response for fire risk subtracted from the aggregated mean values of the remaining 12 issue areas. For instance, if a stakeholder gave a +70 for fire risk and the mean responses for the remaining 12 issue areas was +60, this stakeholder would receive a +10 indicating that he or she considers fire risk to be a relatively severe risk. The range can vary from +100 to –100, but the mean results for our six stakeholder affiliations range from +21 to +5.

The mean values (Table 1) of the relative fire risk severity score show high scores for local governments/PUDs, state/federal governments, and business/property rights groups. Environmental interests appear the least concerned among the affiliations, but they still show a positive score. The difference among stakeholder affiliations is statistically significant ($P = 0.01$).

The second variable focuses on cutting trees to reduce fire risk. Stakeholders were asked to agree or disagree on a seven-point scale whether “reducing fire risk requires cutting trees near urban areas.” Because a score of four is the midpoint, the means (all were $\geq 4.9$) show at least moderate support for thinning with a borderline significant difference among affiliations ($P = 0.13$).

The third variable relates to the adverse visual effects from thinning trees. Stakeholders were again asked to agree or disagree on a seven-point scale whether “thinning forests will have negative impacts on visual resources.” All stakeholder affiliations strongly disagree with means less than 2.7 ($P = 0.64$).

These results suggest that all stakeholder affiliations are concerned about the relative importance of fire risk, support cutting trees to reduce fire risk near urban areas, and anticipate virtually no adverse visual effects from thinning forests.

Independent Variables. Table 2 summarizes the mean values for our three independent variables by stakeholder affiliations. The first independent variable is whether the respondents hold an advanced degree. A total of 172 of respondents (47%) hold an advanced degree beyond the baccalaureate degree. The percent of policy participants with advanced degrees is notably higher than the overall average in the LTB, where 5–10% of the general public holds advanced degrees (2000 US Census). In our survey population, scientists, environmentalists, and state/federal government officials have the highest percentages of advanced degrees, while local
government/PUD officials and members of business/property rights groups are least likely to have advanced degrees.

The second independent variable is property ownership. A total of 194 respondents (53%) own commercial property, residential homes, or second homes in the LTB. This is consistent with the overall percentages of homeowners in the LTB, which range from 43 to 75% (2000 US Census). Those most likely to own property are members of business/property rights groups, environmentalists, and officials from regional and local governments/PUDs. Scientists and state/federal government officials are least likely to own property in the Basin.

Our final independent variable is whether the respondent holds pro-development beliefs. The stakeholder affiliations with the strongest pro-development beliefs are local governments/PUDs and business/property rights groups. There is a significant difference ($P < 0.00$) among stakeholder affiliations for all three independent variables.

**Explanatory Analysis.** We run three ordinary linear regression models to help explain the variances in our forest fire management variables by the independent variables (Table 3). We also include the relative fire risk severity score as an independent variable to explain the other two management variables (i.e., cutting trees and adverse visual effects).

The three models explain a moderate amount of variance in each dependent variable ($R^2$ values between 0.06 and 0.13).

While the $R^2$ values are low compared to the norms expected in the experimental sciences, they are generally deemed to be within an acceptable range in the social and nonexperimental sciences (Cohen and Cohen 1983). In this analysis, only prodevelopment beliefs appear to explain the differences in the relative fire risk severity score. However, in attempting to explain support for cutting trees, we find that the relative fire risk scores, pro-development beliefs, and having an advanced degree appear to have roughly the same explanatory power. Importantly, the apparent lack of concern about adverse visual effects from thinning trees seems to be heavily influenced by perceptions of the relative severity of fire risk and by pro-development beliefs. In this case, having an advanced degree is of borderline significance. Finally, being a property owner in the LTB is not a significant predictor in any of the models.

**Conclusions.** On the whole, policy participants in the LTB consider fire risk a relatively important problem. They support cutting trees to reduce fire risk and generally are unconcerned about adverse visual effects from thinning forests. Our findings indicate that policy participants who perceive fire risk as a relatively severe problem and who have strong pro-development beliefs will be supportive of forest thinning to reduce fire risk. The findings also suggest that property ownership has virtually no significant influence on the forest fire management variables. Finally, we find that having an advanced degree contributes to stakeholder support for cutting trees to reduce fire risk.

To our knowledge, our study is the first related to forest fire management strategies that focuses on policy participants. The results can be generalized to other individuals who are knowledgeable about and participating in natural resource management in the LTB. The results cannot be statistically generalized to the typical environmentalist or to the typical property owner in the LTB. However, if Zaller (1992) is correct in his analysis, we speculate that those who are “attentive” will follow the cues of their perceived allies among policy participants. We believe that this expected pattern of political learning and behavior makes it all the more imperative to understand the views of policy participants when developing policy and management strategies to deal with hazardous fuel conditions.

The findings of the perceptions of policy participants in the LTB are consistent with the results of previous opinion surveys in other locales. Other researchers have found similar support for mechanical thinning, landscape modification, or clearing vegetation (Shindler and Reed 1996, Winter and Fried 2000, Winter et al. 2002a and 2002b). On the other hand, we find no other studies that show formal education as a significant predictor for thinning trees or research focused on the constraining effects of pro-development beliefs. Our findings

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**Table 2. Independent variables by stakeholder affiliation (means).**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Local govt./PUD</th>
<th>Regional govt.</th>
<th>State/federal govt.</th>
<th>Environ. groups</th>
<th>Scientists</th>
<th>Business/property rights groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced degree</td>
<td>36%</td>
<td>41%</td>
<td>56%</td>
<td>61%</td>
<td>76%</td>
<td>31%</td>
</tr>
<tr>
<td>Property owner</td>
<td>62%</td>
<td>76%</td>
<td>20%</td>
<td>79%</td>
<td>18%</td>
<td>84%</td>
</tr>
<tr>
<td>Prodevelopment beliefs*</td>
<td>3.8</td>
<td>2.3</td>
<td>2.5</td>
<td>2.0</td>
<td>2.1</td>
<td>4.3</td>
</tr>
</tbody>
</table>

* Likert scales with 1 = strongly disagree and 7 = strongly agree.

**Table 3. Ordinary linear regression results for forest fire management variables.**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Relative fire risk severity score</th>
<th>Cutting trees to reduce fire risk</th>
<th>Adverse visual effects from thinning trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^2$</td>
<td>0.06</td>
<td>0.20***</td>
<td>–0.33***</td>
</tr>
<tr>
<td>$F$-stat/P-value</td>
<td>8.2/0.00</td>
<td>8.9/0.00</td>
<td>14.2/0.00</td>
</tr>
</tbody>
</table>

**Note:** All numbers are standardized regression coefficients. Hypothesis tests of coefficient $\alpha = 0$. *** $P < 0.01$, ** $P < 0.05$, * $P < 0.15$. 

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also show that owning property does not influence policy participants’ perception of fire risk or their support for forest thinning. These findings contrast with most opinion research on forest fire risk management that assumes property owners are motivated to protect their private interests. This may reveal an important difference between the attentive public (e.g., most property owners) and policy participants (e.g., people knowledgeable about and involved in policy).

We conclude with a final qualification. The LTB has a unique geographic, social, and political environment that limits the generalizability of our findings. For instance, one of the key conflicts over the Healthy Forest Restoration Act focuses on whether and how much thinning must be done outside the narrow confines of the wildland-urban interface. The geography of the LTB leaves very little land outside of the wildland-urban interface that does not have an immediate influence on fire behavior at the landscape level. However, a cursory review of resort and recreation-oriented communities throughout the American West shows many characteristics that are shared with the LTB: high-value private property interspersed into forested landscapes with long histories of fire suppression and high risks of wildfire; an increasing economic and social dependence on scenic quality as a primary resource; and economies shifting from resource extraction to amenity markets. We suggest that similar results would be found in surveys of policy participants in and around Vail, Jackson Hole, Santa Fe–Taos, or any number of forested resort communities in the American West.

**Literature Cited**


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