

AN ABSTRACT OF THE DISSERTATION OF

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presented on May 1, 2008.

Title: Citizen-Agency Interactions: An Investigation of Postfire Environments

Abstract approved:

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Wildfire management has grown increasingly complex in recent years, particularly in the West and in the Wildland-Urban Interface (WUI) where a steady population growth has resulted in greater risk to people and property. Recent trends suggest the process of recovering from large fires (>100,000 acres) will become increasingly important to forest agencies and communities (National Interagency Fire Center 2007). However, many forest management personnel are ill prepared to cope with the ecological planning and public interactions that follow such events. Agency personnel are called on to make technical decisions regarding fire management and restoration, communicate current and reliable information to community members, and include them in postfire planning (McCool et al. 2006, Taylor et al. 2005). Such circumstances can result in conflicts over management actions that play out in the public arena.

Until recently, little research had been conducted in postfire environments. This dissertation helps close that gap by examining citizen-agency interactions in postfire settings. Findings are presented in three manuscripts. The first manuscript synthesizes literature from postfire and related contexts to identify themes associated

with citizen-agency interactions that may be useful to managers in postfire settings. Findings suggest interactions are key to citizen trust, acceptance, and overall success of bringing communities together to agree on a course of action.

The second manuscript evaluates interviews about postfire communication from citizens and agency personnel in five postfire settings in the western U.S. Results highlight the complexity of communication, and the important role it can play in building trusting relationships. These findings also offer several suggestions for managers faced with planning public outreach in a postfire context.

The third manuscript examines survey results from two postfire settings in Oregon. Findings suggest an agency's commitment to long-term interactions with citizens influences citizen trust in the agencies and acceptance of postfire management strategies. There is broad support for postfire management activities (i.e., erosion control, seeding, replanting), though acceptance is dependent on trustworthy relations. Findings from this research indicate that positive citizen-agency relations will need to be developed before a fire occurs if postfire actions are to be timely and supported by local communities.

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Citizen-Agency Interactions:
An Investigation of Postfire Environments

by

Christine Shaw Olsen

A DISSERTATION

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Presented May 1, 2008
Commencement June 2008

Doctor of Philosophy dissertation of Christine Shaw Olsen presented on May 1, 2008.

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Major Professor, representing Forest Resources

Head of the Department of Forest Resources

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Christine Shaw Olsen, Author

ACKNOWLEDGEMENTS

This dissertation was made possible with the efforts of many people and institutions. I would like to express my sincere thanks to the USDA Forest Service, Pacific Northwest Research Station for supporting this research. I would also like to acknowledge the Oregon State University Folk Club, Oregon Sports Lottery, Alfred W. Moltke, and Dorothy D. Hoener Memorial Scholarship programs, as well as the Arnold & Vera Meier and Saubert Fellowship programs for supporting my studies.

Many agency personnel and forest community residents participated in my interviews and surveys. I am grateful for their generosity and sincerity.

My enormous thanks go to my major advisor, Bruce Shindler. He has weathered my numerous life changes with me and helped me stay the course with this program. He guided me through this process, even though I fought it at many steps along the way. My thanks also go to my committee members for providing guidance, well-rounded suggestions, and most importantly, a second chance when needed. Thank you to John Bliss, Sherri Johnson, Charles Langford, and Arne Skaugset.

Many others contributed to my graduate studies and research. Thanks to my friends from the Harris Lab, Forest Science, Anthropology, and the Corvallis birth community. My in-laws, Ron and Linda, provided essential babysitting that gave me the time to complete this degree, and my parents, Ned and Susie, were always a loving support. And lastly, to my husband Keith, my daughter Ava, and my son Alder, you have made this journey so much more fun. Thank you for believing in me!

CONTRIBUTION OF AUTHORS

I would like to acknowledge the contribution of Dr. Eric Toman with the design and writing of the manuscript presented in Chapter 2.

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In memory of two special women who are dearly missed:

Cathy Holland Brown
1949 – 2007

M. Danielle Robbins
1973 – 2007

CITIZEN-AGENCY INTERACTIONS: AN INVESTIGATION OF POSTFIRE ENVIRONMENTS

Introduction to Dissertation Topic

Fire has been an important disturbance element influencing forests across North America for millennia (Arno and Allison-Bunnell 2002, Pyne 1982). Because small wildfires routinely removed fuels, large wildfires (100,000+ acres) have historically been infrequent and unpredictable (Agee 1997a). However, fire suppression efforts in the last century altered these historical fire regimes and caused an increase in fuel loading across many forests, particularly in the Western United States (Agee 1993 and 1997a). As a result, a number of large wildfires have occurred in the past decade, including record-setting fires in several states. Current drought cycles and the occurrence of wildfires that burn at high intensities are additional factors that make it difficult to effectively suppress these fires (Agee 1997b, Dombeck et al. 2004). Future fire conditions are expected to be further exacerbated by climate shifts associated with global warming (McKenzie et al. 2004).

Consequently, wildfire is a significant threat to forests and communities through the United States. At the same time, forest management has grown increasingly complex in recent years, particularly in the West and in the Wildland-Urban Interface (WUI) where a steady population growth has resulted in greater risk to people and property. Recent trends suggest the process of recovering from large fires will become increasingly important to forest agencies and communities (National Interagency Fire Center 2007). However, many forest management personnel are ill prepared to cope with the public interactions that follow such events (Olsen and

Shindler 2007). Numerous factors exist that make postfire planning especially problematic.

The decisionmaking environment after large fires is filled with a high degree of uncertainty, coupled with pressure for prompt action. Agency personnel on postfire planning teams may have little personal experience to draw on in these circumstances, as wildfires at this scale are often a one-time event in the career of a line officer or technical specialist. Forest management personnel often look to science for guidance, but in postfire settings help is elusive; research on these landscapes is scarce and offers conflicting interpretations (Beschta et al. 2004, Lindenmayer et al. 2004, Sessions et al. 2004). Nevertheless, agency personnel are called on to make technical decisions regarding fire management and restoration, communicate current and reliable information to community members, and include them in postfire planning (McCool et al. 2006, Taylor et al. 2005). Not surprisingly, such circumstances can result in considerable conflict over potential and actual management actions that play out in the public arena. Additionally, emotions are high and much is at stake in these situations, including valuable timber, wildlife habitat, private property, recreation sites, and so on. The prospects for reaching sound, well-supported decisions following large-scale fire events appear tenuous. To be successful, planning efforts will require an informed and supportive constituency (Shindler et al. 2002).

Postfire planning also becomes more difficult as the needs and expectations of local residents increase. Some people have been displaced from their homes, while others are just uncertain about what happens next and look to forest management

personnel for leadership and guidance. This puts new pressures on the agency-community relationship (Shindler et al. 2002) as local personnel attempt to determine what to do with burned landscapes, how to manage surrounding (unaffected) forest lands, and how best to interact with citizens. Trustworthy relations and credible information can be essential throughout these planning efforts (Shindler and Toman 2003, Winter et al. 2004).

Until recently, little social science research had been conducted in postfire environments because fires were difficult to predict and occurred relatively infrequently in any one setting. This dissertation helps close that gap by using a multi-method approach to examine citizen-agency interactions in postfire settings. Three broad objectives are addressed, each in a distinct manuscript that explores this topic in a different way. These objectives include: 1) explore and synthesize pertinent socio-political literature with implications for postfire citizen-agency interactions, 2) examine communication, outreach, and interactions during the federal postfire planning and decisionmaking process, and 3) assess citizen-agency interactions, citizen trust in the federal forest agencies, and public acceptance of postfire management strategies.

Manuscript 1 has been published as a General Technical Report by the U.S.D.A Forest Service, Pacific Northwest Research Station (Olsen and Shindler 2007). It addresses the first objective by exploring and synthesizing the existing literature on postfire planning, decisionmaking, and management, as well as literature from related fields (e.g., habitat restoration, forest health, fuels management, natural

hazards and disasters) that may be useful in postfire settings. The major points are focused in a manner suitable for forest management personnel facing management decisions after a large wildfire, grounding the discussion in the literature and the research experience of myself and my co-author. Five major themes are examined: 1) contextual considerations, 2) barriers and obstacles, 3) uncertainty and perceptions of risk, 4) communication and outreach, and 5) bringing communities together.

Subthemes and examples are provided within each major theme. Suggestions about how forest managers can interact with citizens for planning and restoration activities after a large wildfire are made. From this summary, a set of management implications have been organized to help guide planning in the new era of postfire decisionmaking.

An abbreviated version of Manuscript 2 is in press as a chapter in a General Technical Report by the U.S.D.A. Forest Service, Pacific Southwest Research Station. The full-length manuscript presented in this dissertation addresses the second objective by building on the theme of communication in postfire environments through interviews with agency personnel and forest community members in five regions that have recently experienced wildfires. The five sites were purposively chosen to include a range of fire sizes, local community sizes and characteristics, and physical environments, with all fires occurring primarily on federal land in 2002 or 2003. The sites included communities adjacent to the following national forests: Rogue-River Siskiyou National Forest in southwest Oregon, Deschutes National Forest in central Oregon, Pike-San Isabel National Forest in Colorado, San Bernardino National Forest in southern California, and Cleveland National Forest in southern

California. Semi-structured interviews were conducted either face-to-face or by telephone with a total of 24 Forest Service personnel and 54 community members across the five sites. Interviews were coded and analyzed to identify key findings and themes running through responses. Findings are presented to highlight lessons learned within five primary topics. Factors that contribute to successful communication in postfire environments are explored. Barriers to successful communication are also identified. The issues of credibility, trust, addressing uncertainty, and attention to special places surfaced numerous times in these interviews, underscoring the importance of careful planning for communication between agencies and citizens. The manuscript concludes with suggestions for future research.

Manuscript 3, which addresses the third objective, will be submitted for publication in a scientific journal. This manuscript builds on findings about interactions, trust, and acceptability in postfire environments through results from mail surveys to the attentive public in two sites examined in the previous manuscript: southwest Oregon near the Biscuit Fire (2002), and central Oregon near the Bear & Booth Complex Fires (2003). The questionnaire was developed based on results from the interviews presented in the second manuscript. A total of nearly 800 surveys were delivered, with a 61% response rate from the Biscuit Fire site and a 70% response rate from the Bear & Booth Complex Fires site. The methodology also allowed for examination of differences between sites. Findings suggest an agency's commitment to long-term interactions with citizens influences citizen trust in the agencies and acceptance of postfire management strategies. There is broad acceptance for most

postfire forest management strategies (i.e., erosion control, replanting, reseeding) at both sites. However, acceptance is highly dependent on trustworthy relations among other factors. Findings from this research indicate that positive citizen-agency relations will need to be developed well before a fire occurs if postfire actions are to be timely and supported by local communities.

The dissertation closes with a general conclusion that provides a summary of the dissertation and highlights relationships among the findings.

Chapter 1: Citizen-Agency Interactions in Planning and Decisionmaking After Large Wildfires

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ABSTRACT

This report reviews the growing literature on the concept of agency-citizen interactions after large wildfires. Because large wildfires have historically occurred at irregular intervals, research from related fields has been reviewed where appropriate. This issue is particularly salient in the West where excess fuel conditions indicate that the large wildfires occurring in many states are expected to continue to be a major problem for forest managers in the coming years. This review focuses on five major themes that emerge from prior research: contextual considerations, barriers and obstacles, uncertainty and perceptions of risk, communication and outreach, and bringing communities together. It offers ideas on how forest managers can interact with stakeholders for planning and restoration activities after a large wildfire. Management implications are included.

INTRODUCTION

Wildfire is a significant threat to forests and surrounding communities throughout the United States. The issue is particularly salient in the West where excessive fuel conditions indicate that the large (>100,000-acre) wildfires now occurring in many states are expected to continue to be a major problem for forest management personnel in the coming years. Consequently, the process of recovering from large wildfires will become increasingly important to forest management agencies and communities. However, many forest management personnel are largely unprepared to cope with the ecological planning and public interactions that follow such events. At least four factors converge that make this situation especially problematic: (1) wildfires at this scale may be a one-time event in the career of a line officer or technical specialist on a particular national forest or ranger district, thus individuals have little personal experience to draw upon; (2) although forest management personnel understand much about silvicultural systems and harvest operations, there is less understanding about ecological restoration of lands affected by major wildfire; (3) local residents have even less experience in these matters but possess a high degree of concern about the risk and uncertainty of ecological and social conditions surrounding their communities and look to forest managers for visible leadership; and (4) because timely response is essential for many postfire decisions, forest management personnel should have reliable information in hand and be prepared to initiate a planning process.

Postfire restoration and rehabilitation can refer to a broad range of management actions in the affected forest area and adjacent communities. To be effective in their response, forest management personnel and scientists should agree on which measures (e.g., culvert installation or replacement, road decommissioning, salvage logging, reforestation, no action) appropriately constitute restoration activities once the Burned Area Emergency Response (BAER) team has left and the situation is completely in the hands of local forest management personnel. These measures are likely to include both short- and long-term actions as well as the information required to guide the planning process. Just as important is the need for plans that garner broad public acceptance, especially by members of affected communities. For example, the wildland-urban interface (WUI) is where many decisions will be implemented and where resulting actions will be either supported or opposed by local residents. Ultimately, agency personnel will need to consider a range of ecological, economic, and sociopolitical information in their deliberations (Dombeck et al. 2004). One goal then, would be to design a systematic approach that will enable these individuals to address commonly encountered conditions as well as to account for the uncertainty and risks of new problems. However, relatively few postfire plans have actually matured, and identifying a universal “model for success” is unlikely. Thus, this report provides an in-depth discussion of the most relevant contributing factors from existing efforts and related research.

In this paper, our focus is on summarizing research useful to federal agency personnel (technicians, managers, decisionmakers) who address the range of

sociopolitical concerns in forest communities after wildfires. Throughout this document, we refer to “forest management personnel” as the primary audience. We use this term to refer to forest technicians, managers, and decisionmakers (i.e., line officers) who are responsible for federal forest management—namely, individuals in the U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management (BLM) and Park Service. We have reviewed available literature on postfire planning, decisionmaking, and management, as well as literature in related fields such as habitat restoration, forest health, fuels management, and natural hazards and disasters. We focused the major points in a manner suitable for forest management personnel facing management decisions after a large wildfire, grounding the discussion in the literature and our research experience. Thus far, very little decision analysis for postfire responses has taken place because large wildfires have, until recently, occurred at irregular intervals and are largely unpredictable. However, one team (McCool et al. 2006) has set the stage for more indepth research by providing an event-based framework for examining the effects of wildfire on communities. Our intent here is to use these efforts and expand informed, rational deliberation in this critical area of emerging importance. We have five objectives that are most relevant to current sociopolitical concerns:

- Identify local contextual considerations that influence citizen-agency interactions.
- Identify common barriers and obstacles encountered by forest management personnel.
- Describe the uncertainty and perceptions of risk that surround these events.
- Identify communication strategies that have been effective in forest management planning processes.

- Explore factors that bring communities together to reach agreement.

From this summary, a set of management implications have been organized to help guide planning in the new era of postfire decisionmaking.

MANAGEMENT SETTING

Fire has been an important disturbance element influencing forests across North America for millennia (Arno and Allison-Bunnell 2002, Pyne 1982). Because small wildfires routinely removed fuels, large wildfires (100,000+ acres) have historically been infrequent and unpredictable (Agee 1997a). However, fire suppression efforts in the last century altered these historical fire regimes and caused an increase in fuel loading across many forests, particularly in the Western United States (Agee 1993 and 1997a). As a result, a number of large wildfires have occurred in the past decade, including record-setting wildfires in five Western States. Current drought cycles and the occurrence of wildfires that burn at high intensities are additional factors that make it difficult to effectively suppress these fires (Agee 1997b, Dombeck et al. 2004). Future fire conditions are expected to be further exacerbated by climate shifts associated with global warming (McKenzie et al. 2004).

The prospects for reaching sound, well-supported decisions following large-scale fire events appear tenuous. The federal forest management agency planning and decision process for traditional forest activities (i.e., timber sales) is often fraught with pitfalls (Cortner et al. 1998, Shindler et al. 2002). Interest and community groups frequently line up on each side of such decisions, making planning an arduous and

lengthy endeavor. Forest management personnel often look to science for guidance, but in postfire settings help is elusive; research on these landscapes is scarce and offers conflicting interpretations (Beschta et al. 2004, Lindenmayer et al. 2004, Sessions et al. 2004). The spread of exotic species and increasing impacts in forested areas can further complicate the issue (Dombeck et al. 2004). Additionally, emotions are high and much is at stake in these situations, including valuable timber, wildlife habitat, private property, recreation sites, and so on.

Of course, part of the challenge is the time-sensitive nature of these decisions. Merchantable timber volume and profit is likely to be higher if salvage occurs in the first few years after a wildfire (Lowell et al. 1992, Sessions et al. 2003). Other activities, including erosion control measures such as contour felling for slope stabilization or sediment traps along roadways, are also most effective when conducted soon after a wildfire. However, decisions about active forest management (i.e., harvesting) or more passive approaches (i.e., monitoring, limited management activity, restricting human use) to rehabilitation are certain to be contentious and require time for thoughtful deliberation. To move to timely implementation, both accurate information and a well-crafted public process seem essential.

A dominant question then is determining the appropriateness of salvage operations. The current debate centers largely on whether salvage logging is ecologically sound and what part economics should play in deciding if and where these activities occur (e.g., Donato et al. 2006). Wilderness areas are excluded because salvage logging is not consistent with management objectives for these areas,

but roadless areas and late-successional reserves are central in this argument right now. For example, the postfire recovery project for the 499,000-acre Biscuit Fire in southern Oregon has been contentious because the plan incorporated salvage on land that was previously designated for either late-successional or roadless area management. Although many industry groups and some scientists assert that salvage is necessary for species recovery of desired forest types and for economic gain (e.g., Sessions et al. 2004), other researchers and many environmental organizations do not believe salvage is ecologically consistent with late-successional goals (e.g., Beschta et al. 2004). Public protests of salvage sales are common and the media provides a forum for controversy. Not only do forest management personnel operate within a controversial planning process, they often do so with scientific uncertainty and under scrutiny of a watchful public representing numerous points of view.

Infused in this context is the amount of media coverage given to these events. As the relative size of the wildfires—and the corresponding threat to people's homes and lives—has increased, so has media attention. Television coverage of the 2003 California fires, for example, brought national prominence to wildfire and forest health conditions; cameras recorded entire communities being evacuated while more than 2,400 homes burned (North County Times 2003). Under such elevated levels of public awareness, much is at stake for forest management personnel in the recovery process.

Postfire planning also becomes more difficult as the needs and expectations of local residents increase. Some people have been displaced from their homes, while

others are just uncertain about what happens next and look to forest management personnel for leadership and guidance. This puts new pressures on the agency-community relationship (Shindler et al. 2002) as local personnel attempt to determine what to do with burned landscapes, how to manage surrounding (unaffected) forest lands, and how best to communicate with citizens. Trustworthy relations and credible information can be essential throughout these planning efforts (Shindler and Toman 2003, Winter et al. 2004).

RESEARCH SUMMARY

To help address the challenges to postfire planning and decisionmaking, recent literature was focused into five major areas for examination.

- Contextual considerations and their influence on citizen-agency interactions including spatial, temporal, and social factors.
- Common barriers and obstacles encountered by land management personnel.
- Uncertainty and perceptions of risk.
- Communication strategies for effective planning.
- Factors that bring communities together to reach agreement.

Where a shortage of research in postfire settings exists, we draw from related literature in fields such as habitat restoration, forest health, fuels management, and natural hazards and disasters to help expose potential concerns and opportunities.

Contextual Considerations

Each wildfire occurs under its own set of ecological conditions and within a unique social setting. The notion of context implies that whatever postfire solutions are acceptable in one community may not necessarily be so in another, even when

problems are similar (Kneeshaw et al. 2004). Local contextual conditions are significant to citizens because this is how they understand and prioritize the spatial, temporal, and social factors surrounding an event. Forest management personnel usually think in terms of the first two factors, and most often from an ecological standpoint. But for most citizens, ecological restoration (or rehabilitation) over large spatial and temporal scales is not an intuitive concept (Geyer and Shindler 1994); local residents are much more likely to think in terms of familiar places or specific sites. Thus, an initial consideration for forest management personnel is that the public usually does not consider time and space attributes in the same manner as managers, nor do they use the same terminology to describe them (Magill 1991, Shindler 2000).

Fire ecology researchers typically advocate for landscape recovery at appropriately large spatial scales (e.g., Kauffman 2004). But for citizens, spatial context will require consideration of known, identifiable places. These might be long-time family recreation sites, particular scenic views, or forest places that hold particular relevance to the community. Because the public's interests lie at specific local scales (e.g., parks, recreations sites, etc.), planning at larger watershed or regional-level landscapes may be beyond their initial scope. Many will find it difficult to relate to policies without recognizable boundaries or geographic significance (Stankey and Shindler 2006) and may be reluctant to give full support to restoration of forest lands across a broad landscape. For example, in southwestern Oregon, old-growth forests used by local residents for recreation were burned in the 2002 Biscuit Fire. Plans to salvage timber from these areas met significant opposition

for a variety of reasons, one of which was public expectation that the area would continue to be forested and available for wildlife and recreation purposes (Associated Press 2005, Barnard 2005).

Confrontations about spatial scale also underlie NIMBY (not in my backyard) arguments. Although they may be viewed as selfish responses from property owners, these arguments can reflect a fundamental dissatisfaction with decisionmaking processes judged to be unresponsive to local concerns (Stankey and Shindler 2006). Such concerns can also reveal place attachments that hold meaning to citizens and affect how people define appropriate actions in those places (Williams and Patterson 1996). Thus, taking time to become intimately familiar with community meanings and feelings about a locality (known as constructing a “sense of place”) offers forest management personnel a way to identify, anticipate, and respond to the attachments people form about the landscapes surrounding them (Williams and Stewart 1998) and can strengthen planning and management efforts (Raymond and Brown 2006). Outreach strategies such as community forums, neighborhood meetings, site visits, and mapping exercises can be used effectively to discuss these places while also providing opportunities for local connections to be forged and strengthened (Beverly et al. 2006, Brown 2006, Kruger and Shannon 2000). On the Deschutes National Forest, for example, landscape architects provided geographic information system (GIS) maps and encouraged residents to mark up sites they “identified with” prior to planning a large thinning project. Also, just two weeks after the 90,000-acre Bear & Booth (B&B) Fires in 2003, Deschutes personnel conducted a bus tour of the burned

area so that local property owners could see the wildfire event for themselves, ask questions to better understand what happened on this familiar landscape, and begin to discuss the forest recovery process (Toman et al. 2008). These forms of site-specific attention can facilitate a connection between the ecological and social importance of a place.

The temporal context of managing landscapes also has recently received much attention by researchers. For example, ecosystem management has spurred interest in strategies that focus on dynamic natural processes (Perera and Buse 2004, Rapp 2003), particularly historical fire regimes (Cissel et al. 1999, Kauffman 2004). But temporal context is especially problematic for citizens who are challenged to understand complex ecological processes, such as natural disturbance and succession, and to evaluate the long-term consequences of such processes. In this regard, science has been slow to provide the necessary long-term data. Magnuson (1990) has criticized the lack of time-series analysis in ecosystem research, arguing that too often we produce landscape snapshots in time and as a result, underestimate the degree of change that occurs. Of course, one of the problems for researchers is that it is difficult to address long-term ecological change on predominantly short-term funding cycles. Just recently, primarily through the multiagency Joint Fire Science Program, we have begun more long-term studies at wildfire research sites.

On the management side, federal forest agencies have also been criticized for a lack of institutional memory about forest practices (Cortner et al. 1996). For example, when a new ranger arrives on a district, frustration may be expressed by the locals

who feel they have to “break in” the new forest manager to specific community conditions and concepts. Frequent moves by personnel between jobs or from region to region are only part of the equation. The lack of monitoring and evaluation programs is also to blame. Because these activities are both costly and time consuming, they often may be set aside as thinly stretched forest management personnel move on to other duties.

If forest management personnel are unable to provide solid details about cause-and-effect relationships following postfire management activities, we cannot expect citizens to understand the dynamics involved nor might we expect them to simply go along with untested management plans. For the public, much of the misunderstanding surrounding temporal concerns (e.g., rate of implementation, length of time until results are known) stems from the uncertainty and risk surrounding forest management decisions (Brunson 1996). However, after a wildfire planning situations are often influenced by the pressure to make decisions quickly, as certain activities have ecological or economic time constraints on effective implementation. For example, the goal of recovering value from burned stands means salvage activities should take place within a few years (Lowell et al. 1992, Sessions et al. 2003). Thus, tension is created between public expectations and management necessity. When agency planning timeframes span several years, options become limited. Although legislation has been proposed to speed up postfire decision processes, public concerns will likely persist over the uncertainty of specific actions. Forest managers and decisionmakers are in the challenging position of balancing these demands. As with spatial context,

action taken for restoration or rehabilitation purposes for which the long-term consequences are not apparent—or at best, uncertain—can face public resistance.

The social context surrounding postfire planning may be the most important of all. Forest management personnel understand that resource decisions are not made in a contextual vacuum, but rather they play out among a community of citizens and forest management personnel who often have a history together (Shindler et al. 2002). For example, McCool et al. (2006) contended that attending to postfire social issues requires an understanding of what occurred before and during the event as well. The level of agency-community interactions for wildfire awareness, preparedness, prior planning, evacuation, and suppression all contribute to the postfire planning environment. This contextual culture will strongly influence how management alternatives are considered. Thus, it is not just about the options on the table in the postfire moment. The public's acceptance of resource policies will be directly linked to how they view the quality of previous decisionmaking procedures, especially opportunities for their participation (Shindler et al. 1999, Tuler and Webler 1999). Over time, these collective interactions also help determine how people feel about the decision-makers. In the end, trust in forest management personnel and their agencies is fundamental to social context; and it has played a particularly strong role in communities during other disaster recovery efforts (Pettersen 1999).

At least in one regard—at the wildland-urban interface—social and spatial context are interrelated, which adds to the complexity. When a practice like prescribed burning is implemented “somewhere else” it may be a non-issue; or at least

it may affect people so slightly that they pay little attention (Shindler 2000). To illustrate, several years ago the Mayor of San Diego attended an agency-sponsored ecosystem management workshop in Portland, Oregon. After two days of speakers, he acknowledged that these were indeed interesting issues, but for the citizens he represented, ecological problems such as poor forest health were often low-level concerns. His constituency was more worried about their daily freeway commute, getting the kids off to school, paying their bills, or crime in their neighborhood. Shortly thereafter the national forests surrounding San Diego experienced some of their most devastating wildfires in recorded history. Now conversations with local forest management personnel and citizens indicate that fire conditions and recovery programs have new meaning for residents in these communities (Olsen and Shindler 2006). The point is that forest communities and the WUI are where citizens are most affected by forest management decisions, particularly when residents are aware of the consequences. The extent to which a management practice or policy will affect their personal property, alter traditional community economies, or change unique places can hold considerable contextual importance for those involved (Shindler 2000). Much is at stake in these settings—ecologically and socially. This is also where forest management personnel can make a difference by recognizing relevant concerns and focusing the issues for residents (Toman et al. 2006, 2008). Alternatively, when managers do not make it obvious to locals that they fully considered the social consequences of wildfire policies, it can hinder their ability to achieve broad acceptance of management plans.

Barriers and Obstacles

The postfire planning environment is filled with numerous obstacles. We address a core set here; no doubt, additional ones will continue to surface in forest communities with each fire season. The first barrier involves how forest management agencies and citizens communicate about the fire message. Planning and decision processes are often characterized by a lack of common language between those involved. For example, forest management personnel typically use terms such as “restoration,” “recovery,” “rehabilitation,” “stabilization,” and “salvage” to describe their efforts and intentions; yet understanding (and consequently acceptance) of these management approaches does not exist across all stakeholder groups (Mowrer 2004). Indeed, conflict can arise when people derive different meanings from terminology (Hull and Robertson 2000). In the extreme, citizens may perceive the agencies’ use of unclear or confusing terms as deliberate with the intent to disguise the truth about planned management activities (Brunson 1992). For example, some citizens who do not believe ecological recovery should include certain management activities (i.e., removal of big trees) have criticized the use of the word “recovery” in the Bitterroot Burned Area Recovery Plan, suggesting instead that the term was deliberately used to garner support for the plan while keeping hidden the economic focus (Friends of the Bitterroot 2005).

This leaves us with the question: Where does responsibility lie for creating a clear, more easily understood dialogue about natural resource problems? Ordinary citizens have a stake in the outcomes of local decisions, but they do not come with a

ready-made ability to engage in constructive, deliberative discussion. Thus, the job falls to forest management personnel. Managers should consider their own communication capabilities (refer to section on “Communication and Outreach”) and strive to also develop a basic competency (i.e., increase awareness and knowledge) in those with whom they engage (Jamieson 1994).

A second barrier involves the focus on “natural conditions” and how they are defined by forest management agencies. Efforts abound, particularly after wildfire events, to return landscapes to their “natural” condition. However, after 300 years of manipulation including 100 years of extinguishing wildfires, what is perceived to be natural about American forests is not necessarily what is natural (Kay 1997). A lack of scientific consensus about what constitutes natural conditions only contributes to the situation (Shindler et al. 2002). Underlying the problem is differing standards of naturalness and agreement on what our “natural” forests should look like (Williams and Stewart 1998). In a postfire environment—where landscape conditions may dictate a start-over mentality—agreeing on desired future conditions is important, but may only be half of the discussion. The intended management plans and activities used to achieve those desired future conditions are also part of the deliberations. Ample time and resources should be available for forest management personnel, citizens, and other stakeholders to observe and openly discuss the alternatives, as well as great patience for resulting decisions to play out.

Closely related to the natural conditions dilemma is another barrier—overcoming the dominance of forest aesthetics in decisionmaking. Visual quality has

long been a concern for most citizens in forest management and, consequently, for managers as well. Indeed, public dissent about forest management at times seems concerned only with appearance. This may be symptomatic of more serious underlying problems; Ribe (1999) suggests some individuals may interpret a landscape that looks bad as not being ecologically sound. Although the visual appearance of forests after a large wildfire is much different than that which existed before, we will need a way to come to terms with these conditions. If the long-term view of ecosystem stewardship is to be promoted, it will mean instilling an expanded set of factors for evaluation, one that encourages people to look beyond the scenic aesthetic to an ecological perspective (Gobster and Hull 2000). Gobster (1996) argued that most reliable measures of public acceptance for forest management activities may be those made onsite, where people can observe with all five senses and consider the context of management decisions. Thus, forest landscapes following large wildfires may actually provide good opportunities for getting people on the ground while simultaneously fostering an appreciation of biologically diverse and dynamic environments.

The fourth barrier can be one of the most serious constraints on forest management personnel in postfire planning—the pressure for rapid decisionmaking. Determining whether to salvage log is extremely time-sensitive, driven by politics and high expectations of the players involved. As mentioned previously, science offers conflicting evidence as to the proper course of action in these cases (Beschta et al. 2004, Sessions et al. 2004); thus, forest management personnel are left with little

scientific guidance in this political debate. Much like the Healthy Forests Restoration Act (HFRA 2003) offers methods to expedite thinning projects, lawmakers are likely to devise additional regulatory remedies to hasten the planning process and allow timely entry onto lands disturbed by wildfire. However, Stankey and Shindler (1997) warned that rushing to judgment could deter building of long-term support for solutions. Given the high level of distrust among stakeholder groups and forest management personnel and their organizations, sufficient time should be invested to develop credible planning frameworks that are acceptable to the parties involved. One potential remedy in the need for quick decisions is to already have strong community relations in place. This has been the case for the Deschutes National Forest following the 2003 B&B Fires. The fires were preceded by a period of relationship building in which a number of cooperative agency-citizen group fuel-reduction projects were accomplished. This has made postfire recovery efforts and additional thinning programs far less contentious than in other locations.

A final barrier we describe here is also significant. The importance of trustworthy relations among citizens and forest management personnel is the common thread that runs through all decisionmaking processes. At a basic level, trust refers to predictable behaviors, reciprocity among parties, and an agency that follows through with its promises (Fukuyama 1995). As Winter et al. (2004: 9) noted “trust is the willingness to rely on those who have the responsibility for decisions and actions related to risk management.” In an atmosphere requiring rapid agency response, public trust hinges on relationships built well before the wildfire event (McCool et al.

2006). Unless communities of individuals (forest management agencies, homeowners, business leaders, etc.) have previously built strong relationships through joint planning for forest management, they are not likely to come together quickly after a wildfire event and agree on a course of action.

Approaches to building trust are often unique to individuals and communities, but there is little doubt they are centered on frequency, reliability, and predictability of contact over the history of a relationship (Blatner et al. 2003, Boon and Holmes 1991, Fukuyama 1995). After extensive examination of citizen-agency interactions, Shindler and Cheek (1999) concluded that such contact includes six common factors: (1) sincere leadership, (2) sound organizational and planning skills, (3) early commitment to citizen participation and continuity of efforts, (4) inclusiveness, (5) innovative and flexible methods for interaction, and (6) efforts that result in action. These are all characteristics of sound management that can be achieved at the local level, where the best opportunity for building strong relationships exists. The key to finding acceptable solutions is in the genuine discussion and real listening that occurs when people begin to discuss specific problems, lay out the range of options, and eventually see positive patterns in their interactions (King 1993).

A recent example sheds some light on this issue and potential outcomes of forest management agency interactions with the public. After one Forest Service ranger district organized public bus tours of the 2003 B&B Fires on the Deschutes National Forest, citizens were asked their opinions about the onsite discussions (Shindler et al. 2004). Overall, 92 percent rated the tour as very useful, 98 percent felt

the information was fair and balanced, and 100 percent believed it was credible and trustworthy. As a result of the tour, 60 percent said they were now more confident in the ability of the Forest Service to implement an effective fuels program, and 84 percent indicated they were more confident that the agency would incorporate citizens' concerns into future plans. The tours were obviously well-received by participants. In the year following this fire, a 14,000-acre thinning program proposed by the ranger district in this community has received broad local support.

However, the nuances of achieving and maintaining trust can be elusive (Kramer 1999). To help in understanding the conceptual nuances, one recent research effort has identified three primary dimensions of trust: shared norms and values (perception being similar), willingness to endorse (built on confidence, expectation of reciprocal behavior, and trustworthy behavior), and perceived efficacy (belief about the way others will act and other's capacity to act) (Liljeblad 2005). The author argued that these dimensions and the attributes that they encompass can be used effectively for conceptualizing and measuring trust—a task that has been difficult for forest management personnel and research scientists. Once earned, trustworthy relations need to be protected too; they can quickly be destroyed by insincere or deceptive behaviors (Slovic 1993, Zimmer 1972). On-the-ground success can be most easily achieved by organizations that encourage the building of trusting relationships as the long-term goal of public interactions.

Uncertainty and Perceptions of Risk

Although they are very real concerns, uncertainty and risk are not easily addressed in a postfire context; often, few concrete answers exist. Recent public opinion research on the topic found views from across the risk spectrum. “Years of successful fire suppression by management agencies contribute to a feeling of control; the extent of most wildfires is reasonably limited and there is generally enough warning to be able to evacuate, thereby avoiding fatalities” (McCaffrey 2004b: 511). In other disaster situations, there is considerable evidence that people who survive one event believe it will not happen to them again, thus underestimating the potential risk and magnitude of a second event (Burton et al. 1993, Halpern-Felsher et al. 2001, Sattler et al. 2000). Repeated exposure to a hazard may even lead some to adopt a “disaster subculture” attitude where the event is normalized and residents become used to dealing with it (Tierney 1993). At the same time, the increase in fire awareness and preparedness after recent fire events and campaigns has also probably led to an increase in the perception of risks associated with living in or near forests.

It is likely that different parties will focus on different aspects of risk in making decisions after a wildfire. Forest management personnel and research scientists necessarily will be concerned with follow-up actions to reduce further risk to a forest ecosystem. Despite generalized public support for such ideas, when specific proposals are introduced for local landscapes, apprehensions may emerge. Some decisions will be easy to support, such as soil stabilization and minimizing flood damage near developed areas (Ryan and Hamin, in press); other decisions with greater

uncertainty of actions may be less likely to receive broad support. Judgments are likely to be related to personalized factors such as impacts on the source of peoples' livelihood (e.g., decisions favoring or prohibiting harvesting), changes to important recreation sites (e.g., new use limits, treatments in wilderness or roadless areas), effects on private property in the WUI, or concerns that forest management agencies are acting too quickly and without adequate information to support their plans (McCool et al. 2006, Wondolleck and Yaffee 2000). From the public standpoint, central questions in these decisions will involve which actions will be taken and where, as well as how serious, how certain, and how soon the consequences will be experienced (Shindler et al. 2002).

Addressing uncertainty and risk is difficult—largely because results are unknown and risks can only be calculated on the probability that an undesirable result will occur. However, two ideas seem helpful: (1) knowledge among individuals about existing forest conditions and management activities and (2) citizens' trust and confidence in forest management personnel (Fischhoff et al. 1981). Shindler et al. (2002) argued that the public's recognition of forest management problems and citizens becoming comfortable with potential outcomes are likely to best evolve from interactions in forest communities **prior** to major wildfire events—simply, residents become more at ease as they learn about the proposed alternatives as well as the individuals who will implement them. McCool et al. (2006) called this part of a “fire auditing” process, where an appraisal is conducted of the event itself including decisions before, during, and following the wildfire. The purpose is for forest

management personnel and citizens together to examine these decisions, learn from them, and recommend changes in policy. Thus, the effort becomes an important component of community recovery. Collectively, these ideas underscore the importance of building a mutual literacy of local ecology, as well as an understanding of the economic and social influences in a community, and then using a thoughtful public planning process—in effect, giving the uncertainty some certainty (Stankey et al. 2005).

We warn against the temptation to underestimate the uncertainty issue, particularly as it relates to relationships in forest communities. Overall, the general trend in the United States has been for citizens to be less tolerant of government personnel taking risks (Shapiro 1990). However, even when individuals have a low level of understanding about a potential threat or a new program is introduced, their apprehension over management decisions can be mitigated by trustworthy, reliable relations with those responsible for implementation (Earle and Cvetkovich 1995, Jacobson and Marynowski 1997, Siegrist and Cvetkovich 2000). In short, people will tend to perceive less risk and more benefits associated with proposed solutions. The greater the trust, the more citizens are likely to believe that wildfires can be controlled, that the extent of the wildfire will be limited, evacuation plans can save lives, and any resulting risks will be low (McCaffrey 2004b).

We also recognize that most postfire settings carry a certain stigma where creating additional risks is to be avoided. In these risk-averse environments, attempting new or untested ideas is not easily achieved, and resistance can come from

politicians, regulatory agencies, and citizen groups (Stankey et al. 2003). Wildavsky (1988) contended the most effective strategy for reducing this uncertainty involves visible, local trial-and-error experimentation. In short, to overcome uncertainty, risks may need to be taken. Jamieson suggested that, in these cases, we should think small and longterm; that is, it is better to put many small boats out to sea than a single Titanic (Jamieson 1994). Consider diverse projects and approaches and monitor the outcomes. Even in the best scenario, some things may not happen quickly or efficiently.

A good deal of the postfire uncertainty, as well as questions about risk, can be mitigated by multipartner relationships in forest communities. This suggests forest management agencies will need to be forthcoming about difficult decisions as well as the choices involved and engage the many stakeholder groups that show interest in forest management activities. On-the-ground evidence indicates the benefits of mobilizing citizens far outweigh shortcomings of their involvement. For example, in the aftermath of large wildfires in southern California in 2003, citizens renewed their efforts to organize their neighborhoods, protect homes, and communicate about effective risk-reduction strategies. Fire Safe Councils (and similar groups throughout the West) are devoted to providing information and resources to citizens (Fire Safe Council 2005). Although these groups can serve as an organizing mechanism, they have been most successful when forest management agencies work in cooperation to provide leadership, continuity, seed funding for small projects, and expertise for clarifying and addressing risks (Curtis et al. 2002, Shindler et. al. 2002). Such efforts

often reduce uncertainty and perceived risks by providing individuals with experience, familiarity, and a perception of control over the situation (Palm 1990, Perry and Greene 1983).

Communication and Outreach

The need for “effective communication” in the context of natural resource management is heard frequently these days. We pose no arguments with this premise here, but a basic understanding of the two components of communication is useful.

Content is what the communication is about; in other words, the information being conveyed. In most cases, this has been the focus of forest management agency communications. For example, McCool et al. (2006) outlined several areas where information can be useful to local citizens including descriptions of the extent of the ecological and social impacts incurred; new potential hazards such as floods and mudslides; needs for salvage, restoration, repair, and reconstruction; and lessons learned for future events. All such communications may be useful in postfire settings.

The second component of communication involves **process**, or how and why information is conveyed. Some authors claim that once content has been identified, everything else becomes process (Clark and Stankey 1991), intimating the importance of communication skills, public outreach, and knowing the target audience. However, good public process has typically been a shortcoming of our federal forest management agencies (Cortner et al. 1998, Shindler et al. 2002), although in wildfire situations some phases are handled more adeptly. For example, during and immediately following a wildfire, communication is important for conveying

information about emergency supplies, disaster assistance, and identifying potentially dangerous areas (Taylor et al. 2005). Accessible, accurate, and easily understood information can help alleviate public concerns and questions about what will happen next (Kumagai et al. 2004b, Taylor et al. 2005). Phone trees and the Internet have become invaluable tools at this stage; citizens want real-time information about their community. They also want reassurance about management activities and short-term actions; thus, the ability to have personal contact with forest management personnel seems essential.

Beyond this initial dissemination of information, the communication process for planning and decisionmaking is a multifaceted job—one for which forest management agencies have come under considerable scrutiny (e.g., Cortner et al. 1996, Toman et al. 2006). Standardized, one-way messages are widely criticized, as are meetings that follow traditional government testimony-style format with little two-way interaction (McCaffrey 2004a, Toman 2005). In short, people just do not like being “talked at.” As Shindler et al. (2002) argued, a common mistake for forest management personnel is confusing the provision of information with increased public understanding, and ultimately with public acceptance of forest management programs. This is not to suggest that technical information about forest conditions or restoration treatments is not necessary or useful for citizens. Particularly after a wildfire event, accurate details about potential next steps will be essential. But how and why information is presented, as well as the ensuing discussion, are just as important. Substantial research (e.g., Winter et al. 2002, Yaffee and Wondolleck 1997) indicates

that any practice, especially new or untested ideas in local communities, is more likely to succeed if the public understands the rationale for it, if citizens have been genuinely engaged in a hands-on give-and-take process (before implementation), and if they recognize the potential outcomes. Jamieson (1994:26) saw the need for meaningful forms of communication that fit the target audience as a way to understand citizen concerns and to positively alter behavior:

Facts do not speak for themselves. They must be interpreted and appreciated. Generally programs that provide information are not very successful in improving understanding or changing behavior. Serious thought must be given to what it means to educate both the public and policy-makers. As opposed to brochures and reports, people tend to respond to stories, analogies, examples, and so on. Education is more likely to occur in the context of a personal relationship than in anonymous information provision.

In postfire environments, forest management personnel can choose how they provide information and what the experience will be for citizens. The most positive public responses come from situations where managers are able to articulate in clear terms the purpose of a particular restoration treatment, including the ecological basis for it (Hull and Robertson 2000; Ryan and Hamin, in press). But forest management personnel have limited resources to spend across the spectrum of outreach activities and different tools work better for different objectives. In wildfire situations, Toman and Shindler (in press) identified that both one-way devices (i.e., brochures, newsletters, public service announcements) and more interactive approaches (i.e., interpretive activities, demonstration sites, guided field visits) contribute to successful

public communication strategies. Broad mass media formats are useful for general audiences and delivering large-scale (Smokey Bear type) prevention messages, whereas targeted, more interactive formats tend to be better for developing understanding and building people's capacity to participate in solutions. Additionally, information that focuses on local conditions and concerns can decrease citizen uncertainty and the tendency to blame someone (Kumagai et al. 2004b, Tennen and Affleck 1990). In sum, plans and practices that result from a well-crafted communication process are viewed as more credible and reliable.

The notion that effective communication is a product of effective planning cannot be overstated. This is particularly true in forest communities where communication strategies now often include developing community fire plans and relationships with property owner groups for fuel reduction and restoration activities (Toman and Shindler, in press). In such cases, it is important to organize an outreach plan **within** the management unit before approaching the public (Shindler and Gordon 2005b). Although it is important to bring the community into the planning process as soon as possible, initial internal planning by a core management team is a key element. Just as in planning any treatment or project, time should be devoted to organizing the outreach approach (Knotek and Watson 2006, Toman 2005). This initial step involves forest management personnel agreeing on how community members will be included and how to communicate with them in an organized and effective manner. By clarifying outreach objectives, personnel can focus on the most suitable forms of communication. For example, this process allows management units

to identify their relevant publics, what people might need to know to participate, the most useful timing of communications, the role citizens will play, where established relationships already exist, any planning constraints or apparent risks, which personnel are best suited to be the public contact lead, and so on. When it comes time to meet with citizens, the agency will appear better organized, be more capable of providing sound leadership, and be better able to respond to unanticipated events or challenges inherent in every wildfire event.

To summarize, steps to a more successful communication program include (1) going in with a plan, (2) choosing the right leaders and then supporting them, (3) taking advantage of existing resources, (4) getting out on the ground and into neighborhoods, (5) letting actions speak for intentions, (6) keeping in touch with the community, and (7) staying in it for the longterm (Shindler and Gordon 2005b). A comprehensive presentation of these ideas is provided in a recent DVD production, *Communication Strategies for Fire Management* (Shindler and Gordon 2005a), which draws from effective citizen-agency partnerships in forest communities. A companion field guide (Shindler and Gordon 2005b) outlines the stepwise approach for implementing these public outreach strategies.

Bringing Communities Together

Although large wildfires occur in forests, their most profound effects are felt by citizens in communities. This relationship is becoming most evident as forest management agencies attempt to plan their postfire approach to rehabilitation and restoration. Researchers have provided extensive discussion about the human

community response to natural hazards and disasters but, until very recently, little has been specific to wildfire. When faced with natural disasters such as hurricanes and floods, local residents tend to unite with the feeling that “we’re all in this together.” This cohesion phenomenon results primarily because these disasters tend to be viewed as uncontrollable events where victims are more-or-less randomly chosen (Burton et al. 1993, Slovic et al. 1987). Although often short-lived, this cohesion serves as a coping mechanism for victims and can enable local leaders to reach agreements with citizens on postdisaster recovery activities and priorities (Burton et al. 1993). In some cases, however, the temporary nature of citizen attention has a negative effect. Studies indicate that after disasters, there is a tendency for some residents to become apathetic to the possibility of future events, particularly if they have fared well or experienced so many other events as to normalize the aftereffects (Palm 1990, Tierney 1993).

Human-caused disasters, on the other hand, can result in blaming behaviors because they are seen as preventable and provide a subject for finger pointing (Cuthbertson and Nigg 1987). For citizens, major wildfire events may have elements of both natural and human-caused disasters; thus, postfire planning efforts may experience mixed responses (Carroll et al. 2000, 2005; Kent et al. 2003; Kumagai 2001; Kumagai et al. 2004a). For example, differences in how citizens view who is responsible for fuel reduction and defensible space programs that protect homes, as well as the importance of these activities, may divide communities. Basic beliefs about more/less involvement by government and whether citizens should accept greater personal responsibility for property are at the root of these concerns (Bright

and Burtz 2006). Responses after Montana's Bitterroot Fires and Oregon's Biscuit and B&B Fires show communities on both sides of these issues (Campbell 2004, Friends of the Bitterroot 2005, Olsen and Shindler 2006).

Forest management personnel are thrust into this difficult and complex social dynamic. They are often called upon to create plans to improve ecological conditions, and recognize their chances of success will be greater if citizens pull together in support. Research indicates that the job will be easier when cohesiveness already exists within a community, demonstrated by an initial well-being and a capacity to respond to both internal and external stress (Carroll et al. 2005). Well-being simply refers to the existing general components (social, economic, political) that contribute to the community maintaining itself (Kusel 1996, Nadeau et al. 1999). Capacity involves the community's ability to meet the needs of residents, respond to changes, minimize impacts, create opportunities, and take advantage of changing conditions (Kusel 1996). Both terms suggest that good leadership and a well-informed, motivated set of stakeholders are integral for success.

McCool et al. (2006) make a strong case that fire management agencies should provide the organizing framework for bringing communities together and that much of this organizing should manifest as planning before an event occurs. They describe steps to bridge the sociopolitical and environmental context including actions prior to, during, and after wildfire events. Their basic premise involves the need to (1) accept the "uncontrollable" elements in the fire equation (i.e., drought cycles) and identify variables that can be controlled (i.e., fire risks, mitigation measures), (2) consider the

consequences to communities, and (3) foster longer term planning. Their framework is intended to help all parties better understand the consequences of wildfire and build the capacity for communities to link decisions that occur at every stage of these events. This (admittedly) is a broad-scale conceptual approach; however, Ryan and Hamin (2006) found considerable support for these ideas in assessments following the Cerro Grande Fire in New Mexico.

Other researchers have suggested more specific approaches can also contribute to a community's ability to come together and reach agreement. For example, Shindler and Gordon (2005b) urged forest management agencies to take advantage of existing community networks that can carry the fire message to a larger audience. Property owner associations, watershed councils, and "friends" groups that already have a constituent base can be allies in building awareness and increasing public acceptance of management practices. Important, respected community members can help focus the message for citizens, effectively sharing the load and taking forest management personnel out of the perpetual "hot seat" of forest planning. Community members are particularly useful in identifying local trouble spots in need of active management. For example, Fire Safe Councils in California have been successful owing to the side-by-side work between citizens and forest management personnel. In other postfire settings, many such efforts are emerging throughout the Western United States. One community group in southern California was formed after the 2003 wildfires and has the mission of coordinating "financial, economic and social resources, and enhancing information sharing to help vulnerable mountain area

families to improve their quality of life” (Rebuilding Mountain Hearts & Lives 2006). Groups in other fire-prone regions in Montana, Idaho, Colorado, and Arizona are coming together with a similar mission—better preparedness for wildfire. In Oregon, citizens who participated in an agency/public tour of a wildfire site joined together to support a restoration plan that included erosion control and salvage logging (see footnote 3). These examples and the early success of community fire planning teams in response to the Healthy Forest Restoration Act (HFRA 2003), offer guidance on how to build capacity among citizens and bring communities together.

In a postfire environment, program development and use of local resources such as established social networks will be an essential part of community recovery (Carroll et al. 2005, Petterson 1999). These processes can help address concerns about uncertainty (Lang 1990) and bring local stakeholders together in both a physical and emotional sense (Daniels and Walker 2001, Gray et al. 2001). By promoting face-to-face interaction, humanization of the concerns of others, and acknowledgement of diverse viewpoints, collaboration leads to more cohesive communities and an increased sense of ownership in outcomes (Wondolleck and Yaffee 2000). These conditions are best achieved through local programs, rather than dictated from the regional or national level, and form the foundation for wildfire recovery efforts (McCool et al. 2006).

For these reasons, it is important to create opportunities to meet local citizens in their neighborhood setting (Shindler and Gordon 2005b). Residents care deeply about their home site, their backyards, and other familiar places in their community.

They have a stake in what happens there. Forest management personnel can help these committed individuals develop a better understanding of the surrounding resources and potential options, enabling them to work together to accomplish mutual objectives. But the problems considered need to be urgent to the community, not just to the forest management agency (Sirmon 2001). Issues such as erosion and flooding potential, continued recreation access, or protecting wildlife habitat may be the most pressing concerns for community members following a wildfire. Listening skills and patience are important attributes for forest management personnel; creating effective community partnerships reflects an iterative process. It is one that builds on itself and commonly requires continual “care and feeding” (Shindler and Gordon 2005b).

MANAGEMENT IMPLICATIONS

Forest management personnel are faced with many challenges after a wildfire. Questions persist about how natural resources will be restored, extracted, or left alone, as well as how the planning process will be conducted to reach decisions that will be broadly supported. Although each occurrence is different, made so by its own set of unique conditions and circumstances, we have summarized research and management experiences that can be useful in crafting postfire forest management plans. This section identifies a set of management implications that may be common across jurisdictional settings.

Acknowledge the Reality and Importance of Public Acceptance

The ability to adequately address citizens' concerns about postfire forest management efforts will influence a community's acceptance of resulting decisions. It will be important to acknowledge the reality of public opinion and the need for multiparty relations. Although most researchers and forest management personnel recognize the value in working toward public acceptance (Kneeshaw et al. 2004, Mascia et al. 2003, Thornhill 2003), skepticism still remains among the federal agency culture about the need to include citizens (Shindler et al. 2002). Yet, there is no denying that citizens will have numerous questions and concerns after a wildfire event and, in many cases, will have an expectation that their views will be included in recovery and rehabilitation plans.

To legitimize efforts for postfire planning, forest management personnel will need to recognize the factors that shape, sustain, and alter citizens' judgments about policies and the forest management agencies who will implement them. Three ideas may be useful. Stankey and Shindler (2006) noted that public judgments are **conditional**, often based on whether actions are fair to all stakeholders and if decision processes are inclusive of those who may be impacted. They also noted that public judgments are **contextual**, based on familiar, identifiable places that hold meaning for citizens. Thus, planning is ideally built around these places where people can see the relevance in proposed practices and become comfortable with the longer term consequences. This will involve discussions of uncertainty and perceptions of risk. To the extent forest management personnel can tell them, people will want to know

how certain and how soon the effects will be, particularly the “no action” decision of leaving burned landscapes alone.

Public judgments also are **provisional** (Stankey and Shindler 2006). Plans and decisions that people find acceptable today may fall out of favor depending on new factors that emerge. For example, judgments can change based on new science, success of on-the-ground treatments, or the performance of forest management personnel. Thus, maintaining a balance point among parties involves a continual process of monitoring, evaluation, and adjustment (Westley 1995).

In the postfire context, it will be useful to think of multiparty relations not as barriers, but as opportunities to ensure public access to planning processes and as a way to build an ecological literacy among the community (Orr 1992). These programs can provide a method to communicate with the public about important concepts as well as a way to learn from citizens about their concerns and priorities (Yankelovich 1991). It is also useful to recognize that public acceptance is not something an agency can directly control; instead it is more likely to evolve from an informed citizenry. Public opinion that derives from an understanding of the issues and the implications of actions is more responsible, stable, and consistent (Shindler et al. 2002). By giving credence to the idea of public process, forest management personnel acknowledge the constant tension between citizens, interest groups, and themselves, and provide a method for reaching durable decisions (Wenner 1990).

Building Public Understanding and Agreement Requires a Long-term Commitment

Building public support will require commitments of time, resources, and leadership to develop a shared understanding of forest conditions and practices. Postfire planning is an ongoing process that begins long before a fire occurs. The learning environment that evolves through all phases of fire (pre, during, post) can help citizens understand the implications and potential consequences that must be dealt with in the aftermath (McCool et al. 2006). Even when events result in unanticipated outcomes, the community is better prepared to respond if they have worked through the entire cycle together.

Large fire events may alter the questions we typically address in land management planning. In effect, the area has become a new landscape with different attributes. The old practices of planning and management may not be appropriate for this new landscape. Accordingly, personnel might ask, “what do we have now and what are the options available to us?” This also seems like a good opportunity for an open discovery process and finding community agreement on a suitable course of action. Deliberations will not only involve the options, but also questions about the potential risks, tradeoffs, and costs of each, as well as how long they will take to achieve desired outcomes. This is not likely to be a short discussion. It is rare that such information is readily available and, rarer still, when it can be laid out clearly. This will involve a commitment of resources and leadership to work through these new questions. Likely benefits include more than just finding potential answers. Discussion of problems and plans results in more stakeholders surfacing, who then

learn, interact, and enrich the pool of potential solutions (Shindler and Gordon 2005a, 2005b). Effective leadership is needed to structure the conversation and allow for a common understanding of environmental complexities. Such activities are costly, but a failure to attend to these questions and concerns is likely to be even more so.

Uncertainty and Risk are a Natural Part of Postfire Planning

For many citizens, it is the uncertainty of proposed actions that gets them excited. Forest management agencies will need to help all parties become comfortable with this idea, including some of their own personnel. The presence of risk will challenge forest management personnel to be forthcoming about difficult decisions and choices. It will not be enough to talk about 40-year fire-return intervals and expect this to have much relevance for citizens. We live in an era when postfire science is inconclusive and definitive answers are rare. This means acknowledging the limits of scientific understanding and the importance of on-the-ground experimentation, despite our inability to specify outcomes with precision (Stankey and Shindler 2006). This also means that scientists may need to play a more active role in public deliberations about postfire options. Opinion research from the Pacific Northwest shows that citizens and natural resource managers alike believe better decisions result when ecological scientists are involved (Lach et al. 2003).

There is another important component to this rationale. Because natural resource problems are complex and technical, and people have difficulty judging the accuracy of information, they often base their judgments on how much they trust the information provider (Steel et al. 1992-93). Instilling public confidence is not easy,

but it is important to managing in the face of postfire uncertainty. Thus, an atmosphere of meaningful, interactive disclosure greatly contributes to public perceptions of openness and honesty. Such an approach also helps everyone come to terms with the idea that forest management personnel do not know all the answers and that methods are needed for reaching agreement on “acceptable risk.”

Communicating the Wildfire Message Is a Complex Task

Forest management agencies often think their job is to develop information and deliver it to the public. However, confusing information provision with understanding, and ultimately public acceptance, is a mistake (Shindler et al. 2002). Information alone is rarely sufficient to produce change. Instead, citizen acceptance of planning decisions is most often linked to the quality of communications that stem from forest management agencies. Poorly communicated management plans are certain routes to frustration and disapproval. Alternatively, the ability to clearly articulate the purpose for a practice and its ecological basis is one crucial trait for achieving positive public responses.

Most all recent research in fire-prone communities indicates that interactive communication methods facilitate greater connections to local problems and are better at addressing citizens’ concerns (Toman et al. 2006). Simply, interactive approaches (e.g., field tours, demonstration sites, townhall-type meetings) provide greater flexibility to incorporate residents’ questions and to tailor forest treatments to the local context. Addressing questions together also gets everyone working on the same problem. It is the give-and-take of these exchanges that helps citizens become

comfortable with the options and reinforces a belief that forest management agencies can carry them out. Thus, it is not the information itself that leads to understanding. Scientific and technical facts do not speak for themselves; they need to be appreciated and interpreted (Jamieson 1994). This is best accomplished by well-planned, coordinated public outreach strategies that provide opportunities for personal contact and citizen involvement with forest management personnel (Knotek and Watson 2006).

Problems Are Always Local

Focusing on communities and the ability to adequately address familiar settings is essential to local participants. It is easy for people to agree on a general course of action; for example, national polls indicate that people support the concept of basic wildfire management and the need for fuel reduction (Brunson and Shindler 2004). However, a specific local policy that proposes to salvage log a well-known roadless area or to close a favorite recreation site can dramatically change the situational context in which judgments are framed (Milstein 2006).

To clarify concerns, Zinn et al. (1998) identified five questions that help explain how this contextual specificity plays out: (1) What target is involved (the site)? (2) What issue drives the action? (3) What actions are proposed? (4) What time factor is involved (when will it occur and for how long)? (5) Where will it occur? By increasing the specificity of plans for citizens, the likelihood of improving public understanding will also be increased. Although such detail can also mobilize opposition to a project, it is likely that this opposition would emerge at some point in

any case. The benefits of addressing these questions are apparent: plans and associated impacts are open and explicit, and there is opportunity for discussion, informed debate, and learning (Stankey and Shindler 2006). When focused on identifiable, local resources, these steps all serve to bring communities together to more effectively respond to postfire problems.

Shared Experimentation Allows for Cooperative Solutions

Meeting the challenges of postfire planning will require innovative solutions among federal forest management agencies, including the willingness for shared experimentation within communities. This will mean inviting the public into planning efforts and trying new management approaches, effectively giving citizens a sense of responsibility about decisions that are made. One of the best outcomes of a recent wildfire event might be that it paves the way to plan for the next one; or rather, it motivates people to take steps to prevent or reduce the severity of the next one. When communities escape a close call or have only minimal property loss in a wildfire, this can provide a window of opportunity to organize residents (Shindler and Gordon 2005a, 2005b). For example, tours of affected lands after a major wildfire event can help citizens understand the necessity of decisions, both for restoration and for additional fuel reduction. These discussions are particularly effective when technical specialists are included to elaborate on conditions and outline the alternatives.

There is strong evidence in southern California, Oregon, Montana, and Colorado—all places where large wildfires have occurred—that individual communities are taking seriously their commitment to defensible space activities,

including support of agency programs to treat public lands at the WUI (Deau and Vogt 2003, Vogt et al. 2005). The upsurge in community fire planning efforts after recent large wildfires in the West is a good indication of homeowner groups and forest management agencies working together. Projects at the WUI take on the character of shared experimentation. Within this atmosphere, more innovative ideas that go beyond “one-size-fits-all” policies become possible. In forest communities, this can also make them more achievable.

Participatory Processes Are Essential to Long-Term Success

Public responses and support are intricately linked to the processes used to involve (or exclude) citizens. After all, a major wildfire event has affected everyone’s forest community, not just the forest management agency responsible for managing these lands. How citizens are incorporated into decisions that affect their livelihood and quality of life is critical to their judgments (Shindler et al. 2002). One route is to listen to individual preferences and attempt to assuage individuals or interest groups independently. Another is to structure public processes to determine what a community of people acting together believe is right, not just merely what vocal individuals prefer. Policies based on shared community values often require engaging all relevant parties about what is best for a particular setting (Sagoff 1988). It follows that the public’s idea of fair treatment includes the quality of these procedures and the ability to be active participants (Tuler and Webler 1999). This ultimately translates to how citizens will feel about the decisionmakers.

A forest management agency's ability to publicly articulate objectives and to lead its stakeholders through a decision process is one key factor for achieving more fundamental, tangible on-the-ground results. Most interested people like to be part of the solution and citizens respond much more favorably when they feel ownership in ideas. We understand that public process is seldom swift; in some cases progress will be frustratingly slow. Here, it is important to recognize small victories; remember, the cumulative effect of group experience is a tangible dividend. Sometimes getting to know others around the table, realizing their concerns are common concerns, and building relationships are the **only** measurable benefits that accrue (Shindler and Neburka 1997). These should not be underestimated, as they often mean the difference between success and frustration. Each successive project then builds on the experience of previous ones. In the end, management programs that result from public partnerships are more likely to gain broad citizen support. The common thread that runs through all successful resource management decisions is the importance of trustworthy relations among citizens and agencies.

CONCLUSION

This summary has shown that planning in a postfire environment is replete with challenges. These forest landscapes are different from those forest management personnel typically administer, with different attributes requiring divergent strategies. Technical complexity and uncertainty characterize the problem, varied levels of public knowledge and interests are involved, and efforts to frame solutions often face an

interest-ridden political context. This mixture almost guarantees that finding common understanding and agreement will require multiparty remedies involving forest management personnel, scientists, policymakers, and citizens. By its nature, and the promise of more large wildfires in our future, the problem of postfire decisionmaking will be a continuing, long-term concern. It will require arrangements for innovation, experimentation, and collaboration that contribute to our knowledge base and influence our collective judgment.

**Chapter 2: Communication Strategies for Postfire Planning:
Lessons Learned from Forest Communities**

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ABSTRACT

Wildfires have grown in number and in size in recent years. Research suggests this trend will continue, making postfire recovery increasingly important to forest agencies and communities. Local residents look to agency personnel for leadership during these difficult times, yet personnel have little prior experience with ecological or social management after very large fires. Communication between the agencies and local citizens will be especially important in such uncertain times. This paper reports on results from 78 interviews with agency personnel and forest community members in five regions that experienced large wildfires on federal lands in 2002 and 2003. Findings underscore the importance of careful planning for communication between the agencies and citizens. Citizen participants expressed frustration with feeling left out or lied to about postfire forest planning. Agency participants noted the importance of being supported by supervisors when it came to the time, money, and energy necessary to carry out good public outreach and communication. Factors that contribute to successful communication in postfire environments are explored, as are barriers. The issues of credibility, trust, addressing uncertainty, and attention to special places surfaced numerous times in this research. Suggestions for future research are included.

INTRODUCTION

Wildfire management has grown increasingly complex in recent years, particularly in the West and in the Wildland-Urban Interface (WUI) where a steady population growth has resulted in greater risk to people and property. Recent trends suggest the process of recovering from large fires (>100,000 acres) will become increasingly important to forest agencies and communities (National Interagency Fire Center 2007). However, many forest management personnel are largely unprepared to cope with the ecological planning and public interactions that follow such events. Numerous factors exist that make postfire planning especially problematic.

The postfire environment is filled with a high degree of uncertainty and pressure for prompt action. Agency personnel may have little personal experience to draw on in these circumstances, as wildfires at this scale are often a one-time event in the career of a line officer or technical specialist on a particular national forest or ranger district. Additionally, while much is understood about silvicultural systems and harvest operations, there is greater uncertainty about ecological restoration of lands affected by major wildfire (e.g., Donato et al. 2006, Sessions et al. 2004, Thompson et al. 2007). Agency personnel are called on to make technical decisions regarding fire management and restoration, communicate current and reliable information to community members, and include them in postfire planning (McCool et al. 2006, Taylor et al. 2005). The postfire environment is filled with a high degree of

uncertainty and pressure for prompt action. Not surprisingly, such circumstances can result in considerable conflict over potential management actions.

To be successful, planning efforts will require an informed and supportive constituency. Research indicates that citizen knowledge and understanding of the rationale behind management practices is central to public acceptance of agency programs (Shindler et al. 1999). Accordingly, management personnel in fire-affected areas have focused their communication strategies on outreach activities to influence citizens' attitudes and understanding about forest restoration practices. However, the recent occurrence of numerous large-scale fires has exposed a research gap. While a growing body of research addresses communication in a pre-fire context, relatively little is known about the factors that influence outreach success of postfire activity. Communication strategies that meet the information needs and expectations of local citizens will be at the heart of successful postfire management.

The purpose of this pilot study is to identify federal management units that have recently experienced large wildfires and use these settings to examine the effectiveness of agency-citizen communications. Most of what is known about fire communications comes from research in pre-fire situations, particularly interactions with citizens about fuel reduction activities and defensible space programs. The intent here is to learn from both agency personnel and community members specifically about their experiences in postfire circumstances. Essentially, we are interested in identifying factors that lead to effective communication and that build stronger relationships, but we also wanted to know about the constraints that both groups

confronted. Ultimately, the goal is to provide information to management personnel so they are better prepared to develop their own public outreach approach following a fire event.

PREVIOUS RESEARCH

Just as the number of large wildfires has increased steadily in recent years, so has research on the social aspects of forest management in relation to wildfires. Across diverse regions, agency communication efforts influence citizen trust in the agencies to complete fuel treatments (Winter et al. 2002). One recent article examined the entire fire cycle (pre-fire, during-fire, postfire, pre-fire) from a social perspective and identified the major decisions that must be made during each phase (McCool et al. 2006). Agency communication was the one topic present in all phases. This research also made clear that decisions made in one phase influence the options available in other phases. Hence, agency outreach conducted pre-fire would influence communication during- and postfire as well, which would also lead into the next pre-fire phase. This conclusion supports other research in natural resource-based communities that suggested agencies and natural resource community residents are more likely to work together on current problems if they have a history of communicating and working together (Flint and Luloff 2005).

Pre-fire research

Prior research has primarily focused on communication in pre-fire or other natural resource settings. The major components of any communication message are

content, or what the message says, and *process*, or how the message is delivered (Olsen and Shindler 2007, Toman et al. 2006). While message content is a more clear-cut concept that can be easily catered to suit individual site needs, message process is less well understood. In one forest community, panel research conducted in a pre-fire setting suggested that most citizens did not agree that the Forest Service does a good job of providing information about its management activities, and the number of citizens agreeing that they did a good job was dropping over time (Shindler and Toman 2003). This research team further examined agency communication strategies for fuels management programs (e.g., guided field trips, visitor centers, conversations with personnel, public meetings, brochures, web pages, television messages) across diverse settings. While all programs were considered easy to understand, trustworthy ratings were more variable (Toman et al. 2006). Overall, guided field trips, brochures, and interpretive centers were the most highly regarded, while agency public meetings received the lowest scores. Of the eleven communication strategies that were studied in this research, interactive programs seemed to be more trustworthy than unidirectional ones.

This message that interactive programs are more highly regarded than unidirectional ones is not a new finding. Recent studies have suggested that two-way, interactive communication activities are also more effective at increasing understanding and support than one-way activities where citizens had no opportunity to interact with agency personnel (McCaffrey 2004a, Parkinson et al. 2003, Sturtevant and Jakes 2008, Toman et al. 2006). It has been theorized that this is true because of

how adults learn new material; that is, adults are better able to retain material when it is “hands on” and reinforced through an *exchange* of information (Parkinson et al. 2003, Toman et al. 2006). Site visits may also have the potential for increasing agency credibility because of their interactive, back and forth nature set in a meaningful, on-the-ground context (Toman et al. 2004).

Other research has focused on how communication activities can change participant understanding and attitudes. Loomis and colleagues (2001) found that participant knowledge about wild and prescribed fire increased after the introduction of informational materials on these topics. Toman and Shindler (2005) found that after participation in on-site outreach activities about prescribed fire and forest management, participant knowledge did increase, but a corresponding influence on participant attitude about these issues was not observed. In their models, the variables with the largest influence on participant change were initial levels of knowledge or attitude. Another research team found that while direct attitudes about forest management issues are not generally changed by agency communication, the strength of the attitude can be changed (i.e., strong opposition can be lessened) (Bright and Manfreda 1997). They also found in a fire management context that success of communication programs may be more dependent on the strength and direction of the attitude and the perceived credibility of the agency than the content and structure of the message (Bright et al. 1993). One finding common in many studies is the importance of thorough planning within the agency; what will be said, how it will be said, and who will say it (Olsen and Shindler 2007).

Postfire research

Postfire communication is less well understood, largely because until the last decade or so, opportunities to study the postfire context were few, far between, and difficult to predict and be prepared to study. One research team examined the use of guided field trips to the burned landscape (Shindler et al. 2004, Toman et al. 2008). The field trips improved citizens' understanding of potential actions and generated a substantial amount of good will among participants. Their confidence in the local Forest Service personnel also improved. Participants showed appreciation for the opportunity to see the burned forest first-hand (much of the landscape was closed to the public at the time) and discuss with agency personnel face-to-face the management options in a meaningful context.

Another research team evaluated communication in affected communities before, during, and immediately following a fire event (Taylor et al. 2005). Findings suggest citizens seek real-time and place-specific information, particularly about their properties and favorite places. The national media and agency information provided during and following the event was also found to be dissatisfying, outdated, inaccurate, and overdramatic. The importance of local networks was highlighted, as citizens relied heavily on local businesses and organizations for information. Local media and personal networks were also important. Such networks may provide a structure for improving the effectiveness and distribution of agency information.

Burns et al. (2004) took a case study approach with five postfire recovery efforts implemented immediately following fire events. Findings highlight the

importance of engaging local social networks, including community leaders and organized groups, to the successful implementation of rehabilitation projects. Through local networks, considerable volunteer forces were organized to complete large-scale restoration activities that otherwise would have overwhelmed agency resources. While accomplishing important ecological restoration on the landscape, researchers observed that community recovery was also occurring through these activities. This represents an important finding, as some of the most profound effects of a wildfire are felt by citizens in adjacent communities (Olsen and Shindler 2007) because recovery is a social process (Bolin 1994). Successful postfire management on federal lands may often require agency personnel to be as committed to social factors as they are to ecological concerns. Community outreach activities have an important role to play in these efforts.

The dynamics of postfire environments suggest additional factors may also be critical. For example, concerns related to risk and uncertainty are likely to be heightened, while citizen trust will be influenced by perceptions about how well the fire was managed (Kumagai et al. 2004b). Long-term relationships between the agency and local citizens will likely also be important (McCool et al. 2006). Because a large wildfire would likely be a first in any specific community, expectations about agency management practices and communication would be based on prior, pre-fire experiences (Olsen and Shindler 2007). For many citizens, pre-fire experiences with the agencies may be few, making the importance of a solid, trusting long-term relationship between agency personnel and local communities critical.

This prior research helps set the context for agency communication activities following a wildfire event. Findings suggest that successful outreach is not only a function of the content of information provided, but also how the information is presented as well as tangential factors including the credibility of the information provider, perceived relevance of the topic, and the prior knowledge and experience of participants. This study provides an opportunity to explore how these factors contribute to communication success in postfire environments.

METHODS

This study uses qualitative interviews to explore participants' experiences with citizen-agency communication in postfire contexts. Interviews were conducted during 2005 and 2006 with agency personnel and community members at five locations, each of which had been affected by large wildfires during 2002 or 2003 in the wildland urban interface on federal land. Study sites were purposively chosen to include a range of fire sizes, local community sizes and characteristics, and physical environments. We knew that many contextual differences existed across sites but as the literature review in the previous chapter suggests, there might also be common problems or successes. It is these commonalities we hoped to expose with the intent they may be useful and meaningful to managers across many settings.

Study sites

Study sites included communities adjacent to five national forests:

Rogue River-Siskiyou NF (Oregon): Communities represent a wide range of cultures and economic livelihoods, ranging from towns with a strong history of timber dependency where mills still operate today, to settlements with a strong focus on environmental preservation, to port cities with a large fishing industry, to prospering art communities with a strong tourism income. The cities of Grants Pass, Medford, Brookings, and Ashland, as well as small dispersed settlements throughout the Applegate and Illinois Valleys and other communities west of the I-5 corridor are included. The landscape is equally diverse with the rugged slopes of the Siskiyou range, including protected wilderness to more typical WUI forested areas. The major event was the 499,000-acre Biscuit Fire in 2002.

Deschutes NF (Oregon): Although the cities of Bend and Redmond were impacted, the areas most affected by fires were the city of Sisters and the small neighborhoods and resort communities in the more heavily forested areas to the west. This includes the Metolius Basin, popular among retirees and recreation visitors. A series of fires has hit the area since 2000, including some that burned houses; the largest was the 91,000-acre B&B Complex Fire in 2003 which prompted the evacuation of Camp Sherman on two different occasions.

Pike-San Isabel NF (Colorado): Adjacent communities are representative of the Colorado front-range. Denver is noteworthy because fires threatened the city's public watershed and water supply. Many smaller communities in the WUI to the south and west were hit the hardest by the 138,000-acre Hayman Fire in 2002.

Residents in this region also had the memory of major flood damage after a fire in the mid-1990s.

San Bernardino NF (California): This forest borders the Los Angeles Basin and serves many of its population as a recreation area and as a place for second homes in the WUI. The sites most affected by the Old and Grand Prix Fires (160,000 total acres) in 2003 include the numerous forest and canyon communities on the slopes surrounding national forest outside of San Bernardino. Other areas substantially impacted were the resort and other small communities in upper elevations, including Lake Arrowhead, Crestline, and Big Bear Lake. The combination of fires in 2003 burned hundreds of homes.

Cleveland NF (California): This forest is fragmented around numerous small but growing communities typical of the spreading southern California metropolis. Many are bedroom communities for commuters and are tucked away into canyon areas up against the forest boundary. The sites hit hardest by the complex of fires (Paradise, Otay, and Cedar; 375,000 total acres) in 2003 included El Cajon, Ramona, Alpine, and Lakeside east of San Diego where over 2,600 homes were burned and more than a dozen lives were lost.

Interviews

Interview participants were purposively chosen to include individuals who were within close proximity to the fires and, thus, had personal experience with the research topics. This included line officers and technical specialists in the forest agencies (i.e., Forest Service, Bureau of Land Management) and group leaders and

members of affected communities. When potential participants were first contacted, it was explained that this was a Forest Service-funded research project being conducted by an Oregon State University College of Forestry doctoral student. It was also explained that their identity and responses would be confidential and that any documents that resulted from these interviews would include only general identifiers (e.g., “agency person”). Arrangements to meet were then made at the convenience of the participant during the date range when an interviewer was scheduled to be in their community.

Most interviews took place face-to-face, though some were conducted by telephone. A total of 78 individuals were interviewed by one of three project researchers. Of these interviewees, 24 were forest agency personnel and 54 were community members. Interviews took place in participants’ homes, offices, and in vehicles while touring the burned landscape. Most interviews were between 45 and 90 minutes long, though a few lasted more than 2 ½ hours. The interviewer first briefly described the project and the intended use of the data that was collected. Permission to digitally record the interview was requested and granted in all cases. With as few prompts as possible, the interviewer then followed an interview protocol and took notes throughout the discussion. Participants described their experiences with agency-citizen communications and provided insight into what has worked, what has not, and contextual factors that influence success in postfire settings. Contact information for additional interviewees was solicited from initial participants as well, until the research topics had been satisfactorily addressed (Robson 2002). At the end of each

interview, the participant was asked if they had any additional questions and the interviewee gave the participant contact information for the project.

As soon as possible after the completion of the interview, the interviewer developed field notes to capture as much as possible about the data collection. Interviews were then transcribed approximately 90% verbatim (off-topic discussion was abbreviated), generally within a few hours or days of the event.

Data Analysis

Analysis consisted of coding the data with guidance from the research and interview questions, resulting in standardization of the data into categories and sub-categories (Robson 2002). The first review of the text was conducted line-by-line with open codes, to fully tag the subjects covered in each interview. With the second review of the text, codes were then grouped into themes relevant to citizen-agency communication, which were more thoroughly developed with references to the original content and context of the data (Babbie 2001). Key findings were then identified. Because this was a pilot study, the intention was to capture learning experiences from affected individuals.

The intent in the following pages is to report on conversations with agency personnel and citizens by noting points common across these settings that are relevant to the success and/or difficulties associated with citizen-agency communication during postfire forest management planning and decisionmaking. This approach is useful to time-strapped forest managers who often need information in an accessible, summary form. Although these findings may not apply everywhere, it is likely they provide

examples and ideas that managers can adapt to their own situations. This presentation style serves to focus on the objective of lessons learned. Thus, five primary areas of importance are presented, each followed with key points reflecting specific ideas as well as interview quotes to further illuminate contextual relevance. To help protect participant confidentiality, and because the focus is on the common themes, specific quotes are attributed by state (CA, CO, OR) and to the type of respondent (agency or community member) rather than with more specific identifiers.

FINDINGS

Lessons learned about citizen-agency communication from the five study sites are presented here with a focus on issues managers can address at the local level. Findings are grouped into five themes: 1) complexity of communication, 2) communication process, 3) working with community groups, 4) pre- and during-fire relations, and 5) teachable moments.

Complexity of communication

Many managers in this study recognized this new era of large wildfires, and how it involved experiences outside their previous knowledge and understanding.

The fact is, we learned that judging our actions based on our past experience was not adequate for this set of fires. There's been no experience like this during our lifetimes, or our parents' or grandparents' lifetimes. (CA, agency member)

Despite this uncertainty, respondents identified a series of suggestions and ideas that contribute to an agency's ability to operate in this complex communication environment.

Have an internal plan for community outreach

Some responding agency personnel saw the importance of organizing within their work unit before engaging the community. They recognized the need to plan their communication approach just as with any other management activity; others lamented they had not done so.

A failure in our communication effectiveness could have been a fatal flaw... we developed protocols to maintain consistency within the agency. (OR, agency member)

Employing this strategy allowed agency personnel to first agree on how citizens (property owners, members of interest groups) would be included and how to communicate with them in an organized and effective manner. Managers also saw this as a way to keep the message consistent and the information more accessible to the public.

Contradictions can create confusion and unrealistic expectations among the public. (CO, agency personnel)

In summary, management teams reiterated the need to be clear on their own objectives, to consider the community's expectations, and to assess internal resources for accomplishing the outreach job.

Have the “right” people in the communication job

Both agency and community respondents recognized the ability to genuinely communicate with the public is a necessary, but often rare, talent, and many suggested having the right person in the lead was essential. They identified these individuals as well informed, able to think on their feet, and comfortable talking to individuals, groups, and the media.

The key is finding the right people with the right skills for the position.
(OR, agency member)

To a large extent, success has been based on personalities. The type of individuals the Forest Service has here makes the difference. (CA, community member)

Several respondents also noted the best person for the job is an agency member who already has established credibility and trust with local citizens.

If I had it to do over again, I would use existing staff who have connections to the community. (CO, agency member)

Several agency participants also brought up that outreach staff need adequate training. When individuals with no experience were put in lead positions, the entire effort suffered.

Fire information is seen as a need during the crisis, but the agency doesn't see there is a need to train people for that role. (CA, agency member)

Many recognized that communicating with citizens immediately after the fire is out also pays dividends, potentially leading to increased public support for postfire activities and decisions. One respondent suggested additional resources for community engagement could have improved outcomes.

More outreach resources could have decreased controversy and increased acceptance. (OR, agency member)

Engage the public about big picture ideas and find common goals

Many individuals spoke about the need for all parties to consider which specific forest values were at stake and to agree on a few common goals. Identification of a “common enemy” helped several communities agree on management practices that had previously been disputed. Agreeing on what a recovered forest should look like (desired future conditions) is a useful step.

If you want to create unity it is very useful to have a common enemy. The bark beetle was our red flag and our common enemy was the dead trees. (CA, agency member)

It’s no longer about hugging every tree. It’s about a healthy forest... a healthy forest is more fire resistant. Now we’re all fighting for the same thing. (CA, community member)

After a fire, there are often multiple options including restoration for a range of factors, salvage harvest, and leaving the forest to recover on its own. When considered from a landscape perspective, each option may provide a relevant contribution for a recovery plan. To reach agreement on an overarching goal,

respondents highlighted the need to discuss the contributions each individual action can have towards this goal.

We all agree. We don't want it to burn down. This cuts through all the barriers. (CA, community member)

Everyone agrees on need to reduce density for forest health... we need to talk about what the forest will look like, not the volume cut. (CA, agency member).

Target controversial issues (don't avoid them)

Everyone agreed that most postfire plans involve difficult decisions. Both agency and citizen respondents also recognized it was in no one's interest to sugar coat or soft pedal the more controversial ones.

I hate it when they blur the truth. If this EIS is about economic recovery, don't talk about restoration as the purpose. I think it becomes offensive and it harms the credibility of the agency and the individuals. (OR, community member)

Sometimes I think we should just be upfront and say this plan is about economic recovery. (OR, agency member)

Some respondents indicated strong beliefs about what the agencies do with public input and who actually makes the final decisions. Many hinted at a larger political interference in what they argued should have been a local-level decision.

The Forest Service held the meeting just because they are mandated by law to meet with the public... they already had their minds made up. (OR, community member)

The administration has directed them to do postfire logging. (OR, community member)

Many also noted how the salvage logging issue changes the nature of the discussion, especially in Oregon and Colorado.

There's often support for everything but salvage. (OR, agency member)

Recognize the role of emotions and uncertainty

Many respondents recognized a wildfire affects an entire community of individuals, not just those who have the job of restoring forest conditions.

It's completely understandable why people are mad. Some of them lost everything. (CA, agency member)

A range of emotions were noted among affected citizens, from simple curiosity about the extent of the damage to blaming the agency for allowing forest conditions to become more conducive to wildfire. Many individuals responded positively when the agencies acknowledged where they did not have solid answers and how citizens might feel about this. Managers also noted the lack of agreement on how to proceed after a fire.

We appreciate it when the Forest Service acknowledges uncertainty. (OR, community member)

Key thing is there is a lot less professional, political, and public understanding on what you do after a fire than what you do before a fire. Before a fire, the public generally supports thinning, reducing fire

risk, and protecting big trees... after a fire, research, professional understanding, and public opinion are not conclusive. (OR, agency member)

A number of agency respondents noted their own uncertainties, particularly around the salvage issue. They acknowledged few guidelines were in place and that a mechanism for paying for recovery efforts beyond the Burned Area Emergency Response (BAER) team's initial response was needed.

This postfire situation is a relatively new phenomenon... this is a part of land stewardship we haven't figured out yet. (OR, agency member)

You've spun an idea to the public and gotten buy-in, then it doesn't happen... it challenges our credibility that we haven't followed through on things. (OR, agency member)

When agencies were unable to follow through with plans because of a lack of funding, community members voiced that they felt misled. Thus, several agency members took the approach of "under-promise and over-perform."

Communication process

Agency respondents acknowledged they tend to measure communication success by counting products rather than their impact or effectiveness. Conversely, many citizen respondents viewed the agency's communication tactics as a one-way flow of information that ignored their interests and concerns.

The Forest Service has the public input process down... they just ignore responses. They already had their minds made up. (OR, community member)

There was a real sense from respondents that the old ways of disseminating information are simply not enough, and that simple information provision such as press releases was not very successful at improving public understanding or changing behavior. Participants were particularly critical of the limited role of the media in communication.

Using the media is one-way communication; it's not the best way of getting information out. (CA, agency member)

The media just transmits sound bites. We need real education and new methods because traditional approaches are unsuccessful. (OR, community member)

This response was typical among study participants who recognized that citizens listen to and gain understanding through numerous means, and these most often occur in the context of personal experiences in their communities. This is particularly true in postfire settings where people have attachments to specific places that have been affected and they want to know the particular details of proposed actions.

Citizens and agency personnel alike acknowledged the traditional National Environmental Policy Act (NEPA) approach is just not sufficient for postfire planning. Many were in favor of new outreach strategies that helped provide real education about problems and helped gained public acceptance for actions. Many management units were trying new ideas to reach out and build understanding. Methods viewed as positive and helpful in gaining better cooperation from communities included:

- meetings in local communities (even neighborhoods) where they could talk with and listen to residents

- small workshops with subject experts at the table to answer questions
- demonstration sites where citizens could see the results of different treatments
- interactive field trips with personnel to discuss conditions, problems, and options
- home inspections to offer advice on creating defensible space
- regular updates on progress to organized groups
- targeting groups at both ends of the preference spectrum

One idea employed on the Deschutes NF after the B&B Fire generated considerable good will among community residents. Guided field trips to the affected landscape were conducted by personnel on the Sister's District. Following the tours, participants indicated an increased level of understanding and support for fuel treatments and forest restoration activities. Even more striking were responses showing a substantial increase in participant confidence in Forest Service personnel (Toman et al. 2008). Overwhelmingly, respondents expressed appreciation for the opportunity to observe the fire effects first-hand and interact with agency professionals and discuss management options in a meaningful context.

Public tours were going before the smoke was out... we gained access to areas that had been closed. It gave us a sense of what was going on and a chance to talk about prior treatments. The availability of key staff was really great. (OR, community member)

Some suggested that addressing questions together, as is possible on a tour such as the one described here, can get everyone working on the same problem. One manager noted citizens need to “see, hear, taste, and feel” the situation first hand in order to understand what is being proposed to address adverse conditions.

Working with community groups

Numerous agency respondents noted the emergence of local groups who organized around fire issues, including the value of their participation. In several communities organized groups focused their efforts on rehabilitation projects. This local involvement provided the necessary volunteers to complete large-scale restoration activities that otherwise would have overwhelmed agency personnel.

There wasn't enough emphasis on working with the community (groups) before the fire, but afterwards we saw that it was a better way to keep people informed. (CA, agency member)

These activities not only resulted in important ecological restoration but also contributed to the emotional recovery of communities by bringing people together. Many also noted working with community groups lead to increased acceptance of decisions.

On the Deschutes, we don't even think of making choices on the land without input from the public. We find it leads to a better product and we get better support. (OR, agency member)

Another point respondents made was that citizen groups have a different set of abilities for outreach. They have a flexibility to communicate in ways that agencies cannot. Citizens enjoy a peer-to-peer relationship, rather than the government to the public.

Local focus, local leaders make the difference. (CA, agency personnel)

I think the answer is the Fire Safe Council (organized by citizens in California). There are a lot of people in these communities who don't like government... they are more likely to get involved in activities implemented by the FSC. (CA, agency member)

Local community groups are able to contact people more quickly by tapping into established communication networks like group meetings or phone and e-mail trees.

The FSC has a tremendous network of individuals and ability to motivate people locally and gain their commitment. (CA, agency member)

Agency respondents also noted these groups are often comprised of people who have the skills to manage volunteers. Many are talented and qualified individuals who gained their skills from careers in the workplace—business, education, government service—and are motivated to help restore their community and local forests. These groups also now include a growing number of retirees who have the time to organize others in community efforts. This has been most notable in producing community wildfire protection plans for fuel reduction activities around neighborhoods.

We just don't have the organizational skills and manpower for organizing volunteers, but we do have a lot of people who are willing to work because they live near or recreate in the forest. Fortunately, local groups can do the organizing. (CO, agency member)

With talented citizens who have a sincere interest in local conditions, many managers recognized it makes sense to enter into partnerships with organized groups. In most cases, everyone is working towards a common goal.

The bark beetle infestation put all of us on the same side of the fence because it's no longer about keeping every tree. It's about a healthy forest. (CA, agency member)

Community groups also provide a way to communicate examples of success.

It was noted that some are organized to promote citizen education and have helped create demonstration sites, while others are more focused on protecting neighborhoods and getting homeowners involved in defensible space activities. In any case, examples are set from neighbor to neighbor and the message is carried to others.

Community cohesiveness is the biggest factor... the fire safe model is useful for bringing communities together. (CA, agency member)

Once agency-group partnerships were formed another benefit accrued in some cases. Local groups mediated between a frustrated general public and the agencies who are trying to accomplish projects.

When the community initiates public meetings there is a lot less agency bashing and its much more productive. (CA, agency member)

Pre- and during-fire relations

A number of agency respondents noted the necessity of good community relations prior to a wildfire. They recognized that when the agency, citizens, and business leaders had already built strong relationships they were able to come together more quickly after a fire event. But how well agencies communicated with citizens during the fire also influenced their ability to work effectively within the community.

No agency has enough manpower or ability to do the job by themselves, so we built relationships out of necessity. (CA, agency member)

During a fire citizens seek real-time and place-specific information (e.g., is my home affected? when can I return?). If homeowners cannot get timely information from fire personnel, they may be less likely to trust agency communications afterwards.

Some citizen respondents thought it may be easier to develop management alternatives prior to the fire event when time allows for greater discussion and evaluation of the options.

Have discussions ahead of fires...make deals before it hits (regarding salvage) to allow prompt removal. (OR, community member)

However, it is difficult for agencies to predict the level of disturbance that comes with a large fire. Consistency in planning activities is also a problem when personnel move on to other locations.

The prior plan didn't anticipate that 57% of the watershed would be hit by catastrophic fire in less than five years." (OR, community member)

The continuity of staff is important... transfers can decrease trust that has been built." (OR, agency member).

The community's history together appears to influence success. Some even suggested communication over time is key for reducing the complacency that sets in after the fire is over and people turn their attention to other things. In the end, the

long-term quality of those interactions seems to help relationships endure mistakes or disagreements.

I can't imagine not having our history (with these groups). It only comes from doing stuff together. (OR, agency member)

People here know what we do and what we care about... some are still asking hard questions but there is a willingness for things to move forward because they are more trusting of us." (OR, agency member)

Teachable moments

Managers often noted the advantage of using real experiences to "show" people fire conditions instead of just talking to (or at) them. The situation becomes more relevant when people can see things for themselves.

I show houses that had defensible space and ones that didn't and I tell them fuel is one leg of the fire triangle we can break... I say 'you may be on your own' and that gets them thinking. (CA, community member)

With the drought and the bark beetle infestation came the realization that we're living in a tinderbox... we changed our primary message to 'it's not if, it's when.' (CA, agency member)

Agency personnel suggested demonstration sites are an excellent place for such conversations and allow people to see how management activities are implemented on the ground. People responded better to visual images and ideas they could place in a meaningful context. Such opportunities seemed particularly effective at targeting the full range of citizens.

If the Forest Service doesn't provide a rationale for decisions, the public will never understand specific treatments. (CA, agency member).

We spend a lot of time on the ground with diverse groups, not just those who are supportive. (OR, agency member)

After a big fire has occurred, the window of opportunity is wide open. Some personnel noted that the fire captured the public's attention, making it easy to capitalize on what people see and learn from the event. Many used this time to build increased awareness of what makes for a healthy forest and change opinions about thinning activities. Most all Forest Service respondents noted an increase in support for thinning programs after a fire.

Residents in Palomar Mountain didn't want to cut down anything... now they understand fire ecology better and see they have too many trees. Now they embrace removal of dead and even some green trees. (CA, agency member)

We got the public out there to talk to them (about the fire) and we listened to what they thought about salvage. (OR, agency member)

Getting people out in the field was an easy way to get community perspectives. This has really benefited us ... we get better support when we ask for public input. We recognize the value of tours as a teaching tool. (OR, agency member)

It was also noted that learning experiences are just as important for agency personnel. A number spoke of the need to have a way to share experiences across management units.

We constantly reinvent the wheel. We've gone through the Panorama Fire, the Old Fire, the Bear Fire; it's the same issues over and over. We can't get through the hoops fast enough because no one remembered the lessons from past fires. (CA, agency member)

Community members recognized this situation as well, and as even more organized groups come forward they will be looking for the Forest Service to provide strong leadership in setting strategies after large fires.

DISCUSSION

Postfire forest management on federal lands is complex ecologically and socially. This paper explores citizen-agency communication strategies at five postfire sites, with a focus on commonalities across sites that may be applicable in other locations. Data was collected from both citizens and agency personnel, allowing examination of many themes from both sides of the communication process. Several findings are noteworthy.

First, it seems essential that forest management personnel recognize the complexity of the communication situation in postfire contexts and be better prepared to handle it. Inheriting the aftermath of a 200,000—300,000 acre wildfire is likely to be career event for most resource professionals. The ramifications are complex. The media has brought regional or even national prominence to the fire, many homeowners are uncertain about what happens next, special interest and community groups line up on both sides of potential actions, and all decisions seem to be time-sensitive. This level of disturbance to forest systems and surrounding communities puts a premium on

organizational competence and support for personnel who find themselves in leadership roles. Agency respondents in this study, as in previous research (Toman 2005), identified internal outreach planning and careful selection of communication personnel as helpful to their ability to navigate the postfire environment. Once an outreach plan is developed, it becomes easier to identify the skills necessary for the communications job so that appropriate candidates can be selected. Most important seems to be that they have a natural ability to engage people in thoughtful consideration of a problem and also listen to them (Shindler and Neburka 1997, Toman et al. 2006). Giving credence to the outreach job is a way for the entire management unit to offer support to personnel who are responsible for engaging and informing the community about physical recovery efforts.

Other helpful practices include finding common goals through discussion of big picture ideas and targeting controversial issues rather than avoiding them. Management units that target tough issues and get the public involved in discussions early are seen as more proactive and honest. Those who do not may be viewed as attempting to hide something and can have difficulty gaining the public's trust (Brunson 1992). National politics also play a role in some postfire planning processes. Creating realistic expectations about what is possible within federal guidelines can give both managers and citizens more open and honest parameters for finding solutions. Acknowledging emotions and uncertainties is also appreciated by citizens, and can be viewed as genuine care and concern for the community (Olsen and Shindler 2007, Stankey et al. 2005). Thus, it is important to be responsive to public

comments and concerns. Providing a means to learn about the severity and extent of the fire as well as the potential management options is a next logical step.

A second notable finding is the prevalence and importance of interactive communication strategies in many of these research communities. Overall, if agency personnel do not take the time to engage citizens about management activities, it is unlikely community members will understand the dynamics involved or go along with untested plans (Burns et al. 2008, Shindler et al. 1999). Residents care deeply about their homes, their backyards, and familiar places in their community and nearby forests. They have a stake in what happens there and want agencies to be responsive to their comments and ideas (Shindler et al. 2002). Thus, projects must be seen as urgent and relevant to community members as well as to the agency (Olsen and Shindler 2007). Outreach programs are a way to listen, as well as inform, and ultimately can build understanding of planning and decision process (McCaffrey 2004a). Simply, these more interactive approaches provide greater flexibility to incorporate the public's questions, concerns, and ideas into the planning process (Toman et al. 2006). Local context is very important to community members, and interactive outreach approaches give managers the opportunity to learn what the key contextual issues are (Sturtevant and Jakes 2008).

The alliances that can be formed with community groups is the third notable point from this research. In most cases after a fire, residents are hungry for information and will often turn to relatives, neighbors, or community groups to get the latest updates as well as to air their feelings (Taylor et al. 2005). Making progress in

postfire settings means resource professionals will need to be as attentive to social factors as they are to ecological concerns. Partnerships with community groups have an important role to play in these efforts. Some management units have recognized how to harness the ready-made communication networks in place with many community groups, and how effective the peer-to-peer relationship can be for disseminating and soliciting information (Burns et al. 2008). There is also great potential for community groups to actually assist in organizing volunteer efforts and accomplish physical restoration activities. Agencies will need to empower community groups to play an active role for this to be successful. In this effort, it will be important to recognize that the public's interests usually are in specific locations (e.g., around subdivisions, recreation sites, old growth or protected areas). Thus, planning at a larger watershed or landscape level may be beyond their initial interest or even their scope to fully grasp (Olsen and Shindler 2007, Shindler 2000). In short, many will find it difficult to organize around projects unless there are recognizable boundaries or there is geographic significance to their efforts, which in many cases community groups can offer.

The fourth notable point is the need to recognize postfire success is rooted in pre-fire and during-fire actions. No single event occurs in isolation from other actions, even recovering from large wildfires (McCool et al. 2006). How well agency personnel have worked with and included citizens in pre-fire planning activities will have carry over effects (Burns et al. 2008, Sturtevant and Jakes 2008). The communities in this research that had the most solid, trusting relationships in place

prior to the fire event seemed to experience the greatest cooperation and least conflict during postfire planning. Efforts towards building a strong community relationship also give managers the chance to know their community well, allowing future discussions and planning processes to better reflect community concerns and special places (Sturtevant and Jakes 2008). A next step may be to discuss postfire activities and ideas *before* a fire occurs. This may allow faster implementation after a fire event, increasing the effectiveness of many postfire management strategies.

The final point is the opportunity to build understanding among citizens and to bring people together in agreement after a fire through teachable moments. Managers often noted the advantage of using real experiences to “show” people fire conditions instead of just talking to (or at) them. The situation becomes more relevant when people see things for themselves. Discussions are likely to erupt around real life stories and personal experiences (Jamieson 1994). Opportunities abound after a large fire has occurred to take interested citizens out on the burned landscape, discuss what happened, how the fire was handled, and potential activities that may occur during immediate and long-term restoration efforts. It is also a chance to learn about individual’s preferences, local knowledge, and locally desirable outcomes (Carroll et al. 2005, Toman et al. 2008). Managers noted they could also utilize a “lessons learned” agency summary, as they acknowledged many sites had gone through these postfire motions but they seemed to be reinventing the wheel each time.

CONCLUSION

This research helps set the context that surrounds agency communication activities following a fire event. The above findings suggest that successful outreach is not only a function of the information provided, but also the method used to provide information and the role that citizens are encouraged to play. We interviewed numerous individuals, all who were directly involved in fires, about just how important issues of credibility, trust, addressing uncertainty, and attention to special places are to citizens. This study provided an opportunity to explore many of these factors and how they contribute to successful communication in postfire environments. The take-away message may be that these environments should not be treated like any previous management challenge. Because of issues of uncertainty, special places and their recovery, and of trust and prior citizen-agency relationships, the postfire social arena is different than any other setting encountered before. This new and different setting requires special attention to communication and outreach. Local citizens are anxious to get information and are listening intently. Much can be learned from events within a community, and from other experiences across the West, but personnel must carefully sort out their own circumstances and apply lessons learned in the local context. This research identified many commonalities across five sites, but differences abound too and must be addressed for outreach and eventual implementation to be successful in the long-term.

Future research is warranted here. This pilot study addresses how citizens are affected by agency planning after fires, but there is a great deal more to learn. It is

clear many citizens have much at stake and are attentive to decisions an agency makes and how these affect their daily lives. It also appears there may be miscommunications and misperceptions that affect the public's trust in the agencies to effectively manage after fires. A next step might be to expand the scope of this project by surveying a larger body of the public. Specific areas to target include public trust levels in the federal agencies and whether postfire forest planning and decisions have affected that trust, public opinion about specific agency postfire outreach activities, and public acceptance of postfire management strategies across different landscapes. With replication across multiple postfire sites, it can be determined whether patterns exist, offering agency personnel in the position of managing future fires some potential starting points for planning outreach activities. This type of research would be useful to agency personnel, as it would give them a greater understanding of how their local publics are affected by postfire management.

**Chapter 3: An Examination of Citizen-Agency Interactions After Large Fires in
Two Oregon Communities**

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ABSTRACT

Wildfires have increased in number and size in recent years, making postfire forest management an increasingly important topic. Citizen-agency interactions, citizen trust, and citizen acceptance of management strategies are central to successful planning and decisionmaking in postfire settings. The purpose of this paper is to improve understanding about citizen-agency interactions concerning forest management after large wildfires on federal lands. In this study citizen opinions from the attentive public are evaluated in two locations: central Oregon (near the 2003 Bear and Booth Complex Fires) and southwest Oregon (near the 2002 Biscuit Fire). Results suggest an agency's commitment to long-term interactions with citizens influences citizen trust in the agencies and acceptance of postfire management strategies. There is broad acceptance for several postfire forest management strategies (i.e., erosion control, replanting, reseeding) at both sites. However, acceptance is highly dependent on trustworthy relations. Further, results suggest it is not enough to simply offer opportunities for public engagement; citizens need to feel that these activities were meaningful opportunities to participate. Although results differed between locations, overall the majority of respondents did not agree with how the local Forest Service and BLM handled forest planning after recent fires. Findings from this research indicate that positive citizen-agency relations will need to be developed well before a fire occurs if postfire actions are to be timely and supported by local communities.

INTRODUCTION

The magnitude and severity of wildfires in the western U.S. has greatly increased in recent years (National Interagency Fire Center 2007), particularly in the wildland-urban interface (WUI) where steady population growth has resulted in greater risk to people and property. With these trends expected to continue in the future, the process of recovering from large fires (greater than 100,000 acres) will become increasingly important to forest agencies and communities. However, many forest management personnel are ill prepared to cope with the agency-public interactions that follow such events (Olsen and Shindler 2007). Numerous factors exist that make postfire planning especially problematic.

The decisionmaking environment after large fires is filled with a high degree of uncertainty, coupled with pressure for prompt action. Agency personnel on postfire planning teams may have little personal experience to draw on in these circumstances, as wildfires at this scale are often a one-time event in the career of a line officer or technical specialist. Additionally, while much is understood about silvicultural systems and harvest operations, there is greater uncertainty about ecological restoration of lands affected by major wildfire (e.g., Donato et al. 2006, Sessions et al. 2004, Thompson et al. 2007). Nevertheless, agency personnel are called on to make technical judgments regarding forest management and restoration, communicate current and reliable information to community members, and include them in postfire planning (McCool et al. 2006, Taylor et al. 2005). Not surprisingly, such

circumstances can result in considerable conflict over potential actions and the resulting management decisions that play out in the public arena. To be successful, planning efforts will require an informed and supportive constituency (Shindler et al. 2002). Trustworthy relations, developed well before the fire occurs, are significant to bringing agency personnel and citizens together to agree on a course of action after a fire (Carroll et al. 2000, Liljeblad and Borrie 2006, Olsen and Shindler 2007).

A growing body of research addresses citizen-agency relations in natural resource settings, particularly interactions with citizens regarding fuel reduction activities and defensible space programs. However, research is limited in postfire contexts. The purpose of this study is to improve understanding about citizen-agency relations concerning forest planning and decisionmaking after large wildfires on federal lands. More specifically, the intent was to evaluate public opinion of citizen-agency interactions (i.e., U.S. Forest Service and Bureau of Land Management (BLM)), citizen trust in the federal forest management agencies to plan and implement appropriate practices, and public acceptance of postfire management strategies. This was accomplished by exploring the experiences of citizens engaged in postfire planning using survey data in two locations: southwest and central Oregon where large wildfires recently occurred. Prior to the surveys, these two sites were also examined as part of a qualitative study including interviews of citizens and agency personnel (described in a previous chapter of this dissertation). Survey responses from two locations also allowed exploration of differences between sites. Responses suggest the pre- and postfire planning and outreach approach taken by agency personnel can have

a substantial influence on citizen trust in the agencies and acceptance of postfire management strategies. In the results that follow, influencing factors that emerged in each location are examined.

MANAGEMENT CONTEXT

Forests in Oregon illustrate the challenges created by the increase in fire magnitude and frequency. Two study sites were selected where large wildfires had recently occurred; southwestern Oregon in the vicinity of the Biscuit Fire (2002), and central Oregon in the vicinity of the Bear & Booth (B&B) Fires (2003). Lightning was the official cause of both fires. Both burned a variety of land use types and were eventually extinguished by fall precipitation. Plans for recovery projects were developed at both sites that included a variety of management practices applied in different areas. These practices included seeding, measures to control erosion, replanting of conifers, harvest of burned trees (i.e., salvage), actions to protect human safety, and leaving some areas alone.

2002 Biscuit Fire in southwest Oregon

The Biscuit Fire encompassed nearly 500,000 acres in the Siskiyou Mountains, primarily in designated wilderness and roadless areas on the Rogue River-Siskiyou National Forest. Portions of the Six Rivers National Forest in California and the Medford District BLM lands were also affected. Communities near the fire include Medford, Grants Pass, Selma, Cave Junction, and Brookings, among others. Many of these communities have a strong history of timber activity as a primary source of local

income. Included in the burn area were areas of old-growth forest, a passionate issue for many Oregonians, and several popular recreation sites. Four residences and ten other structures were burned, and 15,000 residents were put on evacuation notice. It was one of the largest wildfires in U.S. history and the largest recorded fire in the state of Oregon. Plans for management of the affected forests on the Rogue River-Siskiyou National Forest and Medford BLM lands were developed from 2002-2004. During the planning phase there was an emphasis from local and national-level agency personnel and from local citizens that some timber extraction occur from the burned areas (Biscuit agency source 2005, Biscuit community source 2005). At the same time, there were strong reactions from local citizens and environmental groups that timber removal be minimized or excluded altogether. Final plans included harvest of over 370,000 million board feet from over 19,000 acres, thousands of acres of which were in Late Successional Reserves and Inventoried Roadless Areas (Biscuit Fire Recovery Final Environmental Impact Statement 2004).

A broad range of outreach activities were implemented during the planning phase of the Biscuit Fire Recovery Project. Numerous agency-led public meetings were held in the communities surrounding the fire area. Citizen-organized meetings were also held, some facilitated by professional mediators. The agencies hosted a workshop-style conference with multiple stations of information, giving the opportunity for members of the public to meet scientists and managers face-to-face and ask questions. Agency presentations with question-and-answer periods were also held at various public locations. A designated spokesperson was identified for the

agencies and was the primary contact for releasing most information and for communicating with the media. A limited number of agency-led, invitation-only field trips were also conducted so people could see for themselves results of the fire. Participants on these field trips included members of local environmental groups. The purpose of the invitation-only trips was to interact with those individuals who the agency perceived as most likely to challenge management plans (Biscuit agency source 2005). The communication focus for the agencies during this planning phase was to keep information flowing and to remain consistent with released messages (Biscuit agency source 2005). Overall, nearly 23,000 written comments were received by the Forest Service and BLM regarding plans for the burned area.

The Rogue River-Siskiyou National Forest and Medford District BLM have had mixed success interacting with community members on forest management issues in the past. One notable example is the Applegate Partnership. This cooperative management group, organized in the early 1990s, operates in the Applegate Valley (a relatively small portion of the Rogue-River Siskiyou National Forest) and has dozens of partners, two of which are the local Forest Service and BLM. The now-defunct Applegate Adaptive Management Area (AMA) was used as an experimental site and to incorporate interaction with local citizens. Initially, agency relations with community members through the AMA and the Partnership were productive; however, these interactions cooled considerably over time (Shindler 2003). At the time many individuals attributed this, in part, to policy and budget constraints imposed by the

federal government on the ability of local personnel to work cooperatively with citizen groups (Stankey et al. 2003).

Prior to the Biscuit Fire, there have been few recent fires in southwest Oregon. As the largest fire in the nation for 2002, the Biscuit Fire received a great deal of national media attention and later became the center of debate on salvage logging. Controversy sparked over who was actually making decisions for the region, and numerous claims were made that illegal management activities were conducted on Forest Service land (Conroy 2007). There was the perception by some that management decisions were being made at the national level with no consideration for local concerns (Biscuit community source 2005). There was also turmoil when the Forest Service increased the proposed salvage levels based on a privately-funded analysis released by Oregon State University researchers in 2003, causing many to call into question the information and process used to prepare postfire management plans (Biscuit agency source 2005, Biscuit community source 2005, Durbin 2003). The controversy continued in 2006 and 2007 when other researchers from the same university concluded that salvage in the Biscuit may have caused more harm than good (Milstein 2007).

2003 B&B Fires in central Oregon

The B&B Fires encompassed nearly 92,000 acres in the Cascade Mountains of central Oregon, an area where forest use is focused on recreation and amenity benefits. Most of the fire burned in designated wilderness area on the Deschutes National Forest, though some portions of the Willamette National Forest, the Confederated

Tribes of Warm Springs Reservation, State of Oregon lands, and private lands were also affected. Communities near the fire were Sisters, Camp Sherman, Black Butte Ranch, Bend, and Redmond. Old-growth forested areas were included in the burn area. Few structures were affected, though 1,500 residents were evacuated on two different occasions. It was the largest wildfire in recorded history for the Deschutes National Forest. Plans for management of the affected lands on the Deschutes National Forest were developed from 2003-2005. During the planning phase, as with the Biscuit Fire, there was an emphasis that there be some level of timber extraction from the burned areas from local and national-level agency personnel as well as some local citizens (B&B agency source 2005, B&B community source 2005). And, as with the Biscuit Fire, some citizens and environmental groups advocated that timber removal be minimized. Final plans included harvest of over 29 million board feet from over 6,800 acres, some of which were in Late Successional Reserves (B&B Fire Recovery Project Final Environmental Impact Statement 2005).

Numerous outreach activities were conducted during the planning phase of the B&B Fire Recovery Project. Face-to-face interactions were important to both citizens and agency personnel and were incorporated into many forms of communication (B&B agency source 2005, B&B community source 2005). Several agency-led public field trips were conducted within weeks of containment (with participation based on first-come sign up sheets) where citizens had the opportunity to visit the burn sites with agency managers and resource specialists. In addition, local community groups were invited to provide feedback and suggestions and to work with agency personnel

on planning choices. Agency-led public meetings were also held. The communication focus during this planning phase was to use “plain English” and humanize concerns and individuals wherever possible (B&B agency source 2005). In the end, hundreds of written comments were received by the Forest Service.

Deschutes National Forest personnel have a recent history of interacting with community members on forest management issues, including cooperation on the Metolius Basin Forest Management Project (B&B community source 2005, Shindler and Toman 2003). The Sisters Ranger District also worked cooperatively with a local community group to develop the Heritage Forest Demonstration Project, a set of permanent forest plots that show common forest treatments on the ground. Residents in this area are also familiar with recent smaller wildfires, some requiring evacuations and destroying homes in the immediate area. In addition to the B&B Fires, five other fires burned more than 50,000 acres of ponderosa pine (*Pinus ponderosa*) and mixed-conifer forests in the region since 2002 (Toman et al. 2008).

RELATED RESEARCH

Research on the socio-political aspects of forest and fire management has steadily increased in recent years. Findings from a variety of contexts are relevant to this study. However, very little research has been conducted in postfire settings thus much of the discussion here draws on literature from (pre-fire) agency-citizen interactions for fuel reduction activities. In this section the concepts of citizen-agency interactions, trust, and acceptability are introduced, as each is an influencing factor in

successful forest planning and decisionmaking (Shindler et al. 2002, Toman et al. 2006, Winter et al. 2004).

Citizen-agency interactions

Citizen-agency interactions, especially communication efforts, are important during all phases of the fire cycle (pre, during, and postfire), and, decisions made in one phase often influence the options available in other phases (McCool et al. 2006). Hence, public expectations about agency communication and management decisions are often based on prior, pre-fire experiences (Olsen and Shindler 2007). Historically speaking, forest agencies have been criticized for their public process (Cortner et al. 1998, Shindler et al. 2002). However, a few studies suggest relationships can be forged and strengthened through citizen-agency interactions during postfire phases. Toman and colleagues (2008) highlight goodwill as a significant result of citizen participation in agency-led field trips. Research in five other postfire recovery efforts emphasizes the importance of engaging local social networks and including community leaders and organized groups for the successful implementation of postfire projects (Burns et al. 2008).

The process of *how* citizens and community groups are engaged is an important determining factor to how useful and effective citizen-agency communications or interactions can be (Toman et al. 2006). Communications can be either unidirectional (e.g., brochures, press releases, television campaigns) or interactive where there is personal contact with agency personnel or the learning experience occurs on-the-group (e.g., guided field trips, neighborhood meetings,

conversations with personnel) (Toman and Shindler 2006, Toman et al. 2006). One study on agency communication strategies for fuels management programs specifically evaluated the effectiveness of unidirectional and interactive programs across diverse settings. While all eleven forms of communication were considered easy to understand, the interactive programs were found to be more trustworthy than the unidirectional ones (Toman et al. 2006). Considerable research also indicates two-way, interactive communication activities are more effective at increasing understanding and support than one-way information delivery (McCaffrey 2004a, Parkinson et al. 2003, Toman et al. 2006).

Numerous barriers and obstacles also exist in the postfire planning environment that affect citizen-agency interactions. Olsen and Shindler (2007) identified five, with the caveat that additional ones will continue to surface during each new fire season. The first barrier is the lack of common language between those involved. For example, terms like “restoration” are often used in planning, yet a clear understanding of what this term means does not exist across stakeholder groups (Mowrer 2004). The second and third barriers identified by these authors are closely related; that there is a focus on returning landscapes to their “natural” condition when the American perception of “natural” in many cases is not necessarily natural (Kay 1997), and that there is a dominance of aesthetics in forest management decisionmaking. While there is nothing inherently wrong with choosing management practices based on aesthetics, Ribe (1999) points out that some individuals interpret uglier landscapes to be ecologically unsound, which is not always the case. The fourth

barrier is one of the most serious for agency personnel in a postfire setting – that there is incredible pressure for rapid decisionmaking when ecological and social uncertainty may be considerable (Olsen and Shindler 2007). And the final barrier, trust, runs through all decisionmaking processes, yet the citizen-agency relationship is not always characterized as having high levels of trust (e.g., Carroll et al. 2000, Kumagai et al. 2004b, Winter et al. 2004).

Trust

Citizen trust in forest agencies may be the most essential component to successful implementation of any forest management program (Burns et al. 2008, Carroll et al. 2000, Shindler et al. 2002, Winter et al. 2004). With limited prior exposure to large wildfires, trust may be critical to citizen acceptance of postfire management plans and decisions (Olsen and Shindler 2007). Community relations built on trust have many positive benefits, including conflict reduction, ability to organize, decreased costs, and cooperative behavior (Rousseau et al. 1998). In a natural resource management context, “trust is the willingness to rely on those who have the responsibility for decisions and actions related to risk management” (Winter et al. 2004: 9). It is widely recognized that achieving and maintaining trust can be challenging (e.g., Kramer 1999, Shindler et al. 2002), while a lack of trust can negatively influence public response to fire-related management decisions (Liljeblad and Borrie 2006).

Numerous studies show the public is reluctant to trust agency managers in carrying out forest practices (Liljeblad 2005, Mallon 2006, Shindler and Toman 2003,

Winter et al. 2004). However, recent research suggests that more trusting relations can be developed when agencies and citizens organize before fires occur, specifically to build fire-safe communities and work together on fuel reduction activities (Knotek and Watson 2006, Liljeblad et al. 2005, Winter et al. 2004). Citizen trust in the agencies after a fire is less understood, but research is beginning to emerge. One study indicated trust in the Forest Service may increase during and after a fire event because citizens see the agency as working hard and providing leadership (Ryan and Hamin 2006). Elsewhere citizens' confidence in the Forest Service increased after participation in a postfire tour, also contributing to improved understanding and support for potential management actions (Toman et al. 2008). Beyond this, research that specifically addresses trust in postfire settings has yet to materialize.

These types of citizen-agency interactions and communication efforts are important to the development of trusting relationships (Olsen and Shindler 2007, Toman et al. 2008, Winter et al. 2002). Positive citizen-agency interactions can help bring communities together to make decisions about appropriate forest management activities, particularly after a fire when uncertainty is high (Burns et al. 2008, Ryan and Hamin 2006, Olsen and Shindler 2007, Toman et al. 2008). Methods for building trust are unique to individuals and communities, but research has shown they are centered on the frequency, reliability, and predictability of contact over the history of a relationship (Fukuyama 1995, Toman et al. 2006, Winter et al. 2004). It has also been suggested that in a natural resource context, trust results when individuals believe the managing agency has similar goals and values to them (Cvetkovich and Winter 2002,

Cvetkovich and Winter 2004, Kasperson et al. 1992, Winter and Cvetkovich 2008).

Once earned, trustworthy relations also need to be protected; they can quickly be destroyed by insincere or deceptive behaviors, either real or perceived (Slovic 1993, Zimmer 1972).

Shindler and Cheek (1999) outlined a set of common attributes in trustworthy interactions that can be achieved at the local level where the best opportunity for building strong relationships exists. These include: (1) sincere leadership, (2) sound organizational and planning skills, (3) early commitment to citizen participation and continuity of efforts, (4) inclusiveness, (5) innovative and flexible methods for interaction, and (6) efforts that result in action. An example of a successful trust-building interaction comes from one of the sites examined in this research where public bus tours were organized by the Sisters Ranger District after the 2003 B&B Complex Fires. Participants responded very positively to the tours, rating them as useful, fair, balanced, and contributing to the credibility and trustworthiness of managers (Toman et al. 2008). Similar experiences have been reported on other management units as well; research after postfire tours in Montana indicated improved relations between the Forest Service, National Park Service, and citizens (U.S.D.I. National Park Service 2003). However, Toman and colleagues (2008) point out that trust and credibility are too complex to be fostered or repaired exclusively with one activity. Rather, events like these tours, combined with numerous other interactions over an extended period of time, feed the development of the citizen-agency

relationship (Shindler et al. 2002). Building trusting relationships is a long-term process.

Acceptability

A forest management practice must be socially acceptable in order to be sustainable and adopted for the long-term (Shindler et al. 2002). Researchers and forest management personnel have come to understand the value of working toward public acceptance (Kneeshaw et al. 2004, Mascia et al. 2003, Thornhill 2003). However, public acceptance is not something the agency can fully control. Rather, managers can work with citizens to influence factors that affect acceptance, such as trust, knowledge of conditions and practices, understanding of management objectives, and perceptions of risk (Shindler et al. 2002, Stankey and Shindler 2006).

At a basic level, acceptance of forest management practices is a function of the perceived risk associated with conditions and practices (Brunson 1996). Of particular relevance to postfire settings, Stankey and Shindler (2006) noted that public acceptability judgments are *conditional*, *contextual*, and *provisional*. They are *conditional* because they are often based on whether actions are fair to all stakeholders and if decision processes are inclusive of those who may be impacted. They are *contextual* because they are based on familiar, identifiable places that hold meaning for citizens. And they are *provisional* because public judgments change; what people find acceptable today may fall out of favor depending on new factors that emerge (e.g., new science, lack of successful on-the-ground treatments, lackluster performance or poor follow through by management personnel). Numerous authors

identify trust as a factor that shapes, sustains, and alters public acceptance of management practices, particularly after wildfires (Burns et al. 2008, Olsen and Shindler 2007, Ryan and Hamin 2006). Additional factors include knowledge, local context, esthetics, and risk and uncertainty (Stankey and Shindler 2006). Citizen-agency interactions are one platform where public understanding of postfire issues and implications can be fostered, creating a more responsible, stable, and consistent public opinion (Shindler et al. 2002).

The few studies conducted thus far found high levels of public acceptance for restoration activities such as erosion control and replanting. However, acceptance of salvage harvesting appears highly contextual (Ryan and Hamin 2006, Toman et al. 2008), with higher rates of approval evident when citizens trust the managing agency (Carroll et al. 2000). Acceptance of salvage is also dependent on the specific location where work will be conducted (Ryan and Hamin 2006), as well as the openness and quality of deliberation in the planning process used to determine sales (Olsen and Shindler 2007).

METHODS

The results presented in this paper represent the second phase of research in these communities. The first phase included interviews with a total of 11 agency personnel and 15 community members from the two study sites. Themes identified during the interviews were used to develop the 8-page mail questionnaire examined in this paper. Using categorical and Likert-type items, the survey questions addressed

respondents' awareness and opinions of federal agency planning and decisionmaking with regards to general forest management, forest management after fires, and forest management after the Biscuit and B&B Fires specifically.

This research employed an attentive public sample, which is characterized by a higher level of citizen participation in government than the general public (Barber 1984, Lunch 1987). This is appropriate for three reasons: 1) some questions in the survey required respondents to have experience interacting with the agencies after the recent fires, 2) findings from this population are useful to agency personnel because the attentive public includes people who are engaged and likely to participate, block, or support agency plans, and 3) opinion surveys often target the attentive public because these individuals are usually the "first responders" to a new management plan or initiative (Shindler and Mallon 2006). Samples were drawn from citizen lists maintained by the Forest Service in each region; lists were comprised of individuals who submitted comments on the Biscuit, B&B, or other recent fires, participated in recent fire-related outreach activities, or requested information about recent forest management activities. Only residents within the two study regions were included in the sample. In short, the sample includes local citizens who had interacted with or submitted comments to their local Forest Service office after the fires occurred.

In the Biscuit Fire region, 261 out of 427 surveys were completed and returned for a response rate of 61%. The B&B Fires survey was distributed to 358 individuals, with 250 surveys returned for a response rate of 70%. This level of response is sufficiently high to make inferences to the larger study population of the attentive

public in the two study locations (Lehman 1989). Additionally, because managers may interpret these results as they relate to similar settings, it is likely these findings will ultimately be useful beyond the current study.

Survey administration included a hand-signed notification postcard followed by three waves of the survey packet according to a modified “tailored design method” (Dillman 2007). The survey packet included a hand-signed cover letter, the questionnaire, and a self-addressed, stamped return envelope. The first wave of mailings occurred in January 2007. Second and third wave mailings to individuals who did not return the questionnaire occurred at three-week intervals, with the final mailing completed in March. Given these high response rates and the associated reduction of non-response error (Lehman 1989, Needham and Vaske 2008), no non-response bias check was completed.

Data analysis included examination of frequencies and mean scores. To explore potential differences between sites, chi-square analysis was used where frequencies (percentages) were examined, and t-tests were used for examination of mean scores.

FINDINGS

The survey was completed by members of the attentive, local public at each site. Over 90% of all respondents indicated they were moderately or well informed about forest conditions and management after fires. Most respondents indicated they participated in postfire planning in some way; the majority spoke to agency personnel

about plans, and about half submitted written comments to the agencies about plans or attended an agency-led public meeting. In addition, over one-quarter of respondents participated in a field trip with agency personnel. Approximately half of Biscuit respondents lived within 20 miles of the fire boundary, with over 10% living within one mile of the fire. Over 80% of B&B respondents lived within 20 miles of the fire boundary, with nearly 20% living within one mile of the fire.

Findings are presented in three sections: 1) postfire interactions with the agencies, 2) trust in the agencies, and 3) acceptance of postfire management practices.

Postfire interactions with the agencies

Respondents' opinions of citizen-agency interactions in planning and decision processes after the Biscuit and B&B Fires are displayed in Table 1. Response choices included a 4-point scale (*strongly disagree* to *strongly agree*) and a "*don't know*" option. For each statement, the percent of *agree* or *strongly agree* responses, the mean score, and the percent of *don't know* responses are presented.

Table 1. Citizen-agency interactions for postfire planning and decisionmaking.

Statement	% Agree/strongly agree (mean score ^a) % don't know	
	Biscuit Fire	B&B Fires
Citizens had meaningful opportunities to contribute to decisions *	31 % (2.12) 8 %	43 % (2.52) 20 %
Federal managers have used public input to help make decisions *	24 % (1.96) 9 %	45 % (2.48) 16 %
Thus far, management decisions after the Biscuit (or B&B) Fire have been made according to a fair process *	11 % (1.73) 11 %	33 % (2.32) 25 %
Decisions were based on scientific information *	17 % (1.88) 12 %	38 % (2.43) 29 %
Federal forest managers did a good job of explaining management options, activities, and consequences *	32 % (2.18) 12 %	46 % (2.63) 19 %
I am skeptical of information from federal forest agencies *	73 % (2.96) 5 %	57 % (2.69) 3 %
Federal forest managers have effectively built trust and cooperation with local citizens *	13 % (1.72) 6 %	40 % (2.41) 9 %
I agree with how local agency staff have handled forest management after wildfires *	11 % (1.68) 8 %	31 % (2.26) 16 %
Local agency staff are constrained from doing their jobs by government restrictions at the national level	74 % (3.20) 15 %	76 % (3.31) 15 %

^a Response categories range from 1 = strongly disagree to 4 = strongly agree. Don't know responses omitted from mean scores.

* Responses for these statements are significantly different between sites at $p \leq 0.05$.

Overall, respondents at both sites were substantially critical of agency actions. At the same time, B&B participants tended to look more favorably on interactions than their Biscuit counterparts. The lack of agreement for the first four statements, dealing primarily with agency decision processes, suggests citizens are not satisfied with their role in decisionmaking or in the information agencies use to make decisions. The next two statements indicate citizens are cynical of agency information and management explanations. Citizens' overall lack of trust and agreement with how postfire management was handled is revealed in the following two statements, and the final statement expresses respondents' belief that national-level restrictions constrain agency personnel at the local level. It is also noteworthy that numerous` respondents indicated *don't know* for many statements, particularly B&B participants.

To better understand perceptions about specific interactions with agency personnel, respondents were first asked if they had participated in four activities that occurred at both sites: 1) provided written comments on forest plans, 2) spoke with agency personnel about forest plans, 3) attended a public meeting with agency personnel, and 4) participated in field trips or on-site demonstrations with agency personnel. The majority (more than half) of Biscuit respondents provided written comments, spoke with personnel, or attended a public meeting, and one-quarter had participated in a field trip or demonstration. At the B&B site, between one-third and one-half of survey respondents participated in each of the four activities. Respondents were then asked to rate how worthwhile activities were in which they had participated.

The questionnaire also explained that “worthwhile” meant an activity was a good, credible exchange of information and they would participate in it again. Findings are presented in Table 2.

Response options included a 4-point scale from *not worthwhile* to *extremely worthwhile*. Again results are mixed. Biscuit respondents tended to rate their experience poorly with only participation in field trips judged as *moderately* or *extremely worthwhile* by at least a third of respondents. Responses from the B&B site were significantly better; the majority found all activities except providing written comments as *moderately* or *extremely worthwhile*. Field trips fared the best at both sites.

Table 2. Worthwhile interactions with agency personnel after fire.

Activity	% Moderately/extremely worthwhile (mean score ^a)	
	Biscuit Fire	B&B Fires
Provided written comments on forest plans	17 % (1.77)	34 % (2.23)
Spoke with agency personnel about forest plans	25 % (1.89)	56 % (2.52)
Attended public meeting with agency personnel	26 % (1.90)	51 % (2.50)
Participated in field trips or on-site demonstrations with agency personnel	37 % (2.09)	73 % (2.73)

^a Response categories range from 1 = not worthwhile to 4 = extremely worthwhile.

Responses for all interactions are significantly different between sites at $p \leq 0.05$.

Respondents were also asked about how effective local agency personnel were in planning for and managing lands affected by the fire. Response options included a 4-point scale (*not effective* to *very effective*) and “*don’t know*” with scores reported in Table 3.

Table 3. Agency effectiveness.

Question	% Moderately/very effective (mean score ^a) % <i>don’t know</i>	
	Biscuit Fire	B&B Fires
How effective have local forest personnel been in planning for and managing lands affected by this fire?	13 % (1.67) 13 %	38 % (2.39) 23 %

^a Response categories range from 1 = not effective to 4 = very effective. Don’t know responses omitted from mean scores.

Responses are significantly different between sites at $p \leq 0.05$.

As before, ratings were substantially low. Significantly fewer indicated *moderately* or *very effective* at the Biscuit site than the B&B site. Fewer *don’t know* responses were also recorded at the Biscuit site. A follow-up question asked why they responded as they did, and nearly 80% of participants gave an answer. Primary reasons for indicating *not effective* or *slightly effective* included slow decision processes because of government “red tape,” disagreement with the amount of planned harvest (too much or too little), belief that public and local concerns were ignored, and that mistakes were made because action was taken too quickly. Although fewer in number, most positive responses focused on good communication with environmental

groups early in the planning process, though many at the Biscuit site note this was lost when management plans were changed to increase salvage levels.

Trust in the agencies

Research has shown citizen trust in forest agencies is important to the success of forest management policies and practices. Respondents' rated their level of trust in the local Forest Service or BLM to make good decisions about forest management using a 4-point scale (*no trust* to *full trust*) and a "*don't know*" category.

Subsequently, they were asked if their trust in the forest agencies had changed based on how management activities were handled after the fire. Results are reported in Table 4.

Trust in local Forest Service or BLM staff to make good decisions differed significantly between sites, with 41% of Biscuit respondents and two-thirds of B&B respondents indicating *moderate* or *full trust*. Very few respondents used the *don't know* option. Change in trust in the forest agencies because of postfire management was also significantly different between sites. The majority of Biscuit respondents indicated a decrease in trust, while the majority of B&B respondents said trust levels did not change. However, a substantial number (30%) at the B&B site also noted a decrease. Very few respondents at either site indicated an increase in trust.

Table 4. Trust in the agencies.

Trust	% Moderate/full trust (mean score ^a) <i>% don't know</i>	
	Biscuit Fire	B&B Fires
My level of trust in local Forest Service or BLM staff to make good decisions about forest management.	41 % (2.33) <i>1 %</i>	66 % (2.84) <i>4 %</i>
Based on how management activities were handled after the fire, my trust in the forest agencies has...		
Increased	1 %	8 %
Not changed	43 %	62 %
Decreased	56 %	30 %

^a Response categories range from 1 = no trust to 4 = full trust. Don't know responses omitted from mean scores.

Responses to both measures are significantly different between sites at $p \leq 0.05$.

As before, an open-ended follow-up question asked why their trust had changed, and the majority of respondents answered. Of the few who indicated an increase in trust, good public-agency interaction and communication skills was noted. Reasons for a decrease in trust included beliefs about political influence (both national government and interest group) on agencies at the expense of ecological factors, that management activities were illegally conducted, and that citizen input, local needs, and forest needs (some arguing more harvest was needed, some less) were ignored.

Acceptance of postfire management practices

Forest agencies have a number of options for managing lands after a fire once emergency crews have finished stabilizing hazardous conditions. Table 5 displays six common postfire management strategies and respondents' opinions about their use.

The practices were accompanied with the following definitions in the questionnaire:

- *Erosion control*: Activities such as installing water diversion culverts to help reduce damage from erosion after fires.
- *Replanting*: Plant seedlings in areas where desired species are not expected to return naturally.
- *Seeding*: Planting grass and forb seeds to help reduce damage from erosion after fires.
- *Harvest burned tree*: Trees that are dead or expected to die are harvested and sold for economic gain.
- *Manage for safety only*: Conduct management activities only in areas as required for human safety. Leave the rest to nature.
- *No action*: No action should be taken on lands affected by fire. Let nature take its course.

Response options for each practice were as follows: 1) *this practice is a legitimate tool that land managers should be able to use whenever they see fit*; 2) *this practice should be done only infrequently, in carefully selected areas*; 3) *this practice should not be considered because it creates too many negative impacts*; 4) *this is an unnecessary practice*; and 5) *don't know*. Because the second response choice represents the common form of agency implementation for management practices, selection of the first or second choice was interpreted as acceptance of the specific practice. Responses were significantly different between sites for all practices except taking no action.

Table 5. Acceptance of post-fire management practices.

Public Acceptance of Post-fire Practices	Erosion Control*		Replanting*		Seeding*		Harvesting burned trees*		Manage for safety only*		No action. Let nature take its course.	
	Biscuit	B&B	Biscuit	B&B	Biscuit	B&B	Biscuit	B&B	Biscuit	B&B	Biscuit	B&B
This practice is a legitimate tool that land managers should be able to use whenever they see fit	70 %	78 %	70 %	85 %	63 %	78 %	46 %	56 %	43 %	33 %	37 %	29 %
This practice should be done only infrequently, in carefully selected areas	24 %	18 %	21 %	11 %	29 %	16 %	28 %	27 %	28 %	35 %	21 %	25 %
This practice should not be considered because it creates too many negative impacts	2 %	1 %	2 %	1 %	2 %	1 %	16 %	7 %	16 %	12 %	19 %	19 %
This is an unnecessary practice	3 %	1 %	4 %	1 %	5 %	1 %	10 %	9 %	11 %	13 %	21 %	23 %
Don't know	1 %	3 %	3 %	2 %	2 %	4 %	1 %	1 %	3 %	7 %	2 %	5 %

* Responses for these practices are significantly different between sites at $p \leq 0.05$.

Three practices were acceptable (first two answer options) to over 90% of survey respondents from both sites: erosion control, replanting, and seeding. In each case B&B participants were willing to give managers more discretion for implementation by allowing managers to use a practice whenever they believe it is appropriate. Even the most contentious practice, harvesting burned trees, was acceptable to nearly three-quarters of respondents at both sites (74% on the Biscuit and 83% on the B&B). Given this level of acceptance for the first four management actions, it is curious that a majority at each site still rated managing for safety only and let nature take its course as acceptable. It is also noteworthy that scores at each site were significantly different except for the no action alternative. Overall it appears that B&B respondents favored more active management than their Biscuit counterparts. Finally, it is evident that almost everyone had an opinion on these practices as few *don't know* responses were given.

To better understand what influences public acceptance, respondents were asked how important ten factors were to their judgments of agency actions and decisions. Response options included a 5-point importance scale (*none, slightly, moderately, very, and extremely*). The “*don't know*” option was not provided. Findings are presented in Table 6, roughly rank-ordered from most important to the least important factor. For each statement, the percent of *very and extremely important* responses and the mean score are presented.

Table 6. Influences on public acceptance of agency actions and decisions.

Statement	% Very/extremely important (mean score ^a)	
	Biscuit Fire	B&B Fires
Trust in the decision-maker	74 % (4.04)	83 % (4.15)
The decision is based on environmental consequences	74 % (4.15)	82 % (4.30)
When I know the objectives of a proposed management action	74 % (4.02)	79 % (4.10)
Scientists play a role in reviewing alternatives for management decisions	68 % (3.95)	80 % (4.13)
Actions will help reduce the spread of non-native species	65 % (3.86)	76 % (4.02)
The decision leads to active management (thinning) to maintain or restore conditions *	60 % (3.60)	66 % (3.84)
The decision protects wildlife habitat over human use *	56 % (3.63)	65 % (3.90)
The decision maintains forest access for recreation	52 % (3.52)	51 % (3.53)
Actions will help support the local economy *	53 % (3.57)	34 % (3.06)
The decision was based on economic consequences *	46 % (3.32)	34 % (3.07)

^a Response categories range from 1 = not important to 5 = extremely important.

* Responses for these statements are significantly different between sites at $p \leq 0.05$.

A number of influences were highly rated as very or extremely important at both sites. Among these were trust in the decision-maker, basing the decision on environmental consequences, and knowing the objectives of a proposed management action. Beliefs were somewhat stronger among B&B participants, who also gave high ratings (at least 70% or more) to scientists playing a role in reviewing alternatives and actions helping to reduce non-native species. Interestingly, actions that support the local economy and basing decision on economic consequences were among the least important influences on public acceptance.

DISCUSSION

Postfire forest management on federal lands is complex ecologically and socially. This paper explores citizen-agency interactions, trust, and acceptance of postfire management practices in two postfire settings. It must be emphasized that this study did not employ random public sampling, and therefore findings cannot be generalized to the general public. Rather, this study examines the attentive public – individuals who by definition are more active in government (Barber 1984, Lunch 1987). Findings about this population can be useful for management personnel, as these citizens are the most engaged, and are most likely to participate, block, or support agency plans. Several findings are noteworthy.

First, there is broad acceptance from respondents in this study for all postfire treatment options. Acceptance is nearly unanimous for the easy decisions such as use of erosion control, replanting, and seeding in carefully selected areas. A strong

majority of respondents in this study also accepted the use of salvage in carefully selected areas, despite the fact that the commercial harvest of burned trees has been at the center of postfire controversy in several locations (Duncan 2002, Preusch 2004). Although the acceptance of these practices is high, it's likely they are also influenced by trust. Findings here are in line with other studies where people seem to be saying they will withhold their opinion of agency trustworthiness until they see how these treatment options are implemented and whether the agency follows through with what citizens think is right (Cvetkovich and Winter 2002, Cvetkovich and Winter 2004, Kasperson et al. 1992, Winter and Cvetkovich 2008).

At the same time, a majority of respondents also supported the no action alternative. This apparent conflict of accepting both heavily intensive (i.e., salvage) and totally passive (i.e., no action) approaches may result from the expectation that each practice would take place in *different* and carefully selected areas, and that each practice may have an acceptable use somewhere on the affected landscape. Findings from this research support this notion; participants made it clear one of the most important factors influencing their judgment of agency actions and decisions was knowing the objectives of a proposed management action, which presumably includes knowing the spatial context for these actions as well. Also noteworthy is that 40% of respondents completely rejected the "no action" alternative, suggesting many citizens see a need for some form of management on these lands.

Second, respondents' assessments of citizen-agency interactions were generally negative across the board. Not only did participants give managers low

marks for providing information and opportunities for interaction, they also largely indicated that many interaction activities were not worthwhile. One possible explanation for these low marks surfaced in the open-ended questions in this survey; citizens were dissatisfied with how the agencies used public input and what information was used to make decisions. Failure to adequately listen and respond to citizens has been cited as a common problem elsewhere (Campbell 2004, Cortner et al. 1998, Kent et al. 2003, McCool et al. 2000, Mendez et al. 2003) and also leads to loss of trust as was noted by respondents in this study. Closer examination of these responses reveals more clues; participants from the B&B site generally responded more positively than participants from the Biscuit site. These findings suggest the more developed relationships and history of positive citizen-agency interactions at the B&B site were a factor in higher assessments after the fire, lending support to the notion that pre-fire interactions influence postfire relationships (Burns et al. 2008).

As in previous studies (Shindler and Toman 2003), the ability of agency personnel to engage citizens about forest treatment options appears just as important as providing good information. This frequently means going beyond the traditional agency-public meeting, often cited as one-way forms of communication that are used to comply with the National Environmental Policy Act, but do not serve the needs and interests of concerned citizens (Cortner et al. 1998, Shindler et al. 2002). Indeed, citizen interviews from both study sites reveal the sentiment that agency-public meetings were held as a formality, and that management decisions had been made before the public was invited to participate (chapter 2 in this dissertation).

Considerable research supports the need for exploring new approaches for disseminating and explaining information. Such processes would also include providing timely information, and providing opportunities that allow for real participation with genuine discussion that, as a result, inspires greater citizen commitment in the plan itself and the process by which it was developed (Taylor et al. 2005, Toman and Shindler 2003, Toman et al. 2006).

Additionally, many participants are simply unaware (responded “*don’t know*”) about how agency personnel interact with local citizens. This suggests an opportunity for local personnel to make a real difference in their community by influencing attitudes among those who are undecided. The number of *don’t know* responses amounted to nearly one-third of participants for some survey questions in this study. Given these responses came from the attentive public, it is likely there are a far greater number of “undecideds” in these communities. Influencing even a portion of these citizens in a positive way would make a substantial difference. A pathway towards this goal is to restructure citizen-agency communication strategies to focus on a more personalized form of public interaction (Cortner et al. 1998). For example, learning about local concerns and specific forest places of importance make the interaction more meaningful to participants and result in more positive public responses (Shindler and Neburka 1997, Shindler and Toman 2003, Winter et al. 2002).

A third notable finding is the respondents’ decrease in trust in the agencies associated with how they managed after the fires. This decrease reflected many concerns, including beliefs about political influence (from several directions) on

agencies at the expense of ecological factors, the perception that illegal activities were carried out, and a belief that citizen input, local needs, and forest needs were ignored. These all suggest a failure in having authentic communications and ways for people to understand the decisionmaking process (Liljeblad and Borrie 2006, Olsen and Shindler 2007, Toman et al. 2008, Winter et al. 2004). It also supports the notion that respondents believe the agencies do not have goals similar to themselves, as evidenced by the extremely low percent who agreed with how management was handled after the fires (Winter and Cvetkovich 2008). Most believe that basing the decision on environmental consequences was important, similar to responses about how trust in decision-makers is essential to supporting agency practices. Clearly, trustworthy relations is the key to bringing these communities together for a consensus on postfire management (Olsen and Shindler 2007).

Responses from the few individuals who indicated an increase in trust suggest managers have means to change this trend, as good public interaction and communications skills were the primary reason for a positive trust assessment. Although skepticism exists about influence on local personnel from the national level, many concerns can still best be addressed at the district level. Citizens value sincerity in their interactions with agency personnel, as well as genuine discussion of both problems and possible solutions (Burns et al. 2008, Davenport et al. 2007, Shindler and Cheek 1999). This is usually possible only at the local level, often in face-to-face interactions. With the potential for more trusting relationships as a direct result of such frank encounters, conflict may be reduced, cooperative behavior may increase,

and the process for organizing and making decisions may become more efficient (Burns et al. 2008, Rousseau et al. 1998).

Finally, considerable variance in opinion exists between the two study sites. Though some sentiments are similarly shared (e.g., constraints on local agency staff, importance of trust in decision-makers), the significant differences in agreement between most statements about citizen-agency interactions argue against a one-size-fits-all planning and management approach after fires. From the initial descriptions of these communities, one can see there are differences in the size of the fire, management emphasis, and the type of interactions among stakeholders. Overall, B&B respondents were much more positive in their ratings of agency actions than Biscuit respondents, underscoring the importance of acknowledging local-specific social and environmental concerns (Brunson and Shindler 2004, Winter et al. 2004).

An open public process for identifying and deciding appropriate action for local conditions is often complex and one which requires patience, leadership, and commitment (Lachapelle and McCool 2005, Shindler 2000, Shindler and Neburka 1997). Shindler and Gordon (2005b) outlined a step-wise approach to building citizen-agency partnerships for fire and fuel management that included these attributes as well as other planning strategies. Their methods also seem appropriate for use in postfire settings. Such interactive, place-based activities serve many purposes, including fostering good will among all stakeholders, and improving public understanding of the rationale behind proposed management actions (Toman et al.

2006). In turn, this often leads to reducing conflict and increased support for management programs (Shindler et al. 1999, Stankey and Shindler 2006).

CONCLUSION

Postfire planning and decisionmaking for federal lands is a highly complex process, one that is affected by citizen trust, citizen-agency relations, and citizen acceptance of management strategies. Most personnel and local citizens will not have experienced an event of the magnitude described in this study, making it even more difficult to reach consensus on a course of action. A central conclusion from this analysis is that people are generally willing to accept postfire management practices, but they are much less trusting of the agencies to carry them out. It is likely that many people are withholding trust until they see if managers can make good on their word, and whether final agency actions match what citizens believe should happen. People seem to agree something needs to be done, but skepticism remains and the need for a well crafted planning process and good leadership are fundamental to success.

Findings from this study also help us to understand more specifically the elements important to citizens. Clearly, postfire treatment options were broadly supported by respondents in this study, yet they generally gave negative assessments to citizen-agency interactions. Many were also undecided on this issue. Environmental impacts of management practices and trust in the agencies were important to most participants. Many of those who lost trust in the agencies because of postfire management cited reasons such as disappointment in how decisions were

made and what information was used in decisions. The differences between the two study sites in this research suggest positive relationships may be more likely to develop from a long-term investment in engaging citizens in real problem discussion and deliberation.

For managers, an initial use for information from this study is to engage local citizens and discuss whether this is an accurate picture of their local community. It offers a good starting point for managers and citizens to work together and come to agreement on what is important here, what are the alternatives and their likely outcomes, and how will the planning process serve all interests.

General Conclusion

The work presented in this dissertation is significant for postfire forest management on federal land. With little previous research conducted in this context, these findings provide direction for future research and suggestions for citizen-agency interactions, building citizen trust in the agencies, and creating wider citizen acceptance of management strategies after wildfire events. The complexity of postfire relationships and interactions is highlighted in findings throughout this dissertation.

The first manuscript approaches these topics by summarizing research useful to federal agency personnel (technicians, managers, decisionmakers) who address the range of sociopolitical concerns in forest communities after wildfires. Research conducted to date is reviewed on postfire planning, decisionmaking, and management. Important literature in related fields such as habitat restoration, forest health, fuels management, and natural hazards and disasters added to the discussion. Several themes are delineated, including the importance of trust, acceptance, communication, and development of long-term relationships to the success of management plans. The intent here is to build on prior efforts to examine the postfire social context and expand informed, rational deliberation in this critical area of emerging importance.

Using this background research, the next logical step was to explore citizen-agency relationships first-hand in postfire communities. This was accomplished through exploratory interviews in five sites that had recently experienced large wildfires. Findings are presented using a “lessons learned” approach in manuscript two, with a specific focus on communication strategies in postfire forest communities.

Analysis here suggests agency communication with communities after fire is a complicated situation. In particular, postfire success is rooted in 1) the quality of long-term (pre-fire and during-fire) actions, 2) communication strategies that go beyond simple information provision, and 3) building relationships with the attentive public who may be useful partners in reaching out to the larger community. This manuscript concludes with suggestions for future research, including the need for examination of these concepts among a broader sample of the public. This qualitative analysis led to the development of a survey project which is reported in the final chapter.

The third manuscript further explores citizen-agency interactions in postfire environments by examining 1) local citizens' perceptions of their interactions with the federal agencies during postfire planning, 2) citizens' levels of trust in the agencies, and 3) public acceptance for postfire management strategies. This is accomplished through a mail survey developed on the findings from the second manuscript. The survey was administered in two postfire communities that were also examined in the qualitative interviews and analysis. The recipients of the survey were the attentive public. Information about these citizens can be especially useful for local managers because they are the citizens who are most likely to participate in postfire planning processes. Findings indicate attentive citizens are largely supportive of the use of postfire management strategies, yet they generally do not trust the agencies to make fire-related decisions and many are not satisfied in their interactions with agency personnel.

Data presented in manuscript two provide some help in interpreting these results. It suggests these citizens may be supportive of management strategies because they see a need to manage these lands, yet they also perceive the agencies as already having made up their minds about how management plans will be implemented.

Differences between sites in the survey study suggest citizen trust and assessment of interactions with agency personnel may be more positive in communities where citizen-agency relationships were developed well before the fire occurred. Interview responses from manuscript two provide more depth here as well. Agency personnel in the sites with more developed relationships relied heavily on citizens and citizen groups to engage the public and solicit input during postfire planning. Community members commented on how they appreciated this form of interaction, valuing open honesty and acknowledgement of emotional responses among residents.

This research is somewhat limited by the sample populations examined. All three studies employed a level of purposive sampling. In manuscript 1, literature is reviewed and synthesized. Because little research has been conducted in postfire environments, most literature comes from pre-fire or other contexts. While this may be a valid approach, and currently useful, additional postfire research will provide more certainty in outcomes. Manuscript 2 explores themes from five sites based on purposively-chosen interviews with citizens and agency personnel. The intent was to characterize postfire communication at these sites, and not necessarily to produce widely generalizable results. In manuscript 3, findings are specific to the attentive

population from which the sample was drawn. Regardless, these individuals are an important part of the local culture. Thus, despite this targeted sampling, it is likely results from all three manuscripts will be useful in other postfire contexts with similar issues and problems.

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Appendices

APPENDIX A: QUESTIONNAIRE FOR INTERVIEWS FOR CHAPTER 2 (Based on agency interviews)

- 1) Could you tell me briefly about your background, current position, and role during the [Biscuit, Bitterroot, Hayman, etc]?
- 2) When you first inherited the post-fire planning efforts, how did you determine what your priorities were? What were they?
 - a. **Organize:** How did you organize to begin the planning process? Who were the players? How was this determined? Was the public a part of this process? How?
 - b. **Change:** Over time, did this change? If yes, what caused the change?
 - c. **Activities:** Briefly, what are the major post-fire activities [recovery plan, rest & rehab...use their language]? (salvage, watershed protection, wildlife protection, etc) How were the priorities set in developing these plans? (ecological considerations first, fear of runoff, economics, social acceptability, etc)
- 3) Thus far, what factors have made the post-fire planning and decision-making effort a success?
 - a. **Unique:** Anything really unique or special to this area or fire?
 - b. **Special places:** What about “special places”? Were any affected by the fire? How is the recovery being handled?
- 4) Have there been any barriers to the post-fire planning and decision-making efforts? If yes, what? How were they handled?
 - a. **Future:** Do you anticipate additional barriers and obstacles? What?
 - b. **Heartburn:** What are the heartburn issues for the agency? What about for the community? Have they pooled together?
 - c. **Controversy:** Has there been any controversy? Could you elaborate?
 - d. **Lawsuits:** Have any lawsuits or appeals been filed? For what? How is that being addressed?
- 5) How was the public considered or brought in on planning what to do after the fire?
 - a. **Communication:** What were the specific communication or outreach activities? (identify one-way or interactive) What did you want to accomplish with these activities? Were some activities more effective than others? What has been the reaction to these activities?
 - b. **Decisions & challenges:** How were decisions made regarding communication activities? Were there challenges associated with the communication efforts? If yes, what were they? How were they handled?
 - c. **Change & future:** Have communication and outreach activities changed as more time has elapsed since the fire? How? Are additional activities planned that involve the public? What are they?

- 6) What kind of relationship exists between the FS and community?
 - a. **Change:** Did the fire change that? How? What was it like before the fire? Are (were) certain leaders or groups really active?
 - b. **Public concern:** How would you describe the public's level of awareness about forest issues prior to the fire? (defensible space...)
 - c. **Expectations:** What are the FS's expectations of the community? Community of FS?
 - d. **Trust:** What is your sense about the public's trust in the FS to do post-fire planning? How has it changed during the post-fire planning? What seemed to cause these changes?
- 7) Have there been any unifying activities or factors that seem to have brought the community together (both within, and with the FS)? In what way?
 - a. **Disaster culture:** Have you noticed a kind of attitude where neighbors really come together to help each other? Is this still occurring? If not, what caused it to stop?
- 8) Suggestions to other forests/districts that may some day be in your shoes?

APPENDIX B: SURVEY FOR CHAPTER 3 (Based on Biscuit Fire Survey)

Federal Forest
Management
after Large Wildfires

A Survey of Citizens in
Southwest Oregon

Oregon State
UNIVERSITY

College of Forestry

This questionnaire was developed by researchers at Oregon State University. The findings will be summarized to help federal land managers and scientists better understand citizens' opinions of forest management planning and activities. We are asking for your help because of your interest in forests in Southwest Oregon. The first set of questions is about general forest management. These are followed by questions specific to the Biscuit Fire.

Section 1: General Perspectives

We are interested in your opinions about federal forest planning and management. For each of the following questions, please select the answer that most closely reflects your beliefs. Please note these questions do not pertain to designated wilderness areas (i.e., Kalmiopsis) where certain management activities are restricted. **Answers and comments are strictly confidential.**

- 1) **How long have you lived in Southwest Oregon?** _____ years
- 2) **Prior to this survey, how much had you thought about national forest issues or problems?**
Circle one number.
- 1-----2-----3-----4-----5
 / | \
 None A moderate amount A great deal
- 3) **Public opinion and support are important factors in the success of forest policies. We would like to know what influences your opinion of forest management decisions. How important are the following factors to you when making judgments about BLM or Forest Service actions and decisions? Circle one number for each statement.**

	Not Important	Slightly Important	Moderately Important	Very Important	Extremely Important
The decision is based on environmental consequences.	1	2	3	4	5
The decision is based on economic consequences.	1	2	3	4	5
Actions will help support the local economy.	1	2	3	4	5
Actions will help reduce the spread of non-native species.	1	2	3	4	5
The decision leads to active management (thinning) to maintain or restore conditions.	1	2	3	4	5
Trust in the decision-maker.	1	2	3	4	5
When I know the objectives of a proposed management action.	1	2	3	4	5
The decision maintains forest access for recreation.	1	2	3	4	5
Scientists play a role in reviewing alternatives for management decisions.	1	2	3	4	5
The decision protects wildlife habitat over human uses.	1	2	3	4	5

- 4) **Trust in natural resource organizations is essential to the success of forest management programs. Please indicate your level of trust in the following agencies to make good decisions about forest management. Circle one number for each or check (☑) “Don’t know.”**

Agency	No Trust	Limited Trust	Moderate Trust	Full Trust	Don't know
U.S. Federal Agencies (Forest Service, BLM) in Washington, D.C.	1	2	3	4	<input type="checkbox"/>
Your local Forest Service or BLM staff	1	2	3	4	<input type="checkbox"/>
Oregon Department of Forestry	1	2	3	4	<input type="checkbox"/>

Section 2: After Wildfires

This section deals with making forest management decisions after wildfires occur. Please select the answer that most closely reflects your beliefs.

- 1) **Prior to this survey, how much had you thought about forest management after wildfires? Circle one number.**

1-----2-----3-----4-----5
 / | \
 None A moderate amount A great deal

- 2) **How well informed would you consider yourself to be about conditions and management of forests after wildfires? Circle one number.**

1-----2-----3-----4-----5
 / | \
 Not informed Moderately informed Very informed

- 3) **Many federal forest management issues involve difficult trade-offs between natural environmental conditions and economic considerations. In regards to forest management after wildfires, where are your priorities on the following scale? Circle one number.**

1-----2-----3-----4-----5-----6-----7
 / | /
 Highest priority should be given to maintaining natural environmental conditions after wildfires, even if there are negative economic consequences. Equal priority to both. Highest priority should be given to economic considerations after wildfires, even if there are negative environmental consequences.

- 4) **Federal forest agencies can use a number of different practices to maintain or change conditions in forests following a wildfire. We want to know what you think. Please review the four responses listed below; then, for each of the practices listed in the table, circle the number that best reflects your opinion about each. If you know too little to make a judgment about a particular practice, check (☑) the far right hand column.**

Response 1: This practice is a legitimate tool that land managers should be able to use whenever they see fit.

Response 2: This practice should be done only infrequently, in carefully selected areas.

Response 3: This practice should not be considered because it creates too many negative impacts.

Response 4: This is an unnecessary practice.

Practice (with description)	Legitimate Tool	Only Infrequently	Should Not Be Considered	Unnecessary Practice	Don't know
Replanting Plant seedlings in areas where desired species are not expected to return naturally.	1	2	3	4	<input type="checkbox"/>
Harvest burned trees Trees that are dead or expected to die are harvested and sold for economic gain.	1	2	3	4	<input type="checkbox"/>
Erosion control Activities such as installing water diversion culverts to help reduce damage from erosion after fires.	1	2	3	4	<input type="checkbox"/>
Seeding Planting grass and forb seeds to help reduce damage from erosion after fires.	1	2	3	4	<input type="checkbox"/>
Manage for safety only Conduct management activities only in areas as required for human safety. Leave the rest to nature.	1	2	3	4	<input type="checkbox"/>
No action No action should be taken on lands affected by fire. Let nature take its course.	1	2	3	4	<input type="checkbox"/>

Section 3: Biscuit Fire (2002)

Now we would like your opinions about planning actions and decisions for lands involved in the Biscuit Fire. Please select the answer that most closely reflects your beliefs. Your responses are important and will help us understand what citizens think about forest management after large local wildfires. **Answers and comments are strictly confidential.**

- 1) **Federal forest agencies (Forest Service, BLM) interact in various ways with local communities after wildfires. Please evaluate the following statements based on your experiences with these agencies in your area after the Biscuit Fire. Circle one number for each statement or check (☑) "Don't know."**

	Strongly disagree	Disagree	Agree	Strongly agree	Don't know
Federal forest managers have effectively built trust and cooperation with local citizens.	1	2	3	4	<input type="checkbox"/>
Federal managers have used public input to help make decisions.	1	2	3	4	<input type="checkbox"/>
The information provided by agencies is up-to-date and reliable.	1	2	3	4	<input type="checkbox"/>
I am skeptical of information from federal forest agencies.	1	2	3	4	<input type="checkbox"/>
Local agency staff are constrained from doing their jobs by government restrictions at the national level.	1	2	3	4	<input type="checkbox"/>
There are adequate opportunities for citizens to participate in the local agency planning process.	1	2	3	4	<input type="checkbox"/>

- 2) **Federal forest managers need feedback about their actions after the Biscuit Fire. Overall, how effective have local forest personnel been in planning for and managing lands affected by this fire? Circle one number or check (☑) "Don't know."**

1-----2-----3-----4
 / / \ \
 Not Effective Slightly Effective Moderately Effective Very Effective Don't know ☐

Please tell us one or two reasons for your response above:_____

- 3) We are interested in your opinions about specific aspects of how the federal forest agencies conducted planning and decision-making activities for lands affected by the Biscuit Fire. Please indicate your level of agreement with the following statements. Circle one number or check (☑) “Don’t know.”

	Strongly Disagree	Disagree	Agree	Strongly Agree	Don’t know
Decisions were based on scientific information.	1	2	3	4	<input type="checkbox"/>
Citizens had meaningful opportunities to contribute to the decisions.	1	2	3	4	<input type="checkbox"/>
Local public concerns were incorporated into management plans.	1	2	3	4	<input type="checkbox"/>
Federal forest managers did a good job of explaining management options, activities, and consequences.	1	2	3	4	<input type="checkbox"/>
Thus far, management decisions after the Biscuit Fire have been made according to a fair process.	1	2	3	4	<input type="checkbox"/>
Local Forest Service and BLM staff are reliable when managing forests after fires.	1	2	3	4	<input type="checkbox"/>
Residents of the Siskiyou mountain region find the local Forest Service and BLM staff to be trustworthy when managing forests after fires.	1	2	3	4	<input type="checkbox"/>
I agree with how local Forest Service and BLM staff have handled forest management after the Biscuit Fire.	1	2	3	4	<input type="checkbox"/>

- 4) Please tell us if your trust in the federal forest agencies (Forest Service, BLM) has changed because of how they handled management activities after the Biscuit Fire.

My trust in the agencies has... ☐ Increased. ☐ Not changed. ☐ Decreased.

If your trust has increased or decreased, what is the primary reason? _____

- 5) We would like to understand how much contact you have had with agency personnel after the Biscuit Fire, and how worthwhile you think it was. By “worthwhile” we mean activities you feel were a good, credible exchange of information and you would participate in again. For each item, indicate whether you participated in this activity following the Biscuit Fire. Then, for each activity in which you participated, indicate how worthwhile you found that activity.

Activity	Participated? (Circle Choice)	Worthwhile?			
		No	Somewhat	Moderately	Extremely
Provided written comments on forest plans	Yes / No	1	2	3	4
Spoke with agency personnel about forest plans	Yes / No	1	2	3	4
Participated in field trips or on-site demonstrations with agency personnel	Yes / No	1	2	3	4
Attended public meeting with agency personnel	Yes / No	1	2	3	4
Other (specify):	Yes / No	1	2	3	4

Section 4: Your Background

Questions in this final section help us to better understand peoples’ opinions. **All information in this survey will remain confidential.**

- 1) Do you belong to a neighborhood association or other property group that has a defensible space or fuels reduction program?

☐ No ☐ Yes ☐ Don’t know

- 2) Approximately how far do you live from the nearest boundary of the Biscuit Fire?

☐ 0-1 miles
☐ 2-5 miles
☐ 6-10 miles
☐ 11-20 miles
☐ 21+ miles
☐ Don’t know

3) Did you live in Southwest Oregon during the 2002 Biscuit Fire?

☐ No **—————→** Skip to question 4.

☐ Yes **—————→** Answer the following questions:

Were you evacuated during the Biscuit fire?

☐ No

☐ Yes

Were you affected by smoke from the Biscuit fire?

☐ No

☐ Yes

Did you have any property damaged in the Biscuit Fire?

☐ No

☐ Yes

4) What is your gender?

☐ Male

☐ Female

5) What is your age? _____ years

6) What is the highest level of formal education you have completed?

☐ Some high school

☐ Bachelor's degree

☐ High school graduate

☐ Some graduate school

☐ Some college

☐ Completed graduate degree

7) In your own words, what do forest agencies really need to concentrate on after a large wildfire event like the Biscuit Fire? Please use the space below to write any comments or suggestions.

Thank you for completing this questionnaire. We know your time is valuable which makes us appreciate your responses even more. Please fold the questionnaire and use the stamped envelope to mail it back to us.