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Collaborative Planning to Reduce Risk

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Wildland fire knows no political boundaries, nor should efforts to address its risk. Collaboration is not a new idea; many examples of natural resource managers and community groups working together can be found in forest management planning, watershed restoration, and wildland fire suppression (Sturtevant et al. 2005). Direction from a number of sources has urged collaboration as a means to achieve wildland fire management objectives. In 2001, Congress called for "close collaboration among citizens and governments at all levels" for the management of wildland fire, hazardous fuels, and ecosystem restoration (P.L. 106–291, cited in WGA 2001). The Western Governors' Association also outlined a collaborative approach for reducing wildland fire risks. Federal and state authorities provide incentives for collaboration, coordination, and cooperation, including recent initiatives such as the National Fire Plan (NFP) and Healthy Forests Restoration Act 2003 (HFRA) (USDA/USDI 2000; USFS 2004). Programs such as Firewise, FireFree, and Firewise Communities USA provide collaborative forums for homeowners to collectively address their risk.

Findings from case studies of community fire-planning processes across the country support the notion that collaboration enhances community preparedness for wildland fire and implementation of fuel-reduction projects across ownership boundaries. We found that successful collaborations reflect their ecological and social contexts and are affected by their ecological and social scale. For example, collaboration for fuel reduction by a small group of property owners is less complicated socially but less significant ecologically than collaboration on a larger scale, such as a watershed. This ecologically appropriate scale includes a variety of ownerships, however, including small woodland, industrial, and public forest, as well as diverse social values, presenting challenges for collaboration. Successful collaborations work at a scale appropriate to the community, a scale that evokes shared values, collective action, and sense of

place—often neighborhoods or subwatersheds within a larger watershed. Local, small-scale projects may work better than larger ones, but planning needs to be broad enough both to gain endorsement from appropriate political jurisdictions and to cover the ecosystem (Pipkin and Doerksen 2000).

In this chapter, we introduce a model of collaboration that highlights the importance of context, describe stages of collaborative processes, and suggest potential desired outcomes (Figure 3-1). We then illustrate the model with case study findings regarding community efforts to address wildfire risk.

Context

Understanding the ecological setting and social dynamics of the community is essential for successfully undertaking and studying a community-based collaborative project. As social scientists, we are particularly interested in the social composition and history of the community and its constellation of assets, which provide the capacity to launch a collaborative effort.

Ecological Context

Ecosystems vary in their biodiversity, complexity, and fire resiliency. Fire-prone ecosystems are adapted to certain fire regimes, defined by a combination

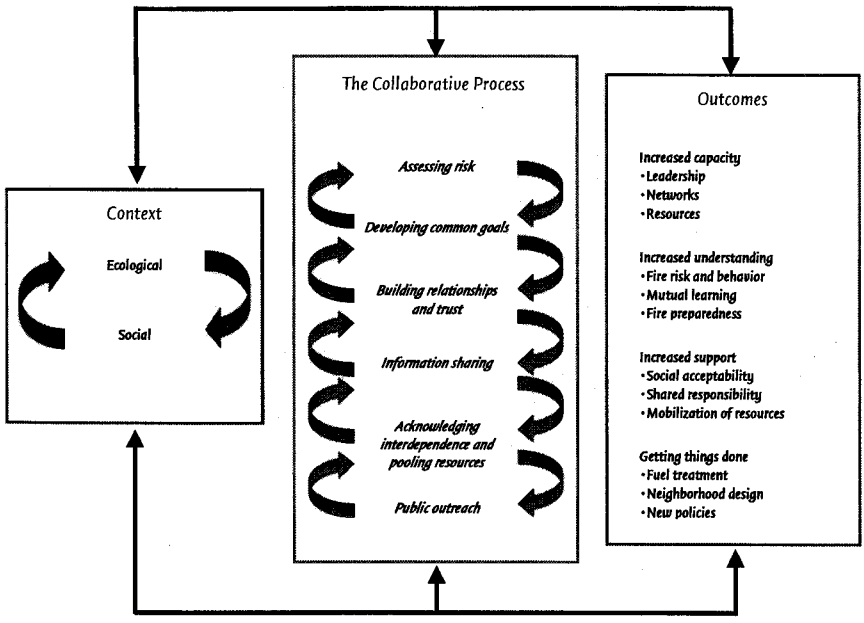

FIGURE 3-1. A Model of Collaboration

of fire severity and fire return intervals (Barrett 2001). For many communities, fire return intervals have been distorted by fire suppression activities. Any alteration of fire frequency or intensity will result in losses of plant and animal species diversity, site degradation, and increases in the size and severity of wildland fire (Ferry n.d.). Insect infestations, drought, and downed trees from windstorms all heighten wildland fire risk and mobilize collective response. The ecological context is an obvious factor for studying collaborative wildland fire management.

Social Context

Just as ecosystems vary in their biodiversity and complexity, they also vary in their social diversity and complexity, including ownership patterns, residential dispersal, income, education, and social networks necessary for community action. A wide variety of people and organizations play a role in wildland fire preparedness (Jakes et al. 2004). As David (1990, *27*) put it, "The interface fire problem is not just the responsibility of land managers. Many other groups must share responsibility for solving the problem—fire protection agencies, homeowners, local and regional planners and governing bodies; builders, contractors, and building and landscape architects; and insurance carriers and mortgage bankers."

Individuals bring their talents, knowledge, and skills—often referred to as human capital (Becker 1962)—to collaborative wildland fire management. These skills enable individuals to fill a variety of roles in a collaborative group, such as problem solver, data collector and analyzer, grant writer, fundraiser, and meeting facilitator. Leaders provide vision, direction, and structure; they bring entrepreneurial attitudes (Yaffee and Wondolleck 2000) and ambassadorial skills.

One of the more critical roles that individuals play in collaborative wildland fire management is that of a catalyst for change. Key community and agency leaders can spark a collaborative effort, taking steps to secure funding and shepherding the process. Some people are better qualified for involvement in collaborative processes because of their capacity to reflect critically, be open to diverse viewpoints, and be willing to engage in productive communication (Kegler et al. 1998).

Wildland fire management is often most effective when planned and conducted at the community level (David 1990). As described in the Firewise Communities workshop literature,

> Communities are more than places where people live, work, and raise their children. They are the relationships, partnerships, attitudes and values that bind people, businesses, organizations and agencies together and motivate them to achieve common goals. A stable community provides a sense of security, serenity, comfort, and neighborhood. (2001, *4*)

Besides individuals, events or actions occurring at the community level can also be catalysts. Selin and Chavez (1995) identify seven social factors that catalyze collaboration: crisis, broker intervention, mandate, common vision, existing networks, leadership, and incentives. NFP grant funding has been a catalyst. Wildland fires themselves serve as catalysts. Even when the fire event is removed by time and space, good educators and communicators can make use of these windows of opportunity to facilitate change (Monroe et al. 2005).

Another community characteristic critical to collaborative wildland fire management is community history—the people, events, and processes that have occurred prior to the collaborative effort (Goodman et al. 1998). A community's history helps determine its identity. The perception of social, political, and economic changes that have occurred throughout the community's history can affect people's willingness and ability to engage in collaboration.

The history of collaboration or cooperation in the community shapes current efforts. Contentious, unresolved past conflict will hinder success (Moote 2003); collective past achievements will better position a community to address a common threat, such as catastrophic wildland fire. If community leaders, including local elected officials and agency managers, are not involved in the collaboration, their ongoing support is important.

Attachment to place refers to people's emotional bond with a place (Davenport 2003). A community can be seen as a "geographic space that has been imbued by meaning and this meaning is largely formed through personal use and involvement with a place" (Kaltenborn and Bjerke 2002). This sense of place shapes people's collectively held values and their sense of mutuality (Kemmis 1990). Because of the ties people have to their place, residents are moved to work with neighbors, agencies, and organizations to protect their community from wildland fire. Attachment to place and stewardship ethic are related to ecological context, settlement patterns, and restoration needs.

The organizational context for collaboration is the groups, agencies, and other associations and networks linking these institutional bodies (Chaskin et al. 2001). Organizations, alone, provide goods and services; networked, they provide relationships that produce trust and increased capacity for problem solving. Collectively, they can act to mobilize resources and support an initiative such as wildland fire preparedness. The simple presence of organizational networks does not build community capacity, yet their mutual obligations and overlapping missions do (Goodman et al. 1998; Chaskin et al. 2001).

Two concepts currently popular in the community literature—social capital and community capacity—have been identified as critical to collaborative wildland fire management (Jakes et al. 2003; McGee and Russell 2003). Social capital, as defined by Pretty (2000, *78*), is the "cohesiveness of people in their societies" and the various networks and relations that build trust and make cooperation possible. Community capacity, as defined by Chaskin et al. (2001, *7*), is the interaction of human capital, organizational networks, and social

capital in a community "that can be leveraged to solve collective problems and improve or maintain the well-being of a given community."

Relevant organizations to wildfire planning are federal, state, and local land management and fire prevention agencies, volunteer fire departments, local governments and planning departments, nongovernmental organizations, voluntary or fraternal associations, and neighborhood or property associations. Ties between organizations within a community are referred to as horizontal networks; outside ties are called vertical. Communities with members who have ties to organizations both within and outside the community may have greater capacity to tackle communitywide concerns (Goodman et al. 1998). Both are important for building social capital (Flora 1998).

The Collaborative Process

Collaboration, the process highlighted in the center box of Figure 3-1, has been defined several ways. Fundamentally, it is the "pooling of appreciations and/or tangible resources, such as information, money, labor, etc., by two or more stakeholders to solve a set of problems which neither can solve individually" (Gray 1985, *912*). Wondolleck and Yaffee (2000, *8*) define collaboration in resource management as "building understanding by fostering exchange of information and ideas among agencies, organizations, and the public and providing a mechanism for resolving uncertainty . . . [and] for effective decision making through processes that focus on common problems and build support for decisions."

Much literature delineates "steps" or "stages" of the collaborative process (Moote 2003; Selin and Chavez 1995; Sirmon 2001; Sturtevant et al. 2005). Our work finds the following elements of process important to wildland fire preparedness: risk assessment, common goals and shared visions, relationships and trust, information sharing, interdependence, resource pooling, and community outreach and education. We will review these, drawing briefly on literature relevant to our findings.

Assessing Wildland Fire Risk

Although all might agree that wildland fire poses a risk in landscapes where historic fire regimes have been significantly altered or lives are imminently threatened, it is another matter to agree upon how to address the risk and communicate it to the public. Obvious participants in collaboratively assessing risk are already cooperating fire agencies, which "may be asking the same questions and seeking similar solutions" (NWCG 1999, *11*). Framing the issue can be tricky, however: residents need to be alerted to the danger of wildland fire but do not respond well to scare tactics and ordinances; local governments are interested in attracting development and shy away from too

many planning regulations. Credible information, such as maps of fire history or scientific information about fire-dependent ecosystems, is useful in assessing and communicating fire risk but may be difficult to procure.

Developing Common Goals

Agreeing on goals allows participants and other interested parties to understand clearly the purpose of their involvement (Ingles et al. 1999; Rickenbach and Reed 2002). Goals are created by discovering and then building upon the commonality of place or community. They often reflect the way participants frame an issue, be it forest health, residential incursion on forest lands, or property loss. A written mission statement underscores this common purpose, providing a course of action and identity for the group (Selin and Chavez 1995).

A recent wildland fire can unify a group otherwise not able to find common ground. Interagency fire managers' coordinated system of fire management has served as a foundation for wider collaboration with the public (Jakes et al. 2004). They link to current efforts in the community, such as volunteer fire department auxiliaries or county planning initiatives. Some environmental or other community groups may be galvanized by a fuel reduction project or new policy, such as HFRA.

Building Relationships and Trust

"Trust is a matter of building credibility and building relationships . . . and demonstrating an attitude of inclusiveness" (Pipkin and Doerksen 2000, *16*). Successful collaborations start with the middle ground, places where people can agree, and build outward. In fuel-reduction projects, middle ground can be found through thinning the "small stuff," clearing along roads and driveways, and working with willing homeowners to create "show me" houses. Collaborative processes create ties and relationships, which are strengthened and extended through involvement in the community—for instance, agency employees offering technical assistance, such as home fire risk audits (Jakes et al. 2003), or working with local leaders and officials in their planning process.

Information Sharing

Information sharing involves not only gathering data about the issue and developing a common knowledge base, but also members learning more about one another, their interests and values. Citizens share their values to be protected, work together to identify hazards and strategies for fuel reduction, and plan for emergency preparedness in their neighborhoods.

As the number of community members interested in natural resource issues has dramatically increased, including contract scientists and retired

agency scientists and managers bringing their own data and approaches, collaborative learning becomes more essential. Collaboration among agency, university, and community scientists moves from "dueling science" to "our science" and cultivates "civic science," a "gyroscope" for conflicting information and values (Lee 1993).

Acknowledging Interdependence and Pooling Resources

Sharing of personnel, equipment, and information is more necessary with shrinking agency budgets, as is leveraging resources (USFS CST 2000). Although initial investments of time and funding are necessary, they pay off in the long term or provide intangible benefits such as better working relationships and can increase efficiency and the "bang for the buck" (Imperial and Hennessey 2000, *18*).

Collaborations rely not only on support from local agencies and community groups, but also on outside linkages and resources. Wildland fire management collaboratives need state and federal resources; federal agencies need state agency and community support. Communication among agencies is necessary to map data across ownership boundaries and set standard policies. Collaborating agencies have created liaison positions; they rethink traditional job descriptions and create new administrative structures.

Public Outreach

Reaching homeowners and changing their behavior are central to wildfire risk reduction across the landscape. Newsletters and multiagency educational workshops are vehicles for outreach, demonstrating a unified voice. Collaborators make use of opportunities such as festivals, parades, tree-planting parties, county fairs (BLM and Sonoran Institute 2000), and similar venues not only to share their message, but also to gather information and develop partnerships in wildfire management with local homeowners. Projects on the ground or demonstration sites help the collaborative group gain credibility and demonstrate a successful accomplishment.

Outcomes

The following discussion of outcomes—new linkages and relationships, emerging leadership, shared resources and goals, civic responsibility, and neighborhood action—echoes the earlier discussion of social context. Indeed, the outcomes of collaboration to reduce wildfire risk strengthen community capacity and build on existing assets, encouraging members of the community to act in their own interest, and also mobilize collective action that can build human communities and restore ecosystems.

Increased Capacity in Leadership, Networks, and Resources

New leaders emerge through collaborative processes (President's Council on Sustainable Development 1997), and in fire-planning processes an array of leadership skills—taskmaster, coordinator, facilitator, and cheerleader—come into play. A critical issue facing community leaders is burnout. "This core [leadership] is composed of ordinary human beings who, in the course of life, become tired or burned out or simply move away. There is a need for designing a way to institutionalize their 'charisma' and their leadership so that there is real continuity of the effort" (Burch 2003, *xi*).

Networks created through collaboration provide enhanced capacity for communication and information sharing. Carr et al. found some of the most beneficial aspects of collaboration reported by Forest Service employees and external partners to be "building relationships and networks, sharing information, improved communication and gaining trust for each other" (1998, *770*). Collaboratives can create agreements for sharing personnel and equipment (Wondolleck and Yaffee 2000) and "accelerate day-to-day cooperation and sharing of resources across various administrative units" (Rolle 2002, *14*).

Collaboration facilitates shared databases, such as merging of multiple GIS databases from federal, state, county, and private lands (Rolle 2002) and websites with software and data downloads for coordinated watershed and fire planning (Birkholz and Lineback 2001). These comprehensive data sources increase the capacity of both agencies and private citizens to decrease fuel loading across ownerships, as well as the effectiveness of emergency preparedness and response.

Increased Understanding, Mutual Learning, and Fire Preparedness

"Only when the public truly understands the nature of the wildland/urban interface fire problem will the community-based coalitions needed to effectively mitigate the problem be successful" (Teie and Weatherford 2000, *29*). To be motivated to participate, individuals must understand the issue. Studies of wildland fire and fuel management planning show that collaborative projects have promoted personal responsibility and motivated landowners to mitigate their own, as well as neighbors,' vulnerability to fire (Firewise Communities USA 2003; Steelman and Kunkel 2003).

Increased Support and Mobilization of Resources

Community backing broadens the base of political support. Community leaders can serve as advocates for agency projects and policies, assisting in public outreach and serving as champions of the collaborative goals. Community members can leverage new sources of funding and resources, including

technical expertise and volunteer labor (Loucks 2002; Wondolleck and Yaffee 2000) and assist in monitoring (Conley and Moote 2003).

Implementation of Projects and Policies

Projects supported by the National Fire Plan have brought together local, state, and federal agencies to restore high-risk ecosystems, work on reducing hazardous fuels, and initiate community projects to reduce risk (Rains and Hubbard 2002). New policies and government initiatives reflect new perspectives gained through partnerships (Moore and Koontz 2003). Local governments can pass ordinances and regulations, and subdivisions have adopted covenants that require fuel management (Jakes et al. 2004; Monroe et al. 2003), but these political moves require broad-based support. Federal and state policies dictate agency coordination during fire suppression, yet collaboration could create agreements better suited for their communities. Publications of the National Wildfire Coordinating Group (NWCG) encourage wildland management agencies to collaborate to create new mutual-aid agreements and work better with the public (NWCG 2004).

Methods

A study of 15 communities preparing for wildland fire across the United States (Figure 3-2) focused on the steps taken by communities to increase their wildland fire preparedness and the social conditions necessary to implement and sustain these steps. Four criteria were used to select the case study communities. First, each community has experienced wildland fire within the last five years or has ecological conditions that represent a high fire risk. In some instances, these high-risk ecological conditions were recognized and acknowledged only by the resource or fire professionals in these communities. Second, all case study communities have taken steps to increase wildland fire preparedness. Third, communities in the study represent a range of community capacity; some were incorporated or had a number of nonprofit and voluntary organizations that provided opportunities for civic participation, whereas others were limited in their governmental and organizational capacity. Finally, case studies were clustered in three regions—the West, Southeast, and Midwest–Northeast—with five cases selected from each region. Communities chosen for case studies were defined in different ways; they included a rural fire district, subdivision, town, watershed, county, and reservation. Key informant interviews were conducted in each community, with participants reflecting the broad array of roles in wildland fire preparedness.

In selecting the Applegate Watershed as one of these communities, we were able to build on the long-term research of one author, which allowed specific focus on the collaborative process during preparation of the Applegate Fire Plan.

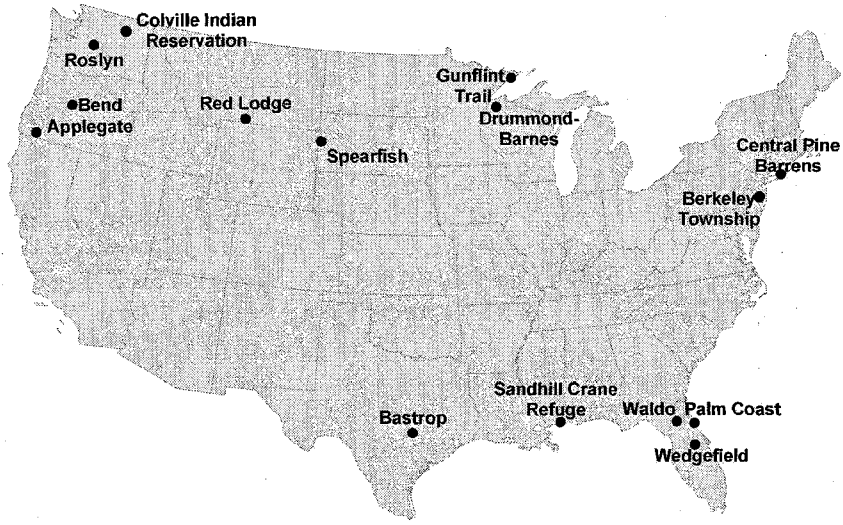

FIGURE 3–2. Locations of 15 Wildfire Preparedness Case Study Communities

Findings

Although not initially hypothesized as an important factor, collaboration (cooperation and coordination) at some level emerged as integral to many of the communities' efforts at addressing wildland fire risk. We will begin by using the Applegate case to illustrate the model discussed above, and then expand the discussion with descriptions of collaborative contexts and outcomes from other case studies.

The Applegate Watershed

The Applegate Fire Plan is offered as a model throughout the nation as a truly collaborative effort. The plan was completed in less than a year, thanks to many networks and relationships built by the Applegate Partnership during the prior decade, and also because of the high-capacity Applegate community. The quotes in this section are from key informant interviews.

Context. The Applegate River watershed in southern Oregon encompasses nearly 500,000 acres of social and ecological diversity. Lowlands and riverbed valleys support farming, ranching, and residences; forested highlands sustain forest products, recreation, and grazing. Because of large-scale human interventions—fire suppression, logging, road building, and hydraulic mining—as well as natural occurrences such as drought and insect damage, the composition and structure of the watershed have changed dramatically, putting it at risk for catastrophic fire (Sturtevant and Jakes 2003).

Nearly 13,000 people reside in the Applegate in several unincorporated communities within easy reach of two cities. Many residents are self-employed, retired, or commute to work outside the valley. Some work in traditional resource management, yet increasingly, amenity migrants—typically urbanites fleeing congested cities for clean air and water, scenery, and recreational opportunities—are changing the social composition of the valley with their high levels of income, education, and property values. Social capital is abundant; neighborhoods and voluntary organizations provide caretaking and public services often afforded by government agencies in larger and more densely settled communities. An ethic of stewardship is strong, as old-timers and newcomers alike feel an attachment to place and a commitment to caring for their land.

Federal agencies—the Bureau of Land Management (BLM) and USDA Forest Service (USFS)—manage 70 percent of the Applegate lands; timber industries own another 8 percent (Sturtevant and Lange 1996). The Applegate community's history is one of diverse lifestyles tied together through attachment to place. The Applegate Partnership had been making history for a decade, addressing forest management conflict, restoring watersheds through work on private land with the watershed council, working on land-use issues, and creating relationships with county and federal players. Agency members of the collaborative fire-planning process had a history of working together as either fire managers or planners.

An initial application for NFP funding submitted for the Applegate by the BLM was turned down, with the request that the community reapply, which it did successfully through the Applegate Partnership in collaboration with the BLM and Forest Service in June 2001. That summer, the Quartz fire burned 6,160 acres and three houses, reminding community residents of their vulnerability. By the next summer (2002), the Applegate Fire Plan was completed and distributed free to all watershed residents, countless fire scientists and managers, and other interested parties. Community meetings, neighborhood meetings, *Applegator* newsletters, workshops, and person-to-person contact educated the public about fire risk, methods of fuel hazard reduction, and steps for emergency preparation. Oversight committee meetings brought together community leaders, agency scientists, and managers, who assembled various data and developed fire suppression strategies to map and turn over to a professional writer from the community, who wrote the plan in community-friendly prose.

The Process. Fire management officers, eager to pull together interagency teams of specialists to map fire hazard ratings and strategic treatment areas in the Applegate, saw risk assessment to be an important part of the process:

> To me probably the most significant part of [the plan] is the fuel treatment priorities for the different areas—and they've identified the communities at risk and the fuel treatment projects that need to happen

there. I think that's a really good deal . . . it's good because it's getting it down on paper, sort of an agreement between us and the community.

Other agency representatives reported finding common goals to be a significant part of the process:

I think the biggest thing was getting all the agencies together with a common purpose. We often meet with the common purpose to put out fire. But this was a broader purpose than just us fire agencies; it was an across the board public—it benefits everybody. And I think by us pulling together and looking at that bigger picture . . . we got a little bit closer together on some issues than we have in the past.

I think, because for one thing we all had a similar focus—one singular goal as far as to do something about the fire situation. That made a cohesive situation as opposed to fighting over whether we should cut timber or not, or some of these other things that polarize the community.

One participant mentioned the individual and collective learning from sharing information during the fire-planning process:

It's a huge learning process at the beginning and maybe that's something I never accepted that, either—the amount that we have to learn before we can comprehend where we are going with this fire plan.

Community members provided valuable information, as noted by this manager:

And then from an agency standpoint, we need to listen. There's a lot of good knowledge out there and we need to listen. It's not going to solve all the—it's not going to necessarily give you all the answers. We're looking for the answers in the same way all the folks in the community are looking for the answers. This is a good way to help give us a roadmap of where we need to head. And it needs to continue evolving, too.

One agency representative mentioned that fire management agencies have an "edict to be in a coordinated effort," and that the plan documented "what are we going to do in a collective sense." This interdependence was elaborated upon by another:

It increased everyone's awareness of how it all fits together, how each agency or group has a piece and how all the pieces fit together. It really increased everyone's awareness that we're all in this together. It definitely increased my awareness of how the roles that these different people have

> fit together. I never really thought about it before, especially the rural fire department and how we can collaborate to make a difference.

An important question remains: "How will we bring what's on paper into separate management plans?" Trust and relationships will be essential for coordinated implementation. As articulated by one participant in the planning process:

> Yeah, we've been at war for a while, but after a while you realize both sides are in something they don't want to be in and can identify with each other. I can remember back when it was an "us against them" thing—that was the beginning of the relationships the federal agencies had with the community. Those evolved over time and we still have our differences and disagreements about how to do things, but the idea of knowing we'll work together is a solid given. I'm not sure other communities could buy into that. That has to evolve over time. It's trust but also just being familiar.

For the fire chief, who visited individuals to plan work on their property in order to receive cost-sharing funds, outreach was a critical step: "out and meeting people during the planning process, actually getting work started . . . brings that together for a lot of agencies."

Outcomes. The planning process "brought a lot of people together," creating opportunities to establish new relationships, form networks, and increase capacity for implementation. Participants in the process now find it more comfortable to call counterparts at different agencies, increasing the likelihood of future collaboration:

> I think that . . . more than in the past, agencies are working together. . . . [A]nd this has brought the community's attention and all the agencies' attention to our ability and our need to work together better. This is something we are doing differently, starting to do differently.

While the plan involved "more field meetings" than most agency staff were accustomed to, they got to "hear a community level response" different from what they were used to. Agency staff gained a belief in communities' ability to address issues, a "trust that they know what is good for their community, [that] they're going to make some good decisions and do what's right for their community."

Just as the agencies learned more about the community, community members increased their understanding of fire risk and took responsibility for creating defensible space:

> It's our fault, we moved out into the interface. [You] can't expect [the] fire department, even though we pay taxes, to save your joint if you didn't

worry about brush around your house. We have a responsibility, otherwise we're just a bunch of kept people and that doesn't make sense.

As one participant mentioned about the process and outcomes:

[They] illustrate that when you get people together with [a] common problem and common solution and a lot of energy because the issue is ripe, you can get a lot of stuff done. And we did, not only in terms of producing a document, but all the little processes and understanding that go along with it.

A homeowner survey following the planning and outreach process found that residents not only were more motivated to take action to reduce risk to their property, but also reported increased support for thinning and fuel hazard reduction on public land.

Finally, people learned that outcomes—intangible and tangible—are worth the investment:

The eye-opening experience is [that] this process really does have a benefit. It's not just sucking up money we could be using elsewhere. We're seeing this is money well spent. I'm taking a different viewpoint. We're going to have to look real hard—it's too easy for us to say no given our limited resources. But the advantages are tremendous.

One important outcome was better community and agency communication during the Squires fire, which burned during the summer after the year of planning. Neighbors were ready with phone trees and evacuation lists. Fire suppression managers trusted the public with regular updates: "From the public information standpoint, we would have been reluctant to have them participate to such a degree had we not had this [collaborative-planning] experience. We can work together on this."

Statistics speak clearly: in 2004, 26,000 acres were treated by the BLM and 2,000 by the Forest Service. Eighty percent of residents reported to the fire chief that they had reduced fuels around their homes, 800 with NFP cost-share funds administered through the State Department of Forestry. In one neighborhood alone, 42 homeowners cooperated with the county and federal land agency in contracting with a Slashbuster operator to do fuel reduction work across their landscape.

This case study has been presented to illustrate the point that community matters. In this case, we found that the social learning from past collaborative efforts at landscape-level forest management and planning greatly facilitated the fire-planning process. Shared knowledge, relationships, and trust gained through the Applegate Partnership carried over, as did networking with other organizations and agencies, and channels of communication such as the

Applegator newsletter. At the same time, new communication had to be worked out, and many more networks and relationships developed, further building community capacity and increasing the willingness of both communities and agencies to work together.

Examples from Other Communities

Although the Applegate is often offered as a model for collaboration, other case study communities provide examples of how context affects outcomes of collaborative wildland fire management projects.

Red Lodge, Montana. In Red Lodge, Montana, magnificent scenery and recreational opportunities contribute to the small town's quality of life and sense of pride, drawing new residents valued for their talents, new ideas, and civic contributions. One of the gateways to Yellowstone National Park, Red Lodge annually welcomes 1.2 million visitors and many seasonal residents who own cabins on leased federal land or in private land developments. The forest provides vistas and privacy, but it also presents wildfire risk, as the lodgepole pine forest is overdue for a stand replacement fire. The seasonal nature of many cabin residences presents challenges for reducing the risk with fuel reduction and defensible space, yet collaboration among homeowners, agency staff, and local fire departments has held out some hope (Sturtevant and Kruger 2004), as does heightened citizen awareness of the reality of wildland fire. In 2000, the 1,500-acre Willie fire required hundreds to evacuate before it stopped just outside the city, providing a "teachable moment."

The district ranger and rural fire chief, leaders in Red Lodge fire prevention efforts, recognize that relationships are key. "If you make good relationships, there's a lot you can accomplish." As partners, they present a unified front, networking with other community leaders and participating in community organizations and events. Fire agencies coordinate with one another, sharing equipment and having mutual-aid agreements. They work closely with the Montana Department of Natural Resources and Conservation on fire suppression and educational outreach. Collaboration in Red Lodge is built on the strength of individual relationships and organizational networks. Although social capital in the community is strong, and some examples of innovative fuel reduction can be seen around cabins belonging to a land corporation, the number of seasonal residents and pace of growth in the community thwart watershed-level or communitywide efforts at risk reduction.

Gunflint Trail, Minnesota. The Gunflint Trail provides access to some of northeastern Minnesota's most beautiful and isolated lakes and forests, including the Boundary Waters Canoe Area Wilderness, the most popular wilderness area in the United States. Fire has always been a critical part of this landscape, and every year the Gunflint Trail Volunteer Fire Department, Forest

Service, Minnesota Department of Natural Resources, and other partners provide crews to fight numerous fires along the trail. Because wildland fire is a prominent part of the landscape, people refer to a "community memory" about fire, and stories about the big fires from the recent and not-so-recent past are a vivid part of local history. In addition, this is an isolated location, and local residents recognize that they are a "peninsula in a sea of public land" and that partnerships are critical for wildland fire management. There is no organized government along the trail, so people are accustomed to organizing themselves to get things done. It is also a community of "creative, innovative, smart people" who have a "can-do" attitude (Jakes and Nelson 2002).

Collaboration has been a key to fire management along the trail. Groups such as the Gunflint Trail Association (a business group) and lakeshore owner associations provide a foundation for collaborative activities. In an annual summer event, canoeists representing lakeshore owner associations, resorts, and businesses race to raise money for the volunteer fire department. A local public land manager says this type of activity helps ensure that the "community has everything it needs to handle wildfire." The relationship between local residents and businesses and the Forest Service has been contentious in the past over the perceived impacts of designating the Boundary Waters Canoe Area a wilderness and other use issues. But collaboration between the agency and locals in response to disasters such as windstorms and wildland fire has begun to build trust and accountability. In addition, public agencies responsible for managing forest land adjacent to the homes and businesses along the trail have found that they are more effective working as a team that includes business leaders and residents, giving them increased access, acceptance, and credibility from presenting a united front on wildland fire management. The local, tribal, state, and federal fire managers also work together, costaffing stations, sharing equipment, teaming up to fight fires, and cooperating in educational activities.

Bend, Oregon. In Oregon's high desert, Bend's FireFree program has provided a focal point for wildland fire risk reduction (Sturtevant and Jakes 2002). After covering significant losses during two fires in the 1990s—the 3,000-acre Awbrey Hall fire and the 17,000-acre Skeleton fire—the SAFECO insurance company funded FireFree, a public education campaign designed by a group of local leaders, including heads of two marketing companies. FireFree draws on many of Bend's assets—a diverse community with highly skilled residents, the locals' strong attachment to place, and active civic organizations—and builds upon the network of fire agencies to reach out to home-ownership associations and individuals. The scale of these efforts is the neighborhood, where "cleanup days" bring together residents to clear property and take debris to the landfill at no charge.

Eighty-five percent of Bend's Deschutes County is under federal management. Representatives of these agencies, with a long history of working together

as a fire cooperative, brought to FireFree their experience, addressing wildland fire risk at the landscape level. A recent collaborative effort, Central Oregon Partnerships for Wildfire Risk Reduction (COPWRR), aims to develop a stable, sustainable supply of small-diameter material from thinning projects so that markets can develop and help these projects become economically sustainable.

Colville Indian Reservation, Washington. The Colville Indian Reservation, nearly 1.4 million acres in northeastern Washington State, is home to the Confederated Tribes of the Colville Reservation, 12 bands with an enrollment of around 8,700 members. The forests on the reservation have supported successful timber product industries since the 1920s, and forest management, including prescribed burning, is central to their way of life. Still, fire has been suppressed on many sites, including residential areas that are now nestled in forests with high risk of wildland fire (Kruger and Sturtevant 2004).

Two wildland fires in 2001 caught residents' attention. The Mount Tolman Fire Center, funded by the tribe and Bureau of Indian Affairs (BIA), integrates forest and fire management and has worked to reduce fuel around homes and address the threat of arson. Its defensible-space program conducts residence evaluations and employs crews with training in prescribed fire to burn around residences. The visibility of fuel-reduction projects and the willingness of crews to work with residents have increased their understanding of wildfire conditions and efforts to reduce risk. Notable are the integration of fuels and timber staff at the Mount Tolman Fire Center and the acceptance of prescribed burning and active forest management as tribal cultural practices by local residents and elders.

The reservation was hit by 11 arson fires in 2003, the largest burning 2,200 acres, requiring $4.7 million for suppression, and resulting in a firefighter's death. The Colville Confederated Tribes and Mount Tolman Fire Center turned to the Washington State Prevention Team for help in reducing the number of fires. Collaboration with this team has resulted in several outreach tools appropriate to the community, including news releases to media outlets, public-service announcements, posters, and billfold-size tip cards with information on the program and contact information. Residents have responded positively to the prevention team's efforts.

Tahitian Village, Texas. Tahitian Village is a 6,000-acre subdivision of Bastrop, a southeastern Texas community located in an isolated region of loblolly pine and hardwoods referred to as the "Lost Pines." Many of the lots in Tahitian Village cannot be developed because of septic system constraints and the terrain. These vacant lots contain highly flammable shrub fuels such as yaupon, Ashe juniper, grasses, and loblolly pine. Narrow roads, steep hills with dangerous intersections, and confusing street names make access difficult for emergency equipment (Monroe et al. 2004).

The 1998 Florida fires and a severe drought were the catalyst for wildland fire management in Tahitian Village. The Texas Forest Service, volunteer fire departments, Bastrop Civic Association, and Tahitian Village Property Owners Association came together to educate homeowners and initiate fuel-reduction projects. One of the keys to fire management has been the strong community networks that exist among the organizations and agencies that service the area. The movers and shakers in the community are a core group of individuals who know each other, resulting in a high interconnectedness among people and organizations. They have been successful in implementing several projects, including the Tahitian Village Wildfire Mitigation Program, Lost Pines Wildfire Mitigation Program, Mulchrest, and Lost Pines Project—all working toward reducing the risk of wildland fire.

Palm Coast, Florida. In the Florida community of Palm Coast, residents elected a new local government to implement fuel management, which they felt necessary to reduce the risk to their community (Monroe et al. 2003a). Palm Coast was carved out of a pine plantation in the 1970s. An early court decision prevented the developers from building in phases, so lots were sold with no restriction on when building would occur. Even today, some homes are isolated on wooded streets, the only house on the block. These vacant lots, owned by absentee landowners around the world, contain vegetation that presents an extremely high wildfire hazard to neighbors. Wildland fires in the 1980s and 1990s, along with the influx of a number of new residents who had expectations regarding local government accountability, resulted in a series of actions that changed the social context in which fuel management is conducted. County commissioners lost elections, department heads were asked to leave, vegetation ordinances were revised and passed, and a citizen task force began working on recommendations for fuel management. Local government now uses a broad range of powers to enforce regulations to reduce the risk of wildland fire.

Conclusions

This chapter used several examples to illustrate how the ecological and social contexts in which collaboration occurs can impact the outcomes of the process. Engaging in collaborative wildland fire management activities increased the capacity of many communities to carry out other projects in the future. Agency leadership was central in two cases, Bend and Red Lodge, where the environmental ethic is strong, recreation and tourism are dominant economic forces, and population growth is rapid. The communities' history of cooperation in fire preparedness and response increased their capacity to carry out collaborative wildland fire management planning. In addition, collaboration helped communities access resources available through the NFP and HFRA,

and made it possible to combine resources from several organizations to accomplish objectives. The various groups that came together to improve wildland fire management in Tahitian Village created an interconnectedness that allowed programs to move forward quickly and efficiently.

Collaboration helped increase residents' understanding of wildland fire in several communities. On the Colville Reservation, wildland fire responsibility rests squarely on the Mount Tolman Fire Center, which is sanctioned by tribal elders and supported by the BIA; however, to build understanding and address the reservation's arson problem, the community turned to vertical linkages, collaborating with an outside organization. In Bend, FireFree helped homeowners take steps to reduce the risk of wildfire through fuel reduction and the use of fire-resistant landscaping and building materials. This program was made possible by collaboration between local leaders and the insurance industry. The education programs developed by leaders in Tahitian Village have helped residents take responsibility for fuel reduction on their land. Although fire may be part of the native Colville culture, many newcomers to Bend and Tahitian Village are initially unaware that they have moved to fire-dependent regions.

Collaboration results in increased support for wildland fire management, even in areas with a history of conflict over resource management issues. For example, years of fighting over wilderness designation on the Gunflint is slowly being overcome by projects that bring the community together to reduce wildland fire risk. In the Applegate, some community members still harbor deep distrust of federal land management agency personnel; this distrust was addressed by involving community leaders—particularly fire chiefs—not connected to past controversies and finding different ways to present the risk reduction message.

Neither Applegate nor Gunflint has local political infrastructure, but neighbors drew on their own understanding of the local ecology, resources, and commitment to place to improve wildland fire management. Their grassroots processes and projects drew on abundant human capital, although relationships with key agency staff were crucial to success. In contrast, Bend and Red Lodge are incorporated cities with professional staff and extensive organizational networks, particularly among federal, state, and local agencies; rapid growth, part-time residents, and diverse values create challenges to their collaborative efforts at wildland fire planning. Nevertheless, collaboration between the local communities and resource management agencies is building support for wildland fire management.

In these communities, different partnerships and projects were appropriate at various scales. Along the Gunflint Trail, the Forest Service and Minnesota Department of Natural Resources work together on prescribed forest burns to reduce fuels across the landscape. The volunteer fire department, lakeshore owners associations, and local businesses partner on efforts to reduce fire risk around homes, resorts, and other private property. Neither activity alone is

sufficient to reduce wildland fire risk substantially, but by taking actions at a scale that makes sense to the partners, and in their own social and ecological scales, they increase their chances of success.

Similarly, in the Applegate, emergency preparedness and clearing around homes and driveways was accomplished through collaboration at the neighborhood scale. Risk assessment and priorities for hazardous fuel reduction were established at the landscape scale on a map with ownership boundaries removed. In communities in Florida, fuel reduction is more feasible at the subdivision scale, mobilizing through homeowners' associations. The Colville Tribe, on the other hand, was able to use prescribed burning across the reservation, both on commercial forests and in residential neighborhoods.

Collaboration allows communities to accomplish their objectives related to wildland fire and fuel management. In the Applegate, similar fuel-reduction prescriptions and equipment are used across federal, county, and private land. In Red Lodge, seasonal residents are creating defensible space around their homes in subdivisions and on leased federal land with assistance from the local ranger district. In Bend, cleanup days are reducing fuel buildup on private property. On the Colville Reservation, fire crews are consulting with local residents about fuel management on their property. And on the Gunflint Trail, sprinkler systems and dry hydrants are increasing wildland fire preparedness along the trail.

Agency staff, especially those who have worked together in the past in a fire cooperative or with mutual-aid agreements, may not want to risk including new partners in fire-planning efforts. Facilitating and integrating different viewpoints can be an arduous task; however, failing to consider and involve the community can impede successful collaboration and efforts to address wildfire risk. Understanding the social composition and history of the community and its constellation of assets is essential for community-based collaborative projects. Equally important is the ecological context, including awareness of the variety of ways in which individuals may relate to the land. Understanding these contexts can help achieve the desired outcomes of wildland fire management projects.

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