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Agencies, educators, communities and wildfire: partnerships to enhance environmental education for youth

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We studied seven programs that engage youth from 10 to 18 years old in wildfire risk reduction in their communities in the United States through in-depth interviews to examine the nature and role of community-school partnerships in resource-focused environmental education. While the programs use a variety of strategies, from Scout badge to summer school, they exhibit several common dimensions: they all engage youth in community projects; they all arise from partnerships between resource agencies, community organizations, and educators; they all began when people familiar with both wildfire and youth education saw an opportunity to improve the community and educate youth through action; and all partners are able to contribute to the common program yet retain their individual identity as they meet their own mission-based goals. We use themes and quotes to illustrate these common dimensions for establishing community-school partnerships that could build action competence through environment-based education projects.

Keywords: community; agency; wildfire; educators; partnership

Youth-based community action projects and partnerships

A number of different strategies for using the local environment to inspire student action projects have evolved, such as action learning, service learning, place-based education, and environment-based education (Ernst 2007; Hart 1997; Jensen and Schnack 1997; Sobel 2005). At their core is the goal of enhancing youth development and problem-solving skills through authentic opportunities outside the classroom (Schusler and Krasny 2010). Despite the clear value of community-based action projects, however, this form of education is not the norm and many educators face significant barriers to organizing and facilitating such projects. According to a national survey in the United States, teachers who use other forms of environmental education perceive three barriers to community-based action projects: lack of community partners, lack of planning time, and lack of supportive school climate (Ernst 2007). In this paper, we tackle the first of these barriers by exploring the nature of partnerships that support community-based youth action projects.

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Uzzell (1999) identifies the types of school-community partnerships for environmental education that might lead to the development of action competence, which is the conscious decision to use action to solve a problem, whether individual or collective and direct or indirect (Jensen 2002). Uzzell uses the following continuum to describe relationships that schools may have with their communities:

- Type 1 – No direct engagement with the community, though the educator helps youth learn about community issues.
- Type 2 – Community members are invited guests into the classroom, making the learning more authentic.
- Type 3 – Youth conduct activities in the community, but the interaction is unilateral, without community members.
- Type 4 – Educators and community members actively work with youth in the classroom and community to bring about change.

Using this typology, an analysis of the projects conducted by 30 outstanding schools in an Australian program designed to engage schools in sustainability initiatives suggests that only 10% of the schools actively worked with community organizations (Flowers and Chodkiewicz 2009). Despite the organized opportunity for schools to link to local communities through action projects, the authors conclude that a stronger framework to guide community-school partnerships is needed.

Educators are no stranger to partnerships, but most are philanthropic, where partners contribute resources to meet educators' goals (Austin 2000) or support programs *for* youth, as in school-to-work coalitions (Legler and Reischl 2003). In contrast, collaborative partnerships across sectors (such as among educators, local organizations, and agencies) (Bryan 2005; Tilbury and Wortman 2008; Trauger, Tilt, and Hatcher 1995) engage individuals and their organizations or agencies in a relationship that helps meet all partners' needs (Waddock 1991). As a result, they have the potential to be satisfying and sustainable (Googins and Rochlin 2000) and bring together new resources to help solve challenging problems (Seitanidi and Ryan 2007; Selsky and Parker 2005). In addition, cross-sector partnerships have been heralded as sources of innovation, particularly where key individuals work at the boundaries of their institutions and missions (Austin 2000; Moore and Westley 2011; Walker and Westley 2011; Westley et al. 2011). Effective partnerships also require skills that most educators emphasize when teaching problem solving skills: effective communication, group process, and decision-making (Bardwell, Monroe, and Tudor 1994). If educators join this type of cross-sector and collaborative partnership and teach these skills to youth, such projects might promote future engagement among these young citizens in addition to the impact they have by creatively addressing current community issues.

The literature on collaborative partnerships offers some guidance for exploring partnerships with educators. A definition of collaboration suggests that community-based partnerships to support youth action projects are an appropriate example of 'when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms and structures, to act or decide on issues related to the domain' (Wood and Gray 1991, 146). The important difference between this study and work focused entirely on collaboration, however, is that partnerships to support youth action projects will have two purposes: addressing the problem *and* youth skill development. All partners may not be equally focused on

solving the problem, as some might be more intrigued by the notion of supporting youth as they tackle an aspect of the local issue. Of interest to us is whether partnerships with educators are similar to other organizational collaborations in terms of (1) their formation and (2) their process of collaboration with respect to governance, autonomy, mutuality, and social capital norms (Thomson and Perry 2006). The combination of a mission-based, local environmental problem with an opportunity for youth skill-building suggests that a collaborative partnership with educators could help an organization or agency meet their short-term goals. Examining example projects that arise independently, and particularly those that span formal and informal education settings but achieve similar goals, should help shed light on the development of the collaborative partnerships that are needed to support these programs.

Environmental problems such as watershed protection, invasive species removal, air quality, or wildfire risk reduction are usually part of an environmental or resource agency's mission; when these topics are manifest as a current, local community issue they become powerful motivators for student interest (Chawla 2002; Hammond 1994; Lieberman and Hoody 1998; Mordock and Krasny 2001; Sobel 2005). Wildfire poses a real environmental, social, and economic threat to many communities in the world, and agencies are investing in reducing the public's risk from wildfire. Our work with youth wildfire education provided a useful context for seeking examples of effective cross-sector partnerships that evolved independently across the United States to help communities reduce their risk of wildfire. Understanding the nature of these programs may help environmental educators seek partners to support community action projects for youth. Our key research question was: *What is the nature of the partnerships that enable educators and communities to engage in youth-based action projects in the context of wildfire risk reduction?* We use our findings to explore the secondary question: *In what ways are these partnerships similar to other cross-sector collaborative partnerships?*

In the United States, agency staff are working to create fire-adapted communities (Wildland Fire Leadership Council 2014) where citizens have the adaptive capacity to address the reality of recurring wildfires (Paveglio et al. 2009). Similar efforts are underway in Australia (DFES 2015; NSW 2015). A variety of beneficial characteristics are associated with these communities, such as social capital, learning communities, and trust; activities that enhance preparedness, including those with an educational component, help strengthen these characteristics (Agrawal and Monroe 2006; Elsworth et al. 2009; Jakes et al. 2007; McCaffrey et al. 2013). Ballard et al. (2012) found that youth-focused education projects were often one component of efforts to create fire-adapted communities. Many of these programs, however, would be characterized by Uzzell (1999) as not optimally engaging youth with the community because they only offer information about fire, for example (Uzzell's Type 1 program). We decided that in contrast, examining programs that fit Uzzell's Type 4 category, which by their nature involve a two-way relationship between the community organizations and schools, would allow us to better explore the potential of partnerships to promote youth community action.

Methods

We selected seven wildfire education programs for youth (ages 10–18) across the United States that engaged youth in their community in some fashion, yet evolved independently. Two programs were organized by schools, four were led by

community-based organizations working with schools, and one involved youth out of school (Table 1). We specifically chose to look at youth education programs that we believed may match Uzzell's Type 4, where schools work 'together with the community as a social agent.' The wildfire education programs and the partnerships that sustain them were the unit of analysis.

To identify potential youth wildfire education programs for inclusion in this study, we collected a list of potential youth programs designed to increase awareness and reduce risk in local communities generated from a larger wildfire education program inventory (Ballard et al. 2012), through Internet searches, and with requests to key informants in both the education and resource agency fields. It was not within the scope of this project to evaluate or compare the programs. Rather, we selected programs to maximize diversity of scope and purpose to better understand how they evolved and functioned, while holding constant the presence of wildfire risk reduction activities in the community.

Data collection

Between 2010 and 2012, we conducted 81 interviews with purposefully-selected key informant partners involved with these programs (an average of 11 interviewees per site) and use them for this analysis.[1] Each program was visited by one of the 4 research teams, all co-authors. Site visits lasting 3 to 4 days for each program enabled researchers to conduct semi-structured interviews and often observe the program or results of a youth project. At each site the research team interviewed at least one of each of the following stakeholder types: program developer, program leader, agency representative, funder, and educator. In several cases we were also able to interview youth and unaffiliated community members. Interviewees were recruited after initial contact with the program leader or agency staff using a snowball sampling approach. Important details from one interview were clarified in subsequent conversations, and if questions arose, interviewees were contacted by phone. Interview questions asked participants to explain the program and their role in it, the partner organizations and lead personnel or players, how the partnership evolved over time, the challenges and benefits of the partnership, and the future plans for the program and partnership. Interview protocols were co-constructed by all co-authors based on the research literature, piloted at least once by each of the 4 research teams, and collaboratively revised. Interviews were conducted by all co-authors after a collaborative training on the protocols. Interviews lasted from 1 to 3 h, and were conducted at school classrooms, agency offices, non-profit organization offices, forest restoration or monitoring sites, and sometimes in interviewees' homes. Interview questions analyzed for this paper focused on the original impetus for the program, the quality and degree of partner involvement, program expectations and outcomes, and ways the program is evolving from each partner's perspective. Rather than conducting an institutional analysis, we were interested in hearing about the experiences and perspectives about developing and working within these partnerships from the participants themselves.

Data analysis

Interviews were audio-recorded, transcribed, and analyzed for themes coming a priori from research literature on community action environmental education programs,

Table 1. Selected youth wildfire education programs that met criteria for investigation.

Program name and case study	Youth	Location and setting	Community activity	Lead partners	Supporting partners
Etoile Firewise school[a]	6–8th grade students form leadership committee for Firewise activities	East Texas pine forests near the small community of Etoile, Texas	Youth leaders support community awareness and clean-up projects that engage other youth and adults	Texas Forest Service, Etoile Volunteer Fire Department, Etoile Public School District (Special Education Teacher)	Keep America Beautiful, Local media
FIRE Up![b]	Summer field school for selected high school students	Public and private land near Boise, Idaho	Three-week program engages youth in investigations for agency and community leaders to better understand the risk and how to reduce risk	Bureau of Land Management, area school districts	Northwest Nazarene College, local municipalities
Firewise Girl Scout Badge and Camps[c]	Girls in 7–10th grade complete Firewise badge; vegetation is reduced at two camp properties	Southwestern Florida's wildland–urban interface	Scouts and parents helped reduce risk at local camps; girls explained risk reduction actions to the community	Florida Forest Service, Girl Scouts of Gulf Coast Florida	Local fire departments
Minnesota Firewise in the Classroom[d]	High school geography unit	The state of Minnesota; students use their own neighborhoods to map risk	Youth gain technology skills in the context of mapping wildfire risk in their community and share information with the community leaders or homeowners	Minnesota Dept of Natural Resources and Local teachers	Local fire departments, Minnesota Association of Geography Educators
Sierra Watershed Education Partnership	Variety of programs offered to area elementary and middle schools	Forested hillsides around Lake Tahoe, in California and Nevada	Youth plant trees to restore hillsides and reduce soil erosion and thin the forest to reduce fire risk	South Tahoe Environmental Education Coalition, Tahoe-Truckee Unified School District	US Forest Service Local fire departments

(Continued)

Table 1. (*Continued*).

Program name and case study	Youth	Location and setting	Community activity	Lead partners	Supporting partners
West Virginia Firewise in the Classroom[e]	At risk high school science students	Hillside subdivisions of second homes near Hedgesville, West Virginia	Students work with Homeowner Association to assess risk, report results, and increase awareness	Hedgesville High School, WV Division of Forestry	Eagle Promise Charitable Fund, The Woods Homeowner Association Firewise Committee
Wildfire in the Foothills[f]	6th grade students in school	Homes along a ridge in Butte County, California at high risk of wildfire	Youth increase awareness about ways to reduce risk and prepare for evacuation; youth take the message home	Butte County Fire Safe Council, Butte County Schools	US Forest Service, CalFire

[a]http://www.nrs.fs.fed.us/pubs/42536
[b]http://www.nrs.fs.fed.us/pubs/42940
[c]http://www.nrs.fs.fed.us/pubs/42939
[d]http://www.nrs.fs.fed.us/pubs/40670
[e]http://www.nrs.fs.fed.us/pubs/40580
[f]http://www.nrs.fs.fed.us/pubs/42537

as well as through analytic induction (Glaser and Strauss 1999), enabling patterns and themes to arise from the cases. After realizing the importance of partnerships in each program, we sought to (1) *characterize the partnerships* with respect to the youth audience, location and setting, community activities involved, lead partners and supporting partners, and goals and contexts in which they develop, and (2) identify themes with respect to *strategies for fostering collaborative partnerships*, in the context of Uzzell's Type 4 programs where schools work with the community as social agents.

To ensure data quality and reliability, the team discussed the cases and how these themes were manifest in each context. The lead authors then analyzed all the data in detail for the themes above, cross-checking all analysis and findings with the rest of the team throughout. We provide direct quotes to illustrate the themes.

Results

The cases varied in educational context (from nonformal youth program to in-school activity), age of youth (from elementary to high school), scale (from programs that occur in one school to programs that happen across a state), and region of the US. Table 1 briefly describes the seven programs based on selection criteria.

Based on observations, program materials, and interviews, we report on the following five themes that reveal the presence, nature, and characteristics of the partnerships, particularly with respect to their evolution, the benefits and challenges that partners perceive, and potential for this relationship to lead to action competence (Jensen 2002). We then use insights from organizational collaboration research to discuss these partnerships and derive elements that may better characterize school-agency-community partnerships.

1. The formation of partnerships was essential to the development of programs that used youth action projects to address community issues.

While programs were not selected because they had partnerships, but because youth were engaged in the community, we found they all, in fact, revolved around partnerships. Furthermore, these youth wildfire education programs do not have only one type of partner. The programs required expertise and contributions from communities, educators, and agency experts. In Texas, for example, youth formed the Advisory Committee to obtain their Firewise Community designation with leadership from the school, state agency, and local fire department. Additional partners were added as resources were needed; the local Keep America Beautiful coordinator helped in each community clean-up by providing bins and removing trash, for example.

Our respondents provided several additional components to this theme, suggesting that the amount and the type of work that needs to be done requires many, as well as differently skilled, people so that it is best accomplished through partnerships. A federal agency staff person in California said, 'I could not see all these kids on my own, but because we have these partners everyone is doing a little bit of work.' In fact, several agency staff admitted that while education is a part of their goals, they simply don't have the personnel to do independently what the partnership with educators allowed them to accomplish. In every case, interviews with program leaders suggested that their trust in the other partners created a strong program that could

weather the twists and turns that might come their way. A school administrator mentioned that the success of the program is due to the combination of partners working together as a team, 'It hasn't just been the high school, but it's also been [the local homeowner association leader] and his group.' No one assumed an educator could develop and manage these programs without the collaboration of resource agency and local partners.

2. Type 4 partnerships were initiated when opportunity and need intersected with a well-positioned individual—a boundary broker. These individuals often continued with administration and coordination responsibilities.

Interviews revealed that the programs began when a committed individual, most often a person with responsibilities and/or interests in both education and agency or community goals, recognized a possibility of working with others to meet an important need. In four of the seven programs, the original impetus came from local agency staff; the vision was to empower youth to reduce community wildfire risk, and he or she approached the most familiar contacts who worked with youth, such as a local teacher, colleague, relative, or friend. In the remaining cases, the programs originated with individuals working at the junction of agencies and education, either a FireSafe or Firewise Council,[2] homeowners association, or an environmental education organization, who had contacts in both worlds.

These people seemed to work across organizational cultures, with the ability to translate ideas effectively to multiple audiences, as 'boundary broker' (Wenger 2000). When these individuals saw program opportunities that satisfied multiple needs, collaborative programs emerged. One state agency land manager explained how the Girl Scout program was first conceived, 'The camps have to be maintained, and we had a lot of wildfires in the area. We thought this would be a great service-learning project for the girls to learn to help keep [the camp] Firewise.'

Some initiating partners saw this work as within their mission. A member of the Sierra Watershed Education Partnership (SWEP) said,

> We use Lake Tahoe as a teaching environment; the goal is to have a place-based, hands-on learning environment with students and teacher as much as possible, and we partner with all of our agencies on a regular basis, and we are also pulling in community members and teachers.

Similarly, an educator in Minnesota explained, '[This program] gave our professional organization … another opportunity to provide professional development for teachers.' Some partnerships sought key individuals who, by virtue of their role, could facilitate the program. For SWEP, a science outreach coordinator became the logical individual to convene the team, based on her networks and responsibilities.

3. Mutuality and autonomy allowed Type 4 collaborative partnerships to develop youth wildfire programs that meet the individual needs of each partner.

While some respondents clearly conveyed the program's purpose as a mixture of youth development and community wildfire risk reduction, all partners tried to articulate their autonomy, pointing out how the program clearly achieved their own organizations' goals. This link between the program and their organizations' missions allowed them to justify their time and other resources supporting the program. We found that despite a focus on meeting their own needs, partners were also able

to describe their mutual ambitions for the ultimate goal of their program in both youth development and community resilience. We separate the three types of partners to explain this theme.

3a. Educators and youth played a key role in helping agency staff meet their needs and organizational goals.

Agency partners revealed that the youth enabled them to advance their mission. An agency staff person explained the advantages that youth can bring to a project and what they can achieve. '[The Scouts] are real instrumental in getting the message out because everyone is going to listen to a little girl. It makes it easy to get our message out.' Similarly, a teacher commented,

> It really makes a difference having a kid do a survey instead of a fire guy or BLM [Bureau of Land Management] person. There's a lot of anti-government people. But when it's kids – people come outside and talk to kids. They're interested in what they're doing, and they're not as unfriendly.

These agency partners saw great value in engaging in a Type 4 relationship with educators, which resulted in youth working in the community on an issue that supports their mission.

3b. Agency partners brought important opportunities to help educators meet their educational and youth development goals.

Educators in all programs were quick to compliment the dedicated contributions from forest or fire agencies and recognized that their expertise (and sometimes equipment) was essential to creating an educational project that addressed local fire risk. These educators described how agency partners provided information about local fire history and risk, directed youth to high-risk communities, and provided modest physical resources (such as recognition awards or seedlings). One educator in California emphasized the importance of their expertise, saying, 'There are so many agency people around here that if I run into a question, I can ask them.'

Educators also greatly valued the fact that agency partnerships provided a real-world context for using geographic information systems (GIS) in their classroom. One Minnesota teacher said,

> As a high school teacher my requirement is GIS, and if the Firewise [unit] is a vehicle to get them exposure to the GIS, that's great … the whole unit is hands-on, it's their own community, it's their own region, I don't see that there's many opportunities that could match this, to bring those pieces together this way it does.

Echoing this sentiment, a teacher in Idaho said, 'We demonstrate to students what professionals do; they replicate it. They understand their work will be valued and used.' From the educators' perspectives, there was great value in a project that engaged youth with agency personnel, sometimes beginning within the school (Type 2) and extending into the community (Type 4).

3c. Community-based partners valued the role that agency and education partners played in helping them meet their own needs and goals.

Community organizations in these cross-sector partnerships are represented by volunteer fire departments, educational consortiums, municipalities, and local councils

that work to build wildfire awareness and reduce risk. We found they provided students with access to locations appropriate for service projects and supported student activities. Interviewees discussed the importance of harnessing students' energy and creativity to achieve their goals. For example, a member of a Texas volunteer fire department explained exactly why he was involved, 'The kids talk to momma, and momma talks to her coffee buddy, and kids talk to kids, and pretty soon the community is aware of what's going on.' This program helped raise awareness in the community because youth were making the first contacts. He also recognized that working with the state agency improved his capacity, too, 'We're able to evaluate our problems a lot easier because of some of their expertise.'

This benefit was recognized by the agency partner in Minnesota Firewise as well,

> Those people [fire department staff and homeowner associations] ask for surveys and get the data they need in order to make decisions. They can actually use the data. [It is] helpful for them to work fairly closely with high school students and see what is going on in education and what students are capable of.

A teacher was able to see that community participation offered an advantage by comparing different experiences,

> What worked really well in some of the other districts is that the fire chief took a really strong interest and said, 'I'll help you. I'll get the letters out to the homeowners; I'll be the first line of defense if there are homeowner complaints.'

4. Partners recognized that participating in Type 4 programs resulted in benefits for youth that might otherwise not be attained.

In every case, respondents were keen to suggest that the partnership improved opportunities for youth to gain important skills. Principals, parents, community leaders, agency staff, and youth themselves spoke about the importance of being engaged in their own community with a chance to make a difference, which gave youth a sense of responsibility and importance. One youth participant from Texas said, 'We do this to help people. We go out there and we take it seriously. We want to make it a good process and maybe change something.' A Minnesota teacher reflected on the benefits to youth of meeting a real need in the community,

> Students always like stuff that's hands-on, and I think the idea that it's not just an academic exercise is motivating for them. It's not just something for school, for points, for a grade. This is something that [the state agency] is counting on and they expect us to have a certain level of professionalism and accuracy because decisions are going to be made based on some of this.

In reference to the twenty-first century skills that schools are expected to cultivate in youth, a school administrator in Idaho said, 'It's about the fourth R: Reality. We have focused many of our programs … on the fourth R – preparing kids for "Reality" of life when they leave the classroom.' Parents also recognized the ways in which the program enabled youth to flourish. Reflecting on her child's leadership role, one parent in Texas said, 'I think this has helped her to get out there, speak out more, and be confident in who she is.' All of these examples point to the significant impact that all partners, parents, teachers, and agency staff felt the wildfire education programs had on youth, specifically because they were addressing a real and urgent need in the community. These benefits are a result of authentic community projects

helping to build action competence, what Uzzell suggests can only happen in Type 4 programs.

5. Sustaining collaborative partnerships may have particular challenges.

Because the programs developed from the personal vision and commitment of a few individuals, maintaining leadership is a challenge, given retirements, transfers, and inevitable change in staffing and budgets. The smallest programs were particularly vulnerable. When the Girl Scout program, for example, lost both champions due to transfers and retirements, their replacements struggled to find the resources needed to help the program grow. In another case, the wildfire education program relied on grant funding despite the contributions from agencies. As one West Virginia agency staff explained, 'Without the grant, I don't know if [the program] would continue.' Without a formalized institutional commitment, challenges to the program may encourage autonomous organizations to retreat into their individual missions; collaboration and partnerships with educators are a luxury.

In some cases, partners saw opportunities to sustain their program by expanding to other locations. The lead community organization for Wildfire in the Foothills has begun to successfully expand to a neighboring county in California. This, however, is a challenge for partners whose mission is defined by municipality boundaries. Students in Etoile were also excited to take their message to other schools, but the lack of close relationships among potential partners made it a challenge. Most of the Girl Scouts in Florida who have completed the Firewise badge live near the camps, despite the large number of other communities in the region where neighborhoods are at risk of wildfire, suggesting that the initial impetus to protect the camps still defines the program.

Discussion

Because each program was defined and supported by a strong partnership among educators, agency staff, and community organizations, there was a highly permeable barrier between the educational institution and the community. We found community members provided expertise and resources which were instrumental in helping youth engage in community projects. In Uzzell's typology, every program we explored fit the Type 4 relationship of a cooperative dialog of highly authentic activities (Uzzell 1999).

In the context of Ernst's barriers to community-based action projects (2007), a focus on an important, local, yet not controversial issue enabled educators to find and work with agency staff, and the ensuing partnership helped reduce perceived barriers to community action projects. The media coverage and awards suggest that the programs put the partners in a positive light, which in turn generated support from school administrators and agency supervisors.

Our findings enabled us to compare and contrast these educators/youth-agency-community partnerships to more typical cross-sector partnerships described in the literature and answer the second research question. Like other collaborative partnerships, each partner perceived that they played an important role in achieving program goals (Waddock 1991). Educators provided agencies and community organizations with youthful energy and helped make their mission-based message more appealing to the community. The relevance and importance of a project in their

own community helped motivate student engagement. This mutually beneficial program enabled partners to achieve a common goal while meeting their own needs.

In several of our smaller programs, the motivating individuals used existing relationships and social capital to build interest and support for a small, community project. With larger programs the process of bridging across institutions created broad ownership for the program, and over time, it appears that social capital norms of reciprocity and trust developed among the individuals who launched these partnerships (Thomson and Perry 2006). Supervisor support was cultivated to institutionalize some programs, allowing incentives, release time, funding, training, and other resources to be available. These elements are similar among all collaborative partnerships.

Unlike other collaborative partnerships where the partners come together to solve a common problem (Gray and Wood 1991) or gain an advantage (Das and Teng 2000), educators did not join the partnership solely to reduce the risk of wildfire. They were engaged in the partnership because of the opportunity for authentic education and skill building. While agency and organizational staff saw benefits of youth involvement, their interest was primarily in using youth to reduce risk rather than contributing to youth development (Hart 1997). In most cases the lead partners saw an opportunity, not a problem. The visionaries who helped launch these wildfire education projects are known in the collaboration literature as *brokers* (Moore and Westley 2011; Wenger 2000) and *conveners* (Wood and Gray 1991). They understand enough of each culture to have credibility with multiple partners, thereby enabling the creation of a collaborative relationship that does not focus on a common problem. In terms of partnership formation, this is distinctly different from non-educator collaborations.

The variability in scale of these seven projects also meant that the partnerships covered a continuum of informal to formal relationships (Thomson and Perry 2006). As a result, dimensions such as governance and administration also varied, with larger programs demanding more funding, greater accountability, and more thoughtful decision-making processes. This level of organization helped make those programs less susceptible to change brought about by retirement or transfer; larger programs existed outside of the personal relationships.

While we saw evidence of some tension between maintaining autonomy and achieving collective goals that often plague other collaborative partnerships (Thomson and Perry 2006), we found it was less of an issue in our cases, because the partnership created an educational program that allowed each partner to achieve their goals. While this distinction could be seen as creating cooperation rather than collaboration, it could also be a factor that sets school-based partnerships apart from those involving the business sector and other organizations. Guo and Acar (2005) suggest that nonprofit organizations in the education and social science sphere are more likely to engage in informal collaborations. Other authors also use the term 'collaboration' when defining key features of our partnerships, such as 'mutually beneficial interdependencies' (Thomson and Perry 2006, 27) and the satisfaction of 'one another's differing interests without loss to themselves' (Wood and Gray 1991, 161).

Although all projects fell into the Type 4 category of educators working in and with community members, they varied in the extent that the projects were designed to increase youth action competence. The most sophisticated project, Fire-UP in Idaho, where high school youth collected data that were used by municipal planners, had the potential to build action competence by intent and design. The state-wide

efforts in Minnesota and West Virginia were initially designed for youth to work in the community, but without active community input, the program could be more easily implemented from the classroom—demoting it to a Type 1 partnership. Even the smallest scale and most informal projects, however, engaged youth in speaking to homeowners about wildfire risk and helping to clean up yards, demonstrating the possibility of organizing a meaningful yet simple Type 4 project with partners. Whether projects evolve to build action competence may depend upon the vision of their leadership; the possibility of opportunities for supporting a resilient, fire-adapted community; and the resources available to support the partnership.

Conclusion

These seven programs are not unique examples of educator–agency–community partnerships but they are also not typical. They all involved a partnership and a level of organization that elevated them out of the realm of a personal relationship that benefits one classroom or club, and moved the work into the broader community. Youth not only learned, they took action, and their actions helped agency partners meet their goals. In the process of taking action, youth gained action competence, community skills, and efficacy.

These cases suggest that the key ingredients for creating community action programs for youth are: (1) A collaborative partnership among agency staff, community organizations, and educators, (2) around an important, locally meaningful environmental issue, (3) that engages youth in a community project. These partnerships were facilitated by a visionary boundary broker who had or built credible relationships with each lead partner (Wenger 2000). Two types of partners are essential to complement educators' who wish to work on complex issues: *agencies* provide priorities, history, resources, and management know-how and *community organizations* provide relationships, context, on-the-ground realities, and local opportunities to make a difference.

Youth age changed but did not preclude community activities. Older youth were given a chance to report their findings to community members and municipal leaders through a venue that made it clear their work was valued and would be used. Younger youth shared information with the public and performed ecosystem management tasks to reduce risk. Uzzell (1999, 411) stressed the importance of these projects: 'environmental action competence may only be elaborated or allowed to function in the presence of a genuine problem facing a local community.'

Given the role that boundary brokers played in creating partnerships and programs, the development of future projects might require that individuals be trained to see opportunities from multiple perspectives and cultures. Someone needs to be the person to suggest a partnership, yet in our experience, neither current undergraduate programs for future educators nor for resource agency personnel explicitly include a community action responsibility. Wenger (2000) suggests that initiating the partnership between communities of practice is a key role of the boundary brokers. Although adding yet another component to an already packed pre-service training schedule is not ideal, teacher preparation courses could introduce their role as a community member and part of network of resources to create change. It may be useful to include an orientation to agencies and their responsibilities and an exercise in imagining programs that could achieve several different goals, making it more likely to sustain cross-sector partnerships. Opportunities to build skills in networking,

problem solving, and communication that extend beyond the classroom could make it more likely that new teachers would be capable partners and would convey these skills to their students.

At the same time, university natural resource programs that ably convey content and professional skills for future foresters, wildlife technicians, and others, could increase attention on the needs and opportunities of partnering with community leaders and youth. Young people should be seen as more than free labor or an easy entrée to a community. Youth-appropriate opportunities to increase community awareness, collect data, and restore forest health are some worthy goals to justify partnering with educators.

The organizers in these seven case studies believe their programs are successful, based on anecdotal feedback and their own observations. It would be useful for an evaluation to focus on a sample of independent programs that evolved to meet needs to clarify their outcomes and impacts. Some of their most important indicators of success were never planned from the beginning of the program, but do suggest they are increasing community awareness of wildfire risk, such as county proclamations, continued funding, request for assistance with new problems, and national awards. Systematic evaluation would be helpful to measure changes in youth, educators, and parents, and in community resilience as a result of these action projects.

These wildfire education cases suggest that youth programs that include community action projects are enhanced or perhaps made possible with collaborative community–educator–agency partnerships. Because collaborations with educators are somewhat different from business mergers or conflict resolution that have defined other types of collaborative partnerships, we offer the following criteria that may promote additional research into these important types of collaboration: (1) clear recognition of an important community issue that suggests an opportunity for youth involvement; (2) respect for the autonomy of the partners and the importance of their goals, needs, and varying benefits of participation; (3) leadership and governance that is appropriate to the scale and scope of project; and (4) the development of strong social capital norms, originating from either personal or formal relationships that eventually become institutionalized. Future research on these criteria could not only inform EE practice, but also further illuminate the role that local, community-driven projects play in creating rich contexts for empowering youth and helping to resolve community problems.

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Notes

1. Case study summaries for most programs can be downloaded from http://www.nrs.fs.fed.us/pubs.

2. FireSafe and Firewise Councils are community groups of forestry, emergency management, fire fighters, educators, elected officials, planners, builders, community organizations, and homeowners who work together to negotiate immediate and long-term strategies to reduce their risk of wildfire.

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