



Research *Review*

NO. 17 | SUMMER 2012



Fuel in a rural development in northeastern West Virginia.
Photo by Pamela Jakes, U.S. Forest Service

Helping Communities Take Charge of Their Wildland Fire Safety

Wildland fires burn millions of acres annually, damaging human and animal communities, endangering the lives of firefighters, and costing hundreds of millions of dollars in damages and suppression expenses. However, wildland fires are also important to maintaining and restoring the health of many forested ecosystems.

Fire management approaches have changed considerably since major firefighting efforts began over a hundred years ago. Then, concern about the negative impacts of wildfires on timber and watersheds led to a policy of total fire suppression. Now, land managers have realized that total removal of fire from the landscape has led to a buildup of fuels that can make fires more severe than before. Changes in vegetation to less fire-resistant plants, climate change and drought, and insect outbreaks also contribute to fires that can burn hotter and leap into the tree canopy, thus becoming more difficult to manage.

To restore the nation's forests to more fire-adapted conditions, land managers need to allow for more fire on the land, whether as prescribed burns or by allowing some naturally occurring wildfires to continue burning for the resource's benefit. Because many people now live in areas at risk of wildfire (the wildland-urban interface, or WUI), such work must be done carefully. Managers need to take into account the human concerns and values that may potentially be affected in efforts to foster more fire-adapted landscapes. Many fire policies are the results of institutional tradition and regulations, response to public and political pressure, or conventional wisdom. They may not be the most useful, appropriate, or cost-effective solutions to particular problems.

The U.S. Forest Service's Northern Research Station (NRS) employs social scientists who are studying the "people aspects" of wildfire management and policies. Pamela Jakes (St. Paul, MN) and Sarah McCaffrey (Evanston, IL) are

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currently conducting research across the country and around the globe to examine multiple social aspects of wildland fire management. This work helps ensure that managers, policy makers, and citizens work together to develop fire management programs that more effectively decrease wildfire hazard and improve forest health. Information from this work also has helped outreach programs target real rather than perceived social barriers.

PEOPLE INFLUENCE ABILITY TO MITIGATE FIRES

Land management agencies across the United States use thinning and prescribed fire or both to reduce vegetative fuels that have built up due to fire suppression, climate, and land use. Although these fuel reduction strategies can improve ecological conditions and help reduce the severity and extent of future wildfires, they are often thought to be poorly supported by the public.

In research in communities near national forests in Wisconsin, Minnesota, and Michigan, Sarah McCaffrey, with partners Bruce Schindler (Oregon State University, Corvallis) and Eric Toman (Ohio State University, Columbus), asked for residents' perspectives on fuel-reduction practices and related risks, their confidence in the U.S. Forest Service to effectively implement treatments, and their views on effectiveness of interactions between the Forest Service and forest communities. The researchers found that there is strong support for prescribed fire and fuel-removal treatments; in fact, most participants believed that these practices are necessary. However, ratings of how well the U.S. Forest Service interacted with local communities were mixed at all three study sites. Participants also expressed concerns that managers could safely implement prescribed fires. Overall, Minnesota residents had the fewest concerns and Michigan respondents the most. In a related study, when the same research team surveyed homeowners in six communities in Idaho, Oregon, and Utah, they found similar strong acceptance levels for prescribed fire and thinning treatments. They also found that confidence in those implementing a specific practice was a key predictor of acceptance. Both studies highlight the importance of positive local agency-community interactions in fostering support for a treatment.

FLEXIBILITY OF FIRE RESPONSE REQUIRES MANAGEMENT PLANNING

One of the challenges to flexibility in fire management practices is the perception that there are political and community pressures for using only total fire suppression rather than using less aggressive techniques that might allow more fire on the land. However, in a study that interviewed community members and agency administrators and fire managers



Pamela Jakes, U.S. Forest Service

Neighborhood-scale community wildfire protection plans motivate individual homeowners to take action to reduce their wildfire risk; here the piles of brush and logs indicate that these Minnesota homeowners have been pruning and thinning their conifers.

involved in two fires in 2008, Sarah McCaffrey and Toddi Steelman (North Carolina State University, Raleigh) found that internal elements of firefighting organizations were the constraint; that is, guiding documents such as Land Management Plans and Fire Management Plans dictated the extent of flexibility allowed. In areas with flexibility built into their plans, and good outreach efforts, fire managers were thus able to be flexible. The researchers also found that community expectations of suppression were not uniform—some individuals favored suppression whereas others favored more limited response. They also determined that local agency outreach efforts could shape or change expectations and help the public accept flexible fire plans.

COMMUNITIES BENEFIT FROM FIRE MITIGATION PLANS AND ACTIVITIES

The Healthy Forests Restoration Act (HFRA) of 2003 supports development of Community Wildfire Protection Plans (CWPPs) in WUI communities. Just as ecosystems vary in biodiversity and complexity, so do communities. They have variety in types of government, land ownership patterns, residential density, financial resources, schools, and social networks and organizations. These factors—plus an area's fire history and residents' attitudes, knowledge, and skills—all influence how well residents absorb the message of community fire planning and what activities they will do. CWPPs offer a framework for developing fire plans collaboratively. The HFRA is sufficiently flexible to allow communities to develop their own priorities for wildland fire management. A plan that meets the needs of one community may not work at all in another, but communities can learn from each other.



Sarah McCaffrey, U.S. Forest Service

Homeowners discussing management options to reduce wildfire risk for their land, with a local fire expert.

In a series of studies on the social aspects of creating CWPPs, Pam Jakes and her research partners across the country have examined whether a policy like the HFRA can bring local residents and emergency managers together to achieve common goals for wildland fire management. They examined documents and conducted in-depth interviews with people who had participated in developing CWPPs in 13 case-study communities. They found that the HFRA requirement to work together influenced the CWPP development process and the ways that people learned from each other. In another study, they found that the process of developing a CWPP had effects beyond the plan itself. Community social networks were generally expanded and strengthened during the CWPP development process and a positive atmosphere around learning together and sharing information developed or was reinforced. CWPP development is helping many communities build what is known as “community capacity”—the ability of the community to meet residents’ day-to-day needs.

CWPPs are relatively new in the United States and few communities have experienced wildfires since creating CWPPs. In a study of three communities that did, Pam Jakes and Victoria Sturtevant (Southern Oregon University, Ashland) found that the treatments carried out as part of the CWPP help with fire suppression and in protecting the community. In addition, the relationships developed during the planning process improved communication and cooperation during the fire. As more communities complete the process of creating CWPPs—and put them

into action before, during, and after wildfires—research studies like these help the firefighting community and the local communities learn from their successes and missteps.

ALTERNATIVES TO EVACUATION

In the U.S., there is a general expectation that all community members will evacuate when a fire approaches. However, anecdotal evidence that many choose to stay and recognition that in some situations evacuation may not be possible have led to increased interest in alternative approaches. Of particular interest is the Australian approach where it is generally left to homeowners to decide whether they will leave or stay and defend their homes during wildfires.

To better understand evacuation dynamics in both countries, Sarah McCaffrey worked on several research projects with U.S. and Australian cooperators. Interviews with Australian firefighting organizations found several factors that could influence how appropriate the Australian approach might be in the United States. This work identified many parallels between the fire risk and social dynamics in each country, but found that institutional factors were likely the most meaningful differences. In Australia, firefighting organizations are limited in number and are primarily state-based. The national government has only a limited role in firefighting and local (generally volunteer) fire brigades are centrally coordinated at the state level. Overall, the authors did not find



Sarah McCaffrey, U.S. Forest Service

Log cabin in Colorado wildland-urban interface where homeowners have cleared out brush for a fire-free zone.

that differences between the two countries were systemic enough to make the Australian approach unviable in certain U.S. communities. However, careful groundwork would need to be laid where local communities worked in close partnership with fire agencies.

Pam Jakes, Matt Carroll (Washington State University, Pullman) and Travis Paveglio (University of Montana, Missoula) talked to emergency managers in southern California about their support for and implementation of alternatives to evacuation. They found that firefighters who have broad firefighting experience (working for different agencies in structural and wildland fires) and work for agencies that are flexible and innovative tend to support alternatives to evacuation. Professionals are also more likely to support alternatives when they perceive that local residents will not hold them liable for damages resulting from trying new innovations.

Subsequent work in communities in California, Florida, and Montana highlighted the importance of better understanding evacuation dynamics in the United States, as results supported anecdotal evidence that some homeowners are choosing not to evacuate. When respondents who had been threatened by a wildfire were asked how they had responded during the most recent fire, 38 percent indicated they left early or when instructed by authorities, whereas 48 percent indicated they had waited to see what would happen before they decided to stay or leave. Overall, 20 percent indicated that they had stayed throughout the fire and tried to protect their property.

NRS social scientists are conducting research to help WUI communities and resource and emergency managers work together in all phases of wildland fire management—mitigation, preparedness, response, and recovery. The ultimate goal of this research is to help communities become adapted to living with wildfire so that to the extent humanly possible, they can experience a wildfire without it becoming a disaster.

BIOGRAPHIES

Pamela J. Jakes is a research forester in the NRS's unit entitled "People and Their Environments: Social Science Supporting Natural Resource Management and Policy." She is stationed in St. Paul, MN, and has been with the USFS for more than 30 years. She received her PhD and MS from the University of Minnesota, and her BS from Michigan State University. She is currently completing a Joint Fire Science project that identifies the social elements that help a community live with wildfire. She is also exploring whether adaptive capacity for one hazard (such as wildfire) helps prepare a community to withstand other hazards.



Sarah M. McCaffrey works in the same unit as Jakes but is stationed in Evanston, IL; she has been with the USFS for 10 years. She received her PhD and MS in wildland resource science, and her BA in international relations from Stanford University. Her research focuses on the social aspects of fire management. This has included National Fire Plan and Joint Fire Science sponsored projects examining the characteristics of effective communication programs

and the social acceptability of prescribed fire, thinning, and defensible space. More recently, she has begun work on the social issues that occur during fires, including alternatives to evacuation and community-agency interactions at that time.

RESOURCES AND REFERENCES

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