Northern Inland West Land/Homeowner Perceptions of Fire Risk and Responsibility in the Wildland-Urban Interface

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Abstract

The issue of sorting through who should bear responsibility for mitigating wildfire risk in the wildland-urban interface of the northern Inland West was approached using focus groups. The groups were selected to reflect a variety of stakeholders in the study area population for whom interface issues are relevant. Most participants believed that current forest fuel conditions exist due to human alteration and that changes in forests and the interface are needed to mitigate wildfire risk. Overall the focus group members believed that the government has responsibility for managing forests under its control, but does not "owe" safety to the people who choose to live in the wildland-urban interface; most felt that homeowners must take greater responsibility for having defensible property in order to protect those responsible for wildland and wildfire management.

Keywords: wildland-urban interface, wildfire, homeowner responsibility, focus groups

Introduction

Anyone who regularly reads a newspaper knows that forest fires are increasing in intensity and destructiveness to ecosystems and social systems in the arid regions of the western United States. A closer look at the situation reveals that this increase in the destructiveness of fires is linked to changes in both of these systems. Healthy ecosystems can be characterized by their biodiversity, complexity, and fire resiliency. Fire-prone ecosystems are adapted to certain fire regimes, which are defined by fire severity and fire return intervals. In many fire-prone ecosystems, fire return intervals have been distorted due to a variety of factors including silvicultural practices, grazing practices, and climate change (Hessburg and Agee 2003). An additional major contributing factor is a long-standing policy that emphasizes suppression of all fires in the forest (Pyne 2004). Regardless of the causes, the impacts of changing fire return intervals have been an increase in the size and severity of wildland fires.

While this increase in wildfire size and severity has resulted in often dramatic ecological impacts, what have captured the public's attention are the actual and potential social impacts. The wildland-urban interface (WUI) is where we find homes and other structures built adjacent to or within tracts of flammable vegetation (Winter and Fried 2000). A rural migration boom, which began in the mid 1990s and continues today (McCool and Kruger 2003) has expanded the land area classified as wildland-urban interface, and has resulted in more people and higher-valued property being exposed to wildland fire.

WUI residents and their representatives are among the people who have asked who is responsible for mitigating fire risk in interface areas. One oft-stated perspective is that much of the increased fire risk in the WUI originates on adjacent public forest lands, so responsibility for mitigating this risk lies with public forest managers. A second perspective is that people choose to live in the interface, and therefore should bear at least some of the responsibility for mitigating the risk to their homes and structures. The research reported here uses focus group methodology to gain further understanding of how different groups answer the question of who is responsible for mitigating wildfire risk in the WUI.

Literature Review

We have found little published forestry literature that deals specifically with who is responsible for mitigating wildland fire risk in the WUI; more literature exists on attitudes towards fire generally. One of the earliest studies pertaining to public attitudes and wildfire (Hall 1972, 62) concluded that "There has been little research on public attitudes toward fire, yet available evidence and widespread opinion indicate that most people agree that fires are harmful and do a great deal of damage." Other studies, including Folkman (1979), also found strongly held views in favor of the suppression of all wildfires.

These opinions began to change in the 1980s. Gardner et al. (1985, 311) found that "Contrary to conventional wisdom, groups of forest users do not believe all fires are bad...they (survey participants) also recognize the need to weigh fire-fighting costs against benefits, and strongly reject traditional suppression approaches." Cortner et al. (1990) added supporting evidence for the shift in attitudes towards fire in the 1980s, and credit this shift in opinion to changes in policy and educational programs initiated by public land management agencies in the mid-1970s.

More recent studies have looked at support for specific activities to mitigate wildfire risk. In looking at support for prescribed forest burning in eastern Oregon and eastern Washington, Schindler and Toman (2003, 12) found that "the more knowledgeable individuals were about a practice, the more likely they were to support its use." Winter et al. (2004) and Vogt et al. (2005) found that a key to citizens' acceptance of fuel management practices, including prescribed forest burning, was trust in responsible land management agencies. Loomis et al. (2001) and Manfredo et al. (1990) reported results similar to those described above.

Studies regarding responsibility for risk mitigation in general have found that homeowners prefer the burden of responsibility to rest with the government. Slovic (1986) found that people prefer risks to be managed by competent professionals so that ordinary citizens need not worry about them. Speaking more specifically of the wildland–urban interface, Gardner et al. (1987, 171) state "…home-owners would rather have the landscape modified for their needs than modify their behavior to live compatibly within the environment." That study also found that homeowners did not like restrictions placed on their use of the land (e.g. building codes), but instead preferred burden of protection solutions be placed on the shoulders of government. Education programs about wildland-urban interface issues and offered by government agencies are found high on the list of preferred alternatives. It seems, as subsequent studies show, that as the general public has become more educated about interface issues, a greater emphasis on personal responsibility has emerged.

More recent research found that homeowners felt protecting their own property and being careful with fire constituted the extent of their responsibility (Winter and Freid 2000). These same homeowners felt the government should be responsible for managing public land for fire safety and for educating citizens and forest users about the fire hazard. However, Cohen (2000) contends that since fire exclusion is neither possible nor desirable, home-related pre-suppression fire protection (e.g. defensible space) should be shouldered primarily by homeowners, and that fire service personnel should provide homeowners with technical assistance as well as fire response in a strategy of assisted and managed community self-sufficiency. Expanding upon the idea of sharing responsibility, Chase (1993, 354) states:

While there is a natural inclination to assign the burden of responsibility to those who, as a matter of choice, live in or use an interface area with unsafe fire characteristics, the responsibility must be shared by either those who initially helped to create that situation, or those who allow it to continue including: developers,... governmental bodies,... insurance carries and financial institutions,... and fire protection agencies...

There is also literature that suggests that the "how" of defensible space creation figures into the willingness of landowners to take action. For example, Nelson et al. (2004) found that for homeowners in Minnesota and Florida, the values of naturalness, aesthetics, wildlife considerations, recreation and privacy figured heavily into decisions about managing their vegetation for defensible space.

Study Context—Complexity in the Wildland-Urban Interface

Government agencies have come to see the wildland fire challenge as one of finding ways to take preemptive measures in order to mitigate the potential risk from wildland fires in the interface, rather than waiting for fires to happen. The complexities of intertwining fire, wildlands and humans are many. Table 1 presents a representative list to illustrate the variety of factors that contribute to the complexity of land management in the WUI. This list is compiled by several fed*Table 1*. Some characteristics of landscapes where fire, wildlands and humans intertwine to increase complexity for land management (FEMA et al. 2001a,b; FEMA 2003).

* Large geographic and multi-jurisdictional al	ional areas
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- * Environmentally sensitive areas
- * Structural vs. wildland fire apparatus abilities
- * Limited points of access and egress
- * Evacuation of citizens/congestion on the road
- * Bridges and other roadway infrastructure
- * Telephone poles/electric poles/ radio towers
- * Limited water supplies/lack of municipal water
- * Varying types of fuel and levels of fuel loading
- * Varying structures, many may not meet building codes
- * Other types of property, boats, small businesses, barns, etc.
- * Fire behavior triangle: fuel, weather, and topography

eral agencies and groups who focus on wildland fire (Federal Emergency Management Agency et al. 2001a,b; Federal Emergency Management Agency 2003).

Each element in Table 1 contributes to the complexity of fire managers' and public safety officials' decision-making when managing land to mitigate fire risk in the WUI. While fire managers generally recognize these complexities, a central challenge is to productively engage the directly affected stakeholders and the general public so approaches to wildland fire management reflect not only the best available scientific/technical knowledge on the subject, but also the values and lived experiences of stakeholders. One fire expert states: "The question faced by fire protection agencies is not what must be done ... rather it is how to motivate the many diverse groups involved to use the information that is already available" (Chase 1993, 354). However, in a democratic society solving the problem is not just a matter of available technical information. Rather, the solution comes from intermixing scientific information with public perceptions and views and reaching what Yankelovich (1991) has termed "public judgment." In describing what is meant by public judgment and differentiating it from mere "public opinion," Yankelovich (1991, 65) states:

Cognitive resolution requires that people clarify fuzzy thinking, reconcile inconsistencies, break down the walls of the artificial compartmentalization that keeps them from recognizing related aspects of the same issue, take relevant facts and new realities into account, and grasp the consequences of various choices with which they are presented.

Progress on issues in the wildland-urban interface can benefit from the application of public judgment—large numbers of people critically thinking about WUI issues.

Agencies who manage wildland fire face additional challenges in carrying out their responsibilities. One challenge is related to compartmentalization of responsibility. Wildland agencies are neither equipped nor trained to handle structural fire suppression situations; structural protection agencies are not equipped or instructed to fight wildland fires. Federal agencies are not responsible for protecting private lands. Yet, to the public a fire truck is a fire truck (Cortner and Lorensen 1997, 24).

Another question that quickly arises during a fire is what resources are to be saved and why? Since, in some situations, there isn't the capacity to simultaneously protect life, property, and natural resources, choices must be made between sacrificing homes and sacrificing forest resources (Cortner and Lorensen 1997). These kinds of choices come with potentially high emotional, financial, and political costs.

Related to such complexity and choices is the issue of post-fire blame. Kumagai et al. (2004, 114) state, "Although various interrelated factors govern the extent of wildfire damage, people incurring damage tend to blame a single factor, often the actions and inactions of a government agency." The authors go on to suggest that as part of the causal attribution or "blaming" process, people tend to oversimplify the often complex causes for a destructive interface fire, arriving at emotionally satisfying but very incomplete explanations for their occurrence. There is additional evidence that much of the complexity that resource managers face is not well understood by those who choose to live in the interface. Gardner et al. (1987) found that the wildland-urban interface is a complex environment that homeowners may not fully comprehend. Similarly, Cortner et al. (1990) suggest that homeowners' low level of awareness may imply a poor understanding of the complex physical environment in which they live. This lack of understanding appears in large part to be due to the scale and complexity of the problem.

To begin to understand what the residents know and believe about mitigating wildland fire risk, we sought to create situations in which groups of residents "worked through" risk and responsibility issues in the WUI. Our goal was to capture what residents in and around the wildland-urban interface think is needed to mitigate risks, and who they believe should bear the responsibility for mitigation of those risks. Additionally and of equal importance, we wanted to observe the dynamics of group discussion and deliberation to see if the "working through" process advocated by Yankelovich (1991) occurred while discussing these issues. With an increasing interface population and area, residents, property owners, fire managers, and community leaders need to have a better understanding of the different views found in their community concerning responsibility for wildland fire in the wildlandurban interface. Residents also need a better understanding of the technical issues and tradeoffs involved, if they are to play a constructive role in reducing risk. Understanding

homeowner perspectives will help fire managers collaborate with residents in the WUI, in a joint effort to make everyone safer.

Methods

The Usefulness of a Focus Group Approach

An obvious choice of methods to approach such a problem would be to survey randomly selected residents in a region or community. Such an approach, carefully implemented, could be used to gauge public opinion on the issues of interest here. However, our purpose extended beyond obtaining a snapshot of public opinion. We wanted to observe how citizens would interact both with information about the complexity of the issues involved and with each other while being asked to think through questions of responsibility. A focus group approach was adopted for this research because of its potential to move beyond opinion to judgment. Focus groups can replicate the kind of working through that Yankelovich (1991) and other public policy scholars argue is needed in successful public decision-making forums that deal with complex issues (Reich 1985; Weber 2003). Though not a substitute for real-world public deliberation, focus groups, arguably, can replicate many of the dynamics of such deliberation. Hence, results of well run focus groups have the potential to be more meaningful and more in-depth than surveys or interviews conducted on an individual basis, despite the relatively small number of participants.

An environment may be created within a focus group in which the individual is faced with complexities, trade-offs, alternatives and perspectives that he or she might not otherwise encounter. An individual's consciousness is raised in a focus group setting when, working through an issue, "people must abandon the passive receptive mode... they must be actively engaged and involved" (Yankelovich 1991, 64). Participants are challenged to come face to face with an issue in a focus group, shedding the most frequent forms of resistance in working through to a resolution including denial, avoidance, procrastination, wishful thinking, and mental laziness. As Beebe and Omi (1993, 22) relate this to the wildlandurban interface, "...people have a remarkable ability to live in hazardous places with relative equanimity-either by denying that a hazard is likely to occur or by discounting its potential impact."

Focus groups such as those reported here were conducted so that participants could be given the chance to work through an issue and not reach individual judgments without the benefits of peer interaction. Encouraging participants to weigh future consequences or interactions between competing and complimentary choices surrounding the chosen topic forces an individual to think critically about the issue at hand. Through group discussion ideas were developed based upon the sequencing of topics that may not have been developed or been expressed otherwise (Krueger 1994). Participant responses were often offered in the context of the group discussion and not necessarily developed independently (i.e. ideas expressed within the group may differ from an individual response) (Edmunds 1999).

Selecting Participants

Our focus group participants represented stakeholders/ citizens from the northern Inland West. We defined the northern Inland West as the geographic area delineated by the crest of the Cascades in Washington to the Continental Divide in Montana, including northern Idaho. Members of the focus groups were selected to reflect a variety of stakeholders in the study area population for whom interface fire risks and issues are relevant. The decision to include members from different stakeholder categories allowed us to compare the knowledge, perceptions, and beliefs of citizens with different experiences and values. The most obvious stakeholder categories are urban and rural, but we wanted to reflect the diversity of people in these two categories in the northern Inland West. For example, both Spokane and Missoula are urban areas, but we did not lump those two populations together into one urban category. Missoula residents were included because Missoula had recently experienced the secondary impacts (including heavy smoke) of a large uncontrolled wildland fire in the surrounding forests.

We also wanted to further divide the rural segment because we did not want to lose the unique perspectives of tribal members, who are primarily rural. A Native American group was selected apart from the rural group to reflect the long history of tribal presence in the area and the tribal members' frequent experiences with fire. A rural non-native group was chosen due to the obvious relevance of fire risk to those who live in the rural study area.

A final group was made up of anti-smoke activists. The anti-smoke activists were people who actively opposed smoke from agricultural field burning, an issue of considerable controversy in the region. The anti-smoke and urban groups were selected as metropolitan counterparts of the other groups, with the anti-smoke group generally reflecting an environmentalist and public health perspective.

To summarize, we held focus groups made up of participants from five stakeholder categories: Missoula, Spokane, rural, Native American, and anti-smoke (Table 2).

Conducting a Focus Group

A focus group is a carefully planned discussion designed to determine attitudes and perceptions around topics of interest conducted in a non-threatening supportive environment

Table	2.	Description	of	stakeholder	categories	represented	in
focus	gro	oups			•	•	

		Number of participants in each focus group		
Stakeholder o	categories Description	Group 1	Group 2	
Spokane	Citizens residing within Spokane County, Washington	10	12	
Anti-Smoke	Eastern Washington residents concerned about the health effects of smoke from agricultural and prescribed forest burning	10	13	
Missoula	Citizens residing in a Montana town that recently experienced wildfire	10	10	
Rural	People from areas outlying Spokane or Reservations	12	12	
Native American	Members of the Colville Confederated, Spokane, and Kalispel Tribes, all with reservations in Eastern Washington	6	13	

(Krueger 1994). In our case, each focus group consisted of a professional moderator and eight to 12 participants representing one of the five stakeholder categories. For each of the five categories of stakeholders, two focus group sessions were held for a total of 10 sessions. Focus groups were conducted in the greater Spokane, Washington and Missoula, Montana areas from late October 2003 through mid January 2004. All but two of the sessions were held in a focus group facility; the others were held in a hotel meeting facility adapted for conducting such sessions. Each focus session was recorded on video and transcribed to collect all verbal information.

The moderator introduced discussion topics and allowed the groups to explore the topics and ideas at length. Focus groups were not expected to reach group consensus. The moderator began each focus group with questions related to general topics, such as the quality of life in the area. As the discussion developed, he would direct and gradually narrow the topics to issues related to forest conditions, fuel reduction strategies, fire risk, homeowner and government responsibility, and prescribed forest burning. (It should also be noted that these same focus groups were queried about the acceptability of smoke from prescribed forest burning. See Weisshaupt et al. 2005).

Results

Results presented below summarize the focus group discussion around three topics: (1) conditions contributing to wildland fire risk (the source of the risk), (2) ways to mitigate that risk, and (3) who is responsible for reducing the risk.

Conditions Contributing to Wildland Fire Risk

In order to understand the complexities involved in wildland fire management, each focus group began with a discussion of ecological and social conditions currently found in the WUI of the northern Inland West.

Participants recognized ecological and social conditions that contribute to the region's wildland fire risk. The discussion of ecological conditions generally focused on the buildup of fuels in local forests:

There are very few hillsides now that you can climb up... Now you have logs and dead trees and it's a mess. If there's a fire, I guarantee its going to be a big one. (Native)

There's a lot of timber that's just down. It's been down for years. And during summer, if you look at it hard, you can damn near see it smoke. (Rural)

Although participants agreed that conditions of the forests in the northern Inland West have been altered, they described current conditions in different ways and had different opinions as to how these conditions developed. Native groups and rural participants in particular emphasized that the current forests are overloaded with undergrowth and dead material. Missoula residents see their forests as too dense with undergrowth and "deadfall," and saw these conditions as contributing to the area's recent fire experience. Anti-smoke participants felt those who place the "priorities of the dollar" over priorities to maintain or improve the environment were negatively altering northern Inland West forests. Spokane participants felt that human interaction has probably negatively affected the forests in some way, but did not reach consensus on how human actions may have led to current conditions.

I think that we try to control situations like that (fuel loading) too much. It is obvious that forest took care of themselves for thousands and thousands of years, and we've only been here 200 years. Why do we have to jump in and think that we have to control it now? (Urban)

Focus group members identified the increasing number of people living in the WUI as the primary social condition contributing to the wildland fire risk. The following comment is representative of many who focused on people moving into interface areas to improve their quality of life:

...In the last 20-25 years, I've really seen a trend to, sort of, have this American Dream of 'Oh I want my house out there in the woods. I want 10 acres.' (Anti-smoke) Missoula residents, in particular, felt that the fact that many of these new WUI residents come from urbanized areas in states such as California presents special problems:

If they can't afford it, if they don't have the wherewithal, the common sense, the ability to get the tools to take care of their property, they shouldn't be out there. They are a liability to everyone.

All focus group participants recognized that the movement of people into the WUI made decisions about reducing wildfire risk in forested areas more complex and more important.

Ways to Mitigate Risk

Most focus group participants believed that fuel loading has reached "unhealthy" proportions in many northern Inland West forests, thus increasing the risk of large uncontrolled fires burning into the interface. This led to a discussion of fuel reduction strategies. The idea of creating defensible space was discussed among the groups as a way to help mitigate the problem. Defensible space is a buffer zone designed to reduce the amount of fuel around a home, and thereby reducing the risk of wildfire spreading through neighborhoods and/or burning personal property. Rural participants embraced the concept of defensible space easily, seemingly having a strong sense of self-sufficiency and responsibility for personal property.

Urban participants understood the idea of defensible space, but did not seem to view it as having as much salience as those who lived in the interface.

I agree that we should be aware and responsible, but on the same token if I am going to live in the forest I don't want to have 300 yards from my house to any actual tree. (Urban)

Rural participants reported having more experience than the other groups interviewed, excluding the native population, with prescribed forest burning and thinning as a way of reducing hazardous fuels. The tribal group members reported that they burned some of their own property, and felt that it was a good idea to have defensible space around their homes. Regarding thinning and burning to clear space around their homes, a tribal member observed:

It lowers the fuel around my home site if I burn every spring before it gets too dry, or right after it's just started to dry out I will do a prescribed burn. So it will take down all the dry old weeds...the green comes back up and you don't have to worry about the danger of high fuel for the forest fires. (Native)

There was some discussion of reducing or limiting wild-

land fire risk by reducing or limiting the movement of people into the WUI. Only one group (the anti-smoke group) raised the idea of growth management in the WUI.

Regardless of the means of reducing wildland fire risk, a consistent theme that emerged across the groups was the idea that it is better to "pay now" to reduce fuels than pay more later to fight a wildland fire. Native groups, who generally had more experience with fire and forest management, referred to the idea of paying now rather than paying more later as "common sense."

Who is Responsible for Mitigating the Wildland Fire Risk in the WUI?

Much of the area's native and rural populations live near publicly (federal or state) managed land. (This includes tribal reservations, but discussion of reservation lands was deemphasized to avoid adding another level of complexity to an already complex subject.) It is on this public land that many participants felt the government has sole responsibility for reducing fuels and mitigating wildland fire risk:

If my property butts up against state land and the state is mismanaging that (land) and creates a danger, that creates a danger in and of itself (Antismoke).

Many felt that public forest land has been "mismanaged" in the past leading to today's conditions. They viewed these conditions as creating a considerable liability, and felt that it is the responsibility of the land management agencies to ensure that its practices do not negatively affect the surrounding citizens.

Some participants worried that it would be difficult for individuals to have a significant impact on mitigating fire risk in an area, even if they do assume responsibility for reducing fuels around their homes, because of what is referred to as the "tragedy of the commons." Tragedy of the commons, in this instance, is the widely cited tendency for an individual to minimize the importance or necessity of his or her own action or restraint because of the presence of others not acting in a given system, thereby resulting in degraded conditions for everyone. Focus group participants generally believed that as more people move into an interface area, the more diffused the responsibility and greater the potential for lack of individual action. Some participants expressed the opinion that no matter what they do to take responsibility for the protection of their homes, if a neighbor (public or private) does nothing, then the effectiveness of the participant's actions could be minimized or nullified. A participant from an antismoke group articulated this notion:

Here in Eastern Washington we have a primary products economy and we basically all have this attitude about farming and mining and logging that these are the basis of the economy, and so we have a private property sense that goes with it. But there is also a set of community laws for the commons, which says that you might own that piece of land, but you don't own the stream that runs through it (Anti-smoke).

A persistent theme among all groups was that landowners should take care of their own land through preemptive measures. They clearly did not feel the government owes residents protection. A majority of participants thought that those who are responsible for wildfire management (government agencies) have a right to require homeowners to take some or all responsibility for having defensible property.

If you are not doing your part, why should somebody go in there and risk their lives to [save your property]? (Anti-smoke)

A participant summarized the overall thinking from the discussion of homeowner responsibility in the wildlandurban interface of both Missoula focus groups succinctly: "You made your bed, now lie in it."

Participants stressed that in order to take personal responsibility, some people would need education about interface issues. They felt that the best sources of education on this issue are government agencies, and that involvement by the government would be viewed as a positive step for reducing wildfire risk, not as an act of intrusion by the government. Two participants from Missoula specifically discussed the need for education in the northern Inland West, while recognizing the sensitivity in the region to "government intrusion":

#10: I think there is a lot that can be done educationally... to teach people how to defend themselves against these fires. But this is the rugged West, and a lot of these people are real individualists. They don't want to be told.

#9: But if they don't want to do that stuff, they can't expect the firefighters to come in and save their house.

#10: *Exactly, so therefore they have to pay the con*sequences. (Missoula)

In general, participants saw a need for government involvement to encourage landowners to take action to reduce wildfire risk:

...they need to spend money and educate the public...Encourage them, or give them incentives, or something to help them help themselves so our taxpayer money isn't spent fighting some idiot who let trees grow around his house and didn't provide a buffer. (Rural)

Focus group participants felt that no matter what they do, public landowners must bear a large amount of responsibility for reducing fuels on public land to help reduce risk to private lands:

In the sense that the largest land owner in most of the Northwest and most of Washington, is one public agency or another whether it be the Forest Service or State, if they don't maintain their forest in a responsible manner, then yes they do affect their neighbor (me) in a negative way. (Rural)

Missoula residents (much like the Native and rural participants) expressed a strong belief that while fuel conditions on many public forests should be altered, some fire is a way of life in the northern Inland West, and there is risk associated with living in such an area. They maintain that the burden of protection should be placed upon those who live there now and not on the government:

You can't look at...the Missoula fire department (after building in the interface) and say 'you owe it to me to take care (of my property).' (Missoula)

This was echoed by another apt quote from a Missoula resident, "The property owner is the first one responsible for the safety of their property."

Some participants, most notably the rural and Missoula groups, thought the nucleus of the problems in the wildlandurban interface was that people expected the same services in the WUI as they had in town—be it fire protection or other municipal services. Missoula and rural participants suspected "city transplants" in particular as having that attitude. They thought that those who moved into the wildland-urban interface zones did not understand that they now resided in an area in which municipal services would most likely not be what they were previously. Water mains, sewer lines or electrical cables may not extend to their property. It was also pointed out that fire service in rural areas couldn't compare to urban areas. In rural areas the closest fire station could be miles away and staffed by volunteers.

I've seen it in Montana where those kind of housing developments, the people expect the kind of fire protection and sewage services and other things, paved roads, that they had in town. But they sort of want the picturesque forest behind them instead of having a real earthy awareness of where they actually are and that's always been one of the risks if you are going to live in the country. (Rural) In places where a lot of us live, you pretty much have to be self sufficient. The ambulance isn't going to get there in five minutes, the fire truck is not going to get there in ten minutes. You're going to have to wait 15-20 minutes for emergency vehicles. (Rural)

An anti-smoke participant added:

...I think there's some ignorance among people like ourselves that we're building homes in spots that they got \$30 million and you're building the top of a hill and you want the fire truck up there to put out your forest when the whole thing goes up.

However, if local governments are to take responsibility for mitigating wildfire risk, some participants suggested that there may be a need to impose or raise taxes on people living in the WUI to help pay for protection in that area. The idea here was that if one chooses to live in the interface then one should pay the taxes in order to receive the services desired. An idea brought up by participants in a number of sessions was that those who live farther out should pay more property taxes to receive protection. Some thought that "hitting people in the pocket book" was the solution:

You should get taxed more if your house is underkept and you don't pay as high a tax if it is cleaner. (Urban)

Others thought just the opposite:

...this fire question is an interesting one because to some extent the people who do live on the fringes pay a premium in property taxes and so forth for additional coverage. And that's not the solution. (Anti-smoke)

Perhaps not surprisingly, the idea of greater taxation of WUI residents was popular among urban participants (i.e. those who do not live there), while other groups did not give as much credence to the idea.

Another idea for discouraging people from living in areas with high wildland fire risk was imposing higher insurance premiums to live in an interface zone. According to this reasoning if one lives in the interface zone he or she should have one's own property insured against possible fire damage.

...if we as humans want to live in the forested lands, and you have the capability to purchase the land etc., and live amongst the trees; I think that the financial burden of the security of your investment [should] be upon your shoulders. Not the citizens that pay taxes, not the Forest Service that has to put out forest fires. If you want to live in the woods, you pay an insurance policy premium that relates to what you are trying to protect and the rest of us are out of it. (Missoula)

Discussion

The focus groups engaged in productive discussions creating an environment that was conducive for group learning and movement towards public judgment. These groups were able to deal with the complexity of the issues in a reasonably systematic fashion while allowing all participants to have a voice.

I found the discussion interesting and educational to say the least. I see forest all around the area in which I live and I've never put too much thought to what it takes to keep those areas alive and prosperous. My mindset has changed considerably. (Spokane)

There were different levels of knowledge on particular topics among participants and between groups. Those in the Spokane area for example did not appear as knowledgeable about necessary steps to protect one's home from a wildfire as rural residents or Native Americans. Those in the antismoke groups tended to think along the same lines as the urbanites and were somewhat more knowledgeable about environmental laws, offering more feasible alternatives such as codes and restrictions. Missoula groups, having experienced a recent large wildfire in their area, seemed to appreciate the complex interactions that lead to interface conflict. Rural participants were, in general, quite familiar with forest issues, most likely due to home locality within the landscape. The natives who, it seemed, accepted both natural and humancaused fires as a part of life, understood the preemptive measures needed to protect oneself from threat of a wildland fire. The idea of mitigating personal fire risk was strongest with the tribal groups.

A general conclusion among the rural, Missoula, and Native groups was the need for homeowners to take responsibility for their own property. This theme was epitomized by the rural and Missoula participants in particular, with the "you made your bed now lie in it" viewpoint, suggesting wildland-urban interface residents should take responsibility for any possible consequences of building in the wildlandurban interface. Spokane residents and anti-smoke activists also felt that individuals needed to take responsibility in the interface, but generally wanted more government assistance than the other three groups. Missoula, rural and Native groups felt responsibility and financial obligation for mitigating wildland fire risk should be placed with the homeowner, while the Spokane residents and anti-smoke groups felt more of the responsibility and financial obligation should be placed with the government. Overall, a clear sense of personal responsibility echoed throughout all group discussions while most participants still wanted some government support, but not intrusion.

Government support was desired by some in the form of technical assistance and educational opportunities to the homeowner; although some participants thought this type of action can cross a line and become intrusive. Intrusion, by typical participant definition, would include government imposed defensible space requirements or overly stringent building codes. Most felt that the land they live on is theirs and they should be able to do whatever they want on it and bear whatever consequences may come.

The complexities of issues about defending personal property in the wildland-urban interface are manifold. An attempt to define homeowner responsibility in the wildlandurban interface from the homeowners' perspective gives some insight from those who live there. There was some ambiguity about responsibility in the WUI because fuel conditions on public lands can propel a fire onto private property, causing damage that may have been avoided had fuel conditions on public lands been mitigated. Missoula rural and native groups split the gray area between government and personal responsibility more towards the individual side, while the urbanites and anti-smoke participants generally drew the line closer towards the government responsibility side. Overall the focus group members seemed to believe that the government has responsibility for managing forests under its control, but does not "owe" safety to the people who choose to live in the wildland-urban interface. Most felt that homeowners must take responsibility for having defensible property in order to protect those responsible for wildland and wildfire management. Mutual responsibility was the bottom line consensus among all groups.

Conclusion

It is important to keep in mind that this is one set of focus groups conducted in a defined geographic area. We would suggest however that there are some potentially useful broader policy lessons to be drawn concerning views about where the line of responsibility between government and individuals should be drawn. These results suggest that topdown, government imposed restrictions are likely to be resisted by interface residents, but education, incentives, and other possible indirect government programs may be better received by such residents. These results and the general literature on risk suggest that approaches to fire risk in the WUI should focus on fostering individual responsibility, rather than top-down regulatory approaches. This was linked to the apparent greater willingness of people to accept self-imposed responses to risk rather than ones placed upon them by nonlocal entities. Helping residents in the interface to understand the risks inherent in the area and encouraging them to use available technical information to design site specific approaches to mitigating risk would seem to make them more willing to take proactive action against such risk. As Nelson et al. (2004, 413) state:

Motivating homeowners to create defensible space requires a better understanding of homeowner values, knowledge, perceptions and current actions in order to lay the foundation for a successful wildfire preparedness partnership between homeowners and public land managers.

To do this we suggest a collaborative approach allowing residents to come to terms with the potential risks as a result of working through issues, rather than a regulatory approach that risks alienating residents and creating tension between regulators and citizens.

Given the complexity of interface issues, the debate about responsibility in the interface is not likely to be resolved any time soon. Well-organized, facilitated group discussions such as those reported here seem to have the potential to engage stakeholders in productive ways that help to avoid the pitfalls of the oversimplification of issues and blaming behavior that Kumagai et al. (2004) discuss. The interface zones continue to grow in many places throughout the United States and wildland fire continues to be a problem. Thus these questions will likely continue to be on the agenda of many stakeholders across the country.

We suggest that these focus groups can be seen as a microcosm of what could be done on the macro scale to progress towards reaching better answers to the complex policy issues surrounding risk and responsibility in the interface. Most of the elements that our groups struggled with in this geographical region are at issue throughout the West and much of the nation. A better understanding of the social aspects of wildland-urban interface management is an important piece of the overall fire policy dilemma. Although groups did not reach closure on many of the details surrounding responsibility in the interface, most were enlightened by working through the issues. More importantly, the groups came to broader and deeper understandings of the complexities of the issues than existed at the beginning of the sessions. As one anti-smoke participant reported about his group experience:

I felt my opinion changing as I learned more, and that made me mad.

We would suggest that such an emotion is part and parcel of coming to understand that public policy dilemmas such as those faced in the WUI require solutions that stretch our individual comfort zones. If progress is to be made on issues of responsibility in the WUI, perhaps more people need to "get mad."

Endnotes

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