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# Wildland–Urban Interface Communities' Response to Post-Fire Salvage Logging

Robert L. Ryan and Elisabeth Hamin

ABSTRACT

Salvage logging, the removal for profit of standing trees that have been damaged by extensive wildfires, has been quite controversial and subject to lawsuits that can delay the logging past the time in which the lumber is still useful. It has not been clear, however, whether the public that has been most affected by wildfires—those that live near burned areas—support or oppose postfire logging. In this research we use focus groups and stakeholder interviews in urban interface communities that have experienced significant wildfires to examine in some detail the perspectives these members of the public have regarding salvage logging. Public support for salvage logging in communities that have recently experienced wildfires was much stronger than hypothesized at the beginning of this study from our review of the number of unsuccessful salvage logging proposals or even popular press reports. Key reasons for supporting salvage logging were that letting useful timber rot was wasteful, that it improves the postfire aesthetics and safety of the forest, and that it can provide some income for local postfire restoration activities. Caveats include assuring that any environmental impacts, such as new roads, are mitigated postlogging, and assuring that appropriate snags are left to provide wildlife habitat.

**Keywords:** forest fire, wildfire, wildland–urban interface—western United States, forest restoration, forest esthetics, forest management

Wildfires have increased in both frequency and intensity, especially in wildland–urban interface communities (Sampson 1999, National Interagency Fire Center 2004). The devastation caused by major fires has created a backlog of postburn areas in need of rehabilitation (Robichaud et al. 2000, Machlis et al. 2002). Recent controversies surrounding postfire planning suggest a need to learn more about the public's expectations of policy goals and responses to proposed treatments such as salvage logging (Robbins 2003, Beschta et al. 2004, McIver and McNeil 2006). Moreover, there may be philosophical disagreements between stakeholder groups about whether to intervene at all in the forest after a "natural" disaster such as a wildfire (Daniels et al. 1996, Ryan and Hamin 2008).

Previous studies provide a solid base for understanding the social acceptability of fuels treatments for reducing fire danger (e.g., Shindler and Reed 1996, Winter et al. 2002, Blanchard and Ryan 2007), but little work has been done on postfire treatments. Preliminary findings suggest that the public is divided in their opinions about postfire forest rehabilitation (Graham 2003). Proposals by public agencies for postfire salvage logging are particularly problematic, usually ending up in litigation and other appeals (Maser 1996, Mendez et al. 2003, Robbins 2003). However, it is unknown if local communities' opposition to salvage logging is as widespread as portrayed in the media, and there is even less known about reasons behind public opinion about salvage logging.

Arguments against salvage logging have focused on environmental impacts, such as soil erosion and habitat loss (Stone 1993, Beschta et al. 2004). Literature indicates that aesthetics play a role in

public concerns. Scenic management research has clearly shown that particular forest scenes, typically those with large trees and open understory are preferred by the public (Daniel and Boster 1976, Kaplan and Kaplan 1989, Bradley 1996, Ryan 2005). Moreover, researchers have shown that the public's evaluation of ecologically appropriate forest management is based largely on aesthetic judgments (Ribe 2002). Although clearcuts are not preferred, removing deadwood through limited salvage logging and thinning may increase scenic beauty (Brown and Daniel 1986).

Research has shown that professional forest managers and other experts have different aesthetic responses to landscape management than the general public (Kaplan and Kaplan 1989). Based on previous research, we expect more support for salvage logging and other extensive thinning treatments from professional foresters, residents of natural resource–based communities (Mendez et al. 2003), and those with natural resource production attitudes (McCool et al. 1986, Ribe 2002). Conversely, we expect to find more opposition to salvage logging from more tourism-based communities and those with more proenvironmental attitudes (Ribe 2002, Mendez et al. 2003). To test these assumptions, we performed an in-depth study of three locations with a recent history of wildfire.

## The Study

To expand the research knowledge about postwildfire forest restoration and rehabilitation, a study of three western US communities was performed. The overall study objectives were to determine the level of support or opposition to a range of postfire treatments, including salvage logging, by those who are most affected by

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them—residents in communities that have recently experienced wildfires. In particular, we were interested in knowing the specific reasons that motivated these attitudes and to understand if aesthetics had any influence on these perspectives. The final objective was to understand the role of community type and stakeholder group in affecting attitudes toward salvage logging and other treatments. Our primary focus was on general residents of these areas, along with local stakeholder groups, but we also investigated the perspectives of local wildfire key informants to gain a fuller understanding of each fire and to be able to compare experts' with residents' opinions. A report on the overall study of treatments responses is available from the Ryan and Hamlin study (2006); in this article, we present the findings specific to salvage logging.

Because there has not been extensive research to date on resident perspectives on salvage logging, we viewed this as an exploratory study in which it was important to be open to emergent themes, suggesting that qualitative work would be most appropriate (Glaser and Strauss 1967). We were interested in determining the reasons behind the opinions held by the residents and stakeholders, which is a type of inquiry well suited to qualitative work (Denzin and Lincoln 1998, Creswell 2003), and focus groups in particular (Litoselli 2003). It is important to note that "the intent of focus groups is not to infer but to understand, not to generalize but to determine the range, not to make statements about the population but to provide insights about how people perceive a situation" (Krueger 1994, p. 87). Thus, we do not claim generalized results about all interface postwildfire communities, rather, we indicate some of the key perspectives that our participants reported.

## Study Areas

This study was conducted in 2005 in three western US communities that experienced a major wildfire in the past 3–5 years: Los Alamos, New Mexico, with the Cerro Grande Fire (2000); Durango, Colorado, with the Missionary Ridge Fire (2002); and the Arnold, California area, with the Darby Fire (2001). These wildland interface fires were selected because they received a range of rehabilitation techniques, but all had fires that significantly (albeit differently) impacted the nearby communities. Particular attention was paid to salvage logging on federal land by including one site that had such logging, another where it was tentatively proposed but not undertaken, and a third where it was not part of the postfire conversation [1]. However, to improve cross-study comparisons, each of the three burn areas had salvage logging conducted on private, county, or tribal lands, increasing the likelihood that residents would be familiar with this technique.

The Cerro Grande Fire began as an escaped control burn at Bandelier National Monument that burned 47,650 ac and 235 homes. The threat posed by postfire flooding to the community and nearby Los Alamos National Lab resulted in over \$105 million in forest rehabilitation costs and \$995 million on community rebuilding (Interagency Burned Area Emergency Response Team 2000), making it an example of extensive rehabilitation work. Salvage logging was never proposed here, according to US Forest Service representatives, because of local environmental activism. In contrast, the Missionary Ridge Fire in the San Juan National Forest of Colorado burned 70,475 ac and 57 homes, but only received \$52 million for forest rehabilitation, including extensive aerial seeding (US Forest Service 2002a). Salvage logging was proposed here, but a lawsuit by a state-level environmental organization delayed the logging so that it was no longer feasible. The Darby Fire in the Stanis-

laus National Forest of California burned 14,288 ac of public and private industrial forestland but no homes. Only \$192,000 was spent on aerial mulching of a small section of the burn area (US Forest Service 2002b). However, the Darby burn area included salvage logging of federal and private land. Each of the respective national forests conducted forest thinning projects around these communities, as well as hazard tree removal and aerial mulching of the burn areas.

## Methods

The study was conducted in two phases. The first phase used structured interviews ( $n = 45$ ) with key informants in each community including representatives from local and federal agencies, business groups (including natural resource-based industry and ranchers), community groups, environmental organizations, recreation groups, and Native American pueblos. The set of key informants was determined in consultation with local US Forest Service personnel at multiple administrative levels, as well as with local groups involved in the rehabilitation work. These interviews developed our understanding of the specifics of each fire, including extent and level of burn, initial firefighting efforts, restoration activities, and rehabilitation actions, along with ways that the local US Forest Service interacted with the local community before, during, and after the wildfire. Interviews lasted on average 1 hour and used a set of open-ended interview questions that were mailed to interviewees ahead of time. Interviews were recorded [2], recordings were reviewed and summarized by study question, and key stakeholder quotes illustrating important findings were transcribed and used in further analysis. The set of interviews were then analyzed for similarities and differences in participants' responses to the set of questions and for emergent themes (Creswell 2003). This knowledge was important in its own right, and also to assure that we were able to understand the comments of the focus groups, described later, within the facts for their particular fire and community.

For phase 2 of the project, the authors conducted six focus groups, two per study area, with a total participation of 55 area residents [3]. One focus group in each study area involved local residents who live within the burn area or immediately adjacent to it (under 0.67 mi away). Respondents were selected based first on proximity of their homes to the burn area, and, in addition, several names for each group come from our questions to invitees regarding who else of their neighbors were most affected by the fire; in all cases a few people knew a few others in the group, but nobody knew everybody, as the main determinant of inclusion was geography (see Litoselli 2003). In each community we also conducted a focus group representing a particular user group important in postfire issues: volunteers who undertook postfire restoration work (New Mexico), tourist-related business owners (Colorado), and timber industry interests (California). For the volunteers, names were gathered from a list of those who had volunteered, and every third person was invited. For the tourist business group, we reviewed the businesses in the local phone book and invited all appropriate owners. For the timber industry focus group, we contacted a local timber industry lobbying group, and their administrator organized the meeting.

Focus group participants filled in brief demographic data forms. Overall, those who agreed to participate, not surprisingly, tended to be older (average age, 58 years), 40% had some property burn during the relevant wildfire. Each of the six focus groups was run similarly, with participants being asked a series of open-ended questions

regarding their general attitudes toward forest management, opinions about the need for postfire rehabilitation, perceptions of rehabilitation treatments including salvage logging in terms of both aesthetics and effectiveness, and recommendations for other postfire situations [4]. Focus groups were recorded, transcribed, and analyzed for emergent themes crosscutting the questions, and then analyzed by question (Schensul et al. 1999, Creswell 2003) [5].

We chose to use photographs of the burn areas and treatments both to prompt discussion and to elicit more specific observations on treatments, generally following the method described by Kaplan and Kaplan (1989). Prints of the images, six per page, were then used as part of the interview and focus groups when asked their attitudes toward local rehabilitation and restoration projects.

Absent alternative explicit wording, the results reported later are for the focus groups, because the main point of interest for our study was the public. On several occasions key informant opinions had significant variation from or consensus with opinions from the focus group, in which case we report this. Our specific terminology is as follows: key informants are our interviewees, stakeholders are those in the three targeted focus groups, and focus groups are findings from the three general public groups.

## Results

We entered the research expecting to find a high level of disagreement and conflict surrounding salvage logging, but, in fact, found a much stronger level of support than anticipated on the general question of whether or not to salvage log. Out of all 100 interview, stakeholder, and focus group participants, only 7 explicitly reported opposition to salvage logging per se [6]. Of the 55 focus group participants, only two people expressed outright opposition to salvage logging. The opposition was generally on ecological grounds, with beliefs that either the harm from the roads, and so on, built to undertake the logging was not worth the lumber, or that the forest recovered better without intervention. A typical comment was,

Mission Ridge focus group: I think the vegetation recovers a lot better in areas where the trees are still standing. Plus, you don't have machines tearing up the ground and introducing weeds. There's a lot more weeds and invasive stuff in the areas where the trees have been taken down.

Opponents to salvage logging were diverse, including not only professional environmentalists, but also amenity-based small business owners and residents.

The rest of the interview respondents, stakeholders, and general public focus group participants who voiced opinions generally supported salvage logging but argued that it had to be done appropriately. An example was the Darby focus group (some quotes shortened):

Moderator: But everybody's okay with the salvage logging that was done?

F1: If they're [the trees are] dead.

M: In appropriate spots.

F2: If you could pay for the removing most of the snags and [remaining slash], if you can pay for that by taking out some of the big old trees.

F3: Well it all depends on how many you consider how many?

F4: Like I said, I think they're making this judgment anyways, and should there be community involvement?

During this discussion there were general nods of agreement from those not commenting, and no one expressed disagreement; the issues raised are further discussed in the following comments.



Figure 1. Shaded fuelbreak near Darby Fire area, Stanislaus National Forest, California.

Sentiment was strong enough that several people voiced significant dismay over lawsuits that halted salvage logging. As noted by one participant, with nods of support from others:

Missionary Ridge focus group: I'm a card-carrying, dues-paying tree hugger, and I just—I think that was just a really stupid lawsuit. I mean there was no reason to do that, there was no value from doing it.

For local residents, part of the issue with these lawsuits is that they were brought by groups from “away,” and thus were the work of outsiders who did not fully understand, or care about, local conditions. Not surprisingly, there was strong support among the timber industry group for speedy and extensive salvage logging.

We organize the specific results along the main issues and values that affected participants' responses to postfire rehabilitation and restoration: aesthetics, utilitarian values, public safety, effectiveness, and impacts to the land.

### Aesthetics

The topic on which there was virtually complete consensus, and which seemed most important to the public, was the aesthetics of the postfire forest. We heard countless comments from the range of key informants, stakeholders, and the public about the ugliness of the burned overforest; typically, these were phrased as “the public agencies should do something about all those ‘dead match sticks’ on the hillsides.” Many participants were very upset about the visual quality of the forest in the postfire period:

Colorado environmental leader: Anyway, people are very much affected by the fact that it's ugly. That's a big thing.

Aesthetics were a primary motivation or reason cited by the public in explaining the need for government agencies to rehabilitate the burn area, whether by cutting down dead trees (salvage logging) and/or planting new trees. Aesthetics also influenced participants' preference and support for forest restoration projects. As suggested in the literature (Kaplan and Kaplan 1989, Bradley 1996, Ryan 2005), there was a much stronger preference among participants for fuel treatments that created more open canopy or shaded fuelbreaks (Figure 1), rather than clearing all vegetation. Thus, salvage logging that left significant trees was preferred to a more extensive clearcut. The desire to see most of the matchstick” trees removed was balanced by the desire to keep an ecologically appropriate level of snags.



**Figure 2.** Hazard trees in Rendija Canyon, Cerro Grande burn area, Santa Fe National Forest, New Mexico.



**Figure 3.** Hazard trees removed along East Shore Road, Lake Vallecito, Missionary Ridge burn area, San Juan National Forest, Colorado.

### Utilitarian Values

The other primary reason for supporting salvage logging was the recognition that trees are a financial resource and that leaving them to rot was wasteful. Often, this thriftiness was coupled with a desire that salvage logging could fund restoration activities. Without a specific question from us, in each focus group participants initiated discussion of the need to make hard restoration choices given limited dollars to spend on the forest:

New Mexico resident: I mean it seems like first, you're not going to want those telephone posts sticking up there forever, and second, why not take them out and use what little money there is from salvage logging . . . to finance . . . rehabilitation efforts?

For forest industry participants and some residents, the issue is not just the US Forest Service reaping income from logging sales, but also that the salvage logging provides jobs and inputs for local industry.

### Public Safety

In litigation and the public press, the issue of salvage logging often is couched in terms of negative environmental impacts versus positive utilitarian benefits. However, for recreation users and nearby residents who regularly use the forest, retaining dead or dying trees was perceived to be a safety hazard (Figures 2 and 3) and often was the primary reason these respondents gave to intervene in the postfire landscape:

New Mexico resident: Along the trail they really do need to do some hazard tree thinning. First of all, if it doesn't fall on a person it'll clog or close the trail.

Only 2 of the 100 study participants argued that safety was not a real hazard tree issue. In general, public safety resonated throughout respondents' comments about all rehabilitation work. In two of the three fires, New Mexico and Colorado, flooding was a major issue, with many study participants mentioning the importance of postfire forest rehabilitation to mitigate flood hazards. In fire-prone California, several participants noted the need to manage the burn area as a firebreak to protect the community from future fires (Figure 4). In addition, in all three study areas, standing deadwood was perceived to be a fire danger. Thus, as long as salvage logging did not leave large brush piles behind, it was perceived as potentially reducing fire danger, which was positive for the community.

### Impacts to the Land

Although there was strong support for salvage logging, in almost all cases (outside the timber industry focus group) that support was conditioned on the logging being done in ecologically appropriate and environmentally benign ways. In each focus group, as soon as general support for salvage logging was announced, members began discussing what the limits to the logging were. Participants made a strong distinction between clearcutting, which all outside of the timber industry group were opposed to, and salvage logging; this distinction was made most strongly in the California study area where clearcutting is a current issue. Key environmental concerns stated by multiple respondents included keeping a large number of snags so that regeneration is faster and habitat for animals is provided, limiting road building or assuring that roads are deconstructed after the logging, and clearing out the remaining brush postlogging, because this is not only unsightly (thus contravening one of the main reasons for community support for logging), but also is perceived as an ongoing wildfire risk.

Focus group participants looked to the US Forest Service as the experts and roughly two-thirds said that treatment decisions in general were better left in the hands of the professionals, who should use effectiveness as their main decision criterion. This trust in expertise was less solid regarding salvage logging than other postfire treatments, however. Some residents believed that when it came to salvage logging, the US Forest Service was too closely aligned with logging interests, and thus should not determine which trees to take.

### Conclusions

Although indicative rather than statistically generalizable, this exploratory study found clear support for salvage logging across the range of local stakeholder groups in wildfire-affected communities, from business leaders to self-described environmentalists, with only very minor opposition. These attitudes spanned different geographic and social settings in three western communities. In contrast to Mendez et al. (2003), this study found support for salvage logging even in tourism-oriented communities. Although a few participants opposed salvage logging and other postfire work—perceiving natural regeneration as the best alternative—the great majority expressed their support for limited salvage logging based on using forest resources efficiently for human use (utilitarian values), improving scenic value (esthetics), and creating safer conditions for recreation



**Figure 4.** Salvage logged forest in Darby burn area, California, with (A) new treeplantings on private industrial forestland and (B) private nonindustrial forestland with natural ponderosa pine regeneration. In general, when some green trees were retained in salvage logged area, the scenes were judged more acceptable than when all trees were removed and soil was exposed to erosion (top).

(reducing risk). However, focus group respondents were very concerned that the logging be done in ways that support the local ecology and public safety.

These findings will not change the challenges that fire managers often face from lawsuits designed to halt salvage logging, but managers need to know that as long as the science supports the logging and appropriate steps are taken to protect the ecology, salvage logging is likely to be supported by the local community. For policymakers, more broadly, the findings suggest that if the income from salvage logging goes toward local postfire restoration or wildfire prevention activities, this will likely increase local support for this type of management.

## Endnotes

- [1] Given the propensity of environmental groups to sue to prevent salvage logging on federal land, there were actually few cases that were available for study. Of the over 25 potential wildfires that were considered, only 3 had any salvage logging actually implemented on federal forestland.
- [2] Four stakeholders did not wish to be recorded, so extensive notes were taken.
- [3] The focus groups averaged 9 participants, with a high of 16 and a low of 7 participants. Both authors attended each focus group and shared management of the meetings. Focus groups were held in a nearby community meeting room, such as the library community room or a local lodge.
- [4] Participants were also asked a series of questions about community–agency relations, both pre- and postfire; degree of community and agency collaboration; and opinions about the rehabilitation process and public involvement. These responses are described in a separate article (Ryan and Hamlin 2008).
- [5] The authors retain transcripts and would be pleased to share these with other researchers.
- [6] About one-eighth of the interviews and one-half of participants in the focus groups did not provide an explicit response to directed questions on salvage logging.

## Literature Cited

BESCHTA, R.L., J.J. RHODES, J.B. KAUFFMAN, R.E. GRESSWELL, G.W. MINSHALL, J.R. KARR, D.A. PERRY, F.R. HAUER, AND C.A. FRISSELL. 2004. Postfire management on forested public lands of the western United States. *Conserv. Biol.* 18:957–967.

BLANCHARD, B., AND R.L. RYAN. 2007. Managing the wildland-urban interface in the northeastern United States: Perceptions of fire risk and hazard reduction strategies. *North. J. Appl. For.* 24(3):203–208.

BRADLEY, G.A. 1996. *Forest aesthetics: Harvest practices in visually sensitive areas*. Washington Forest Products Association, Olympia, WA. 25 p.

BROWN, T.C., AND T. DANIEL. 1986. Predicting scenic beauty of timber stands. *For. Sci.* 32:471–487.

CRESWELL, J.W. 2003. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage, Thousand Oaks, CA. 272 p.

DANIEL, T.C., AND R.S. BOSTER. 1976. *Measuring landscape esthetics: The scenic beauty estimation method*. US For. Serv. Res. Pap. RM-167. 66 p.

DANIELS, S.E., G.B. WALKER, M.S. CARROLL, AND K.A. BLATNER. 1996. Using collaborative learning in fire recovery planning. *J. For.* 94(8):4–9.

DENZIN, N.K., AND Y.S. LINCOLN. 1998. *Collecting and interpreting qualitative materials*. Sage Publications, Thousand Oaks, CA. 712 p.

GLASER, B., AND A.L. STRAUSS. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Aldine, Chicago, IL. 271 p.

GRAHAM, R.T. 2003. *Hayman Fire Case Study*. US For. Serv. Gen. Tech. Rep. RMRS-GTR. 114 p.

INTERAGENCY BURNED AREA EMERGENCY RESPONSE (BAER) TEAM. 2000. *Burned Area Emergency Rehabilitation Plan for Cerro Grande Fire*. US For. Serv., San Juan National Forest, Los Alamos, NM. 416 p.

KAPLAN, R., AND S. KAPLAN. 1989. *The experience of nature*. Cambridge University Press, New York. 340 p.

KRUEGER, R.A. 1994. *Focus groups: A practical guide for applied research*. Sage, London. 320 p.

LITOSELLITI, L. 2003. *Using focus groups in research*. Continuum, London. 112 p.

MACHLIS, G.E., A.B. KAPLAN, S.P. TULER, K.A. BAGBY, AND J.E. MCKENDRY. 2002. *Burning questions: A social science research plan for federal wildland fire management, report to the National Wildfire Coordinating Group*. Idaho Forest, Wildlife and Range Exp. Stn., Univ. of Idaho, Moscow. 253 p.

MASER, C. 1996. Salvage logging: The loss of ecological reason and moral restraint. *J. Ecofor.* 12:176–178.

MENDEZ, S.R., M.S. CARROLL, K.A. BLATNER, A.J. FINDLEY, G.B. WALKER, AND S.E. DANIELS. 2003. Smoke on the hill: A comparative study of wildfire and two communities. *West. J. Appl. For.* 18(1):60–70.

MCCOOL, S.F., R.E. BENSON, AND J.L. ASHOR. 1986. How the public perceives the visual effects of timber harvesting: An evaluation of interest group preferences. *Environ. Manag.* 10(3):385–391.

MCIVER, J.D., AND R. MCNEIL. 2006. Soil disturbance and hill-slope sediment transport after logging of a severely burned site in northeastern Oregon. *West. J. Appl. For.* 21(3):123–133.

NATIONAL INTERAGENCY FIRE CENTER. 2004. *Wildland fire statistics*. Available online at [www.nifc.gov/stats/wildlandfirestats.html](http://www.nifc.gov/stats/wildlandfirestats.html); last accessed Jan. 8, 2004.

RIBE, R.G. 2002. Is scenic beauty a proxy for acceptable management? The influence of environmental attributes on landscape perceptions. *Environ. Behav.* 34(6):757–780.

ROBBINS, J. 2003. Restoring a forest goes slowly and advocates seethe. *New York Times* Mar. 4, 2003, F3.

ROBICHAUD, P.R., J.L. BEYERS, AND D.G. NEARY. 2000. *Evaluating the effectiveness of postfire rehabilitation treatments*. US For. Serv. Gen. Tech. Rep. RMRS-GTR-63. 85 p.

RYAN, R.L. 2005. *Social science to improve fuels management: A synthesis on aesthetics and fuels management*. US For. Serv. Gen. Tech. Rep. NC-261. 58 p.

RYAN, R.L. AND E. HAMIN. 2006. Engaging communities in post-fire restoration: Forest treatments and community-agency relations after the Cerro Grande Fire. P. 87–96 in *The Public and Wildland Fire Management: Social Science Findings for Managers*, McCaffrey, S. (ed.) USDA For. Serv. Gen. Tech. Rep. NRS-1.

RYAN, R.L., AND E. HAMIN. 2008. Wildfires, communities, and agencies: Stakeholders' perceptions of postfire forest restoration and rehabilitation. *J. For.* 106(7):370–379.

- SAMPSON, R.N. 1999. Primed for a firestorm. *Forum Appl. Res. Publ. Pol.* 14(1):20–25.
- SCHENSUL, J.J., M.D. LECOMPTE, B.K. NASTASI, AND S.P. BORGATTI. 1999. *Enhanced ethnographic methods: Audiovisual techniques, focused group interviews, and elicitation techniques.* AltaMira, Walnut Creek, CA. 176 p.
- SHINDLER, B., AND REED, M. 1996. *Forest management in the Blue Mountains: Public perspectives on prescribed fire and mechanical thinning.* US For. Serv. Gen. Tech. Rep. PNW 95-0702. 58 p.
- STONE, R. 1993. Spotted owl plan kindles debate on salvage logging. *Science* 261:287.
- TAYLOR, J., AND T. DANIEL. 1984. Prescribed fire: Public education and perception. *J. For.* 82:361–365.
- US FOREST SERVICE. 2002a. *Missionary Ridge and Valley Fires Burned Area Emergency Stabilization and Rehabilitation Plan.* San Juan National Forest, Durango, CO. 113 p.
- US FOREST SERVICE. 2002b. *Final Environmental Impact Statement, Brown Darby Fuel Reduction Project.* Stanislaus National Forest, Hathaway Pines, CA. 291 p.
- WINTER, G.J., C. VOGT, AND J.S. FRIED. 2002. Fuel treatments at the wildland-urban interface: Common concerns in diverse regions. *J. For.* 100(1):15–21.