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West Virginia Firewise in the Classroom: Youth Working with Communities to Adapt to Wildfire

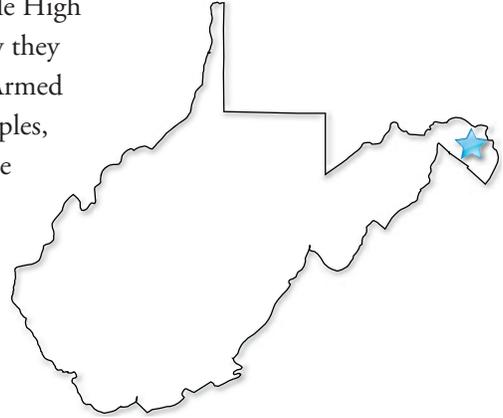
Pamela J. Jakes

Abstract

Around the world, youth are recognized as playing an important role in reducing the risk of disasters and promoting community resilience. Youth are participating in disaster education programs and carrying home what they learn; their families, in turn, are disseminating knowledge into the community. In addition to making a difference today, youth disaster education programs train the adults of tomorrow to be more prepared citizens. As social scientists and education researchers working in wildfire risk mitigation, we asked in what ways can wildfire education programs for youth help develop and support fire-adapted human communities? To begin to answer this question, we studied seven wildfire education programs for youth across the U.S. Programs were based in schools, public agencies, and nongovernmental organizations (NGOs). In a series of interviews, we sought information that would enable us to describe and analyze (1) the program's characteristics and the local resources to support it, (2) ways in which the program increased knowledge and awareness of wildfire, promoted more realistic risk perceptions, and improved wildfire preparedness for youth and their families, and (3) ways in which the program contributed to the local community becoming more adapted to fire. We found that the extent to which the programs were integrated into local wildfire planning and management efforts varied, as did their effectiveness in reaching community members and homeowners. In this report we present findings from one case study—the West Virginia Firewise in the Classroom program (WV Firewise in the Classroom).

WEST VIRGINIA FIREWISE IN THE CLASSROOM

A big yellow bus arrived at The Woods—an exclusive development in rural West Virginia—and a team of consultants got off. These were not three-piece suit consultants, but students from nearby Hedgesville High School, prepared to advise local residents on how they can reduce wildfire hazards on their properties. Armed with their new knowledge about Firewise¹ principles, GPS receivers, and a clipboard with maps and the West Virginia wildfire hazard assessment form, students evaluated driveway width and length, distance between structures and surrounding trees, presence of ladder fuels, and other conditions and determined the property’s site hazard rating.



West Virginia Firewise in the Classroom was initiated at Hedgesville High School and The Woods, a neighboring rural development, in the panhandle of West Virginia (general location indicated by the blue star).

This field trip was part of the West Virginia Firewise in the Classroom program. As researchers conducting a national study of wildfire education programs for youth, we talked to individuals involved in the West Virginia program to better understand program characteristics and the local resources that support it, and to learn more about the program’s direct and indirect impacts on youth, families, and communities—including how the program is contributing to creating a fire-adapted community.² In this research note, we share what we learned in The Woods that can help other communities involve youth in reducing wildfire risk.



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The last wildfire in what is now The Woods occurred in 1942, resulting in a 70-year buildup of fuels.

Several factors contribute to The Woods’ high wildfire risk; the most evident is the amount of dead wood on the ground. As observed by one local resident, “The whole area hasn’t burned since [1942]. So there’s 70 years of fuel buildup on the forest floor... it’s a tinder box.” Recent fire risk assessments of homes in the most heavily wooded areas of the development determined that 73 percent were at high, very high, or extreme wildfire risk. But even though residents drive past this accumulation of fuel every day, they told us they seldom think about wildfire. Even those who are aware of the development’s fire risk seldom take action to mitigate that risk. A local resident explained this lack of action, “Apathy is the biggest cause. They’ve just got other priorities.”

¹The use of the term Firewise in this note refers to Firewise West Virginia, an extension of the national Firewise Communities program focusing on creating safe access and defensible space for homes in the wildland urban interface.

²U.S. policymakers have identified a national goal for at-risk communities to be adapted to fire. Fire-adapted communities consist of “informed and prepared citizens collaboratively planning and taking action to safely co-exist with wildland fire” (Wildland Fire Leadership Council 2011, p.33).

The seasonal residents who own a majority of the homes in the highest risk areas are particularly difficult to motivate to action. One year-round resident commented about his seasonal neighbors: “They don’t want to come here to work. They work back home. This is their vacation place.”

The WV Firewise in the Classroom program seeks to address these concerns, increasing property owners’ awareness of their wildfire risk, providing a plan of action to reduce that risk, and further empowering homeowners by improving access to locally relevant Firewise information.

The WV Firewise in the Classroom program has two components—Firewise in the Classroom and the Firewise in The Woods Web site. WV Firewise in the Classroom is an adaptation of the Minnesota Firewise in the Classroom program (Jakes in press), modified to address local wildland fire conditions and to meet West Virginia education standards. A detailed curriculum includes 10 lesson plans that could take up to 18 class periods and 1 school day (for a field trip) to complete, but teachers can also choose the lesson plans most closely tied to their classroom curriculum or most relevant to local wildland fire conditions. The goals of the West Virginia program are to have students:



Students use GIS technology in the classroom to conduct Level I assessments of wildfire risk around homes in The Woods.

- understand what wildfire is—including wildfire physics, causes, and impacts
- understand the factors that put homes and communities at risk, and how the national Firewise Communities program helps homeowners and communities reduce their risk
- use geographic information systems (GIS), global positioning systems (GPS), and site visits to conduct home risk assessments
- communicate wildland fire information to homeowners and the community

As in Minnesota, the core of the West Virginia program is the home risk assessment—first in the classroom using aerial photographs to evaluate the risk of individual homes throughout a community (Level I assessments) and then in the field to conduct more detailed on-site assessments of at-risk homes (Level II assessments).³ Since the program began in 2007, Hedgesville High School students have completed more than 2,000 Level I assessments for The Woods and four other West Virginia communities. The West Virginia Division of Forestry (WVDOF) uses the Level I assessments to document

³A two-step process is often used to assess home wildfire risk. Homes are first assessed in an office (or in this case, a classroom) using aerial photographs to rate homes on a scale from one (no risk) to five (extreme risk) based on conditions visible on the photos—referred to as a Level I assessment. Homes with some level of risk (generally, moderate to extreme risk) are then visited so that an onsite evaluation can be conducted, with homeowners receiving a detailed description of conditions putting their property at risk—referred to as a Level II assessment.

and map fire risk across the state. Students have also completed more than 700 Level II assessments in The Woods. Homeowners can request a copy of their assessment, and members of The Woods Homeowners Association (WHOA) Firewise Committee are available to help them understand what the assessment means.

In the second component of the WV Firewise in the Classroom program, a computer teacher and her students are helping local community members develop a WHOA Web site that will provide a wealth of location-specific information on taking personal responsibility for reducing wildfire risk. In the future, the teacher would like students to play a role in collecting, organizing, and modifying Web site content, as well as uploading the content to the Web site.

The WV Firewise in the Classroom program incorporates several techniques that have been shown to be keys to successful environmental education programs:

- experience-based learning that links classroom instruction with an engaging activity
- place-based learning that encourages students to use what they had learned in the classroom to study the local community
- service learning that helps The Woods meet a need to reduce wildfire risk, and provides information to the WVDOF to assess wildfire risk across the state

“It gets students actively involved in a real project, service learning project, where they are actually gathering data for a real project that the [West Virginia] Division of Forestry uses in their forest planning.”
(Hedgesville High School staff member)



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When conducting Level II assessments, West Virginia Firewise in the Classroom students seize the opportunity to provide homeowners with information on how to reduce their wildfire risk.

IMPACTS OF WEST VIRGINIA FIREWISE IN THE CLASSROOM

The WV Firewise in the Classroom program resulted in students developing:

- increased wildfire awareness
- new knowledge that will prepare students to be tomorrow's Firewise homeowners
- interest in emergency management careers
- a broader sense of community outside their school or family, and an understanding of how they could help improve that community

The WV Firewise in the Classroom program is one of several initiatives in The Woods that are helping residents and the community improve their wildfire preparedness. One emergency manager described the impact of these initiatives:

“Overall in that community, through this program and through the other grants they've been working on, they are increasing their wildfire awareness in there tenfold.”

Residents indicated that the WV Firewise in the Classroom program has increased awareness of wildfire in their community by:

- generating articles in the community newsletter about the program
- students being visible in the community while conducting Level II assessments
- students visiting with property owners when they conduct assessments
- helping make accessible via a Web site locally appropriate Firewise information

For homeowners who have accessed their Level II assessments, the program has given them the information they need to reduce risk on their properties.

“At an individual community, at one school, in one classroom [the WV Firewise in the Classroom program] has made a significant improvement.”

(Hedgesville High School staff member)



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Residents indicated that seeing the Hedgesville High School students in their community conducting Level II assessments makes them more aware of their wildfire risk.

The WVDOF benefited from having Level I assessments to use in documenting and mapping fire risk in five West Virginia communities. One emergency manager described the potential impact of the Level I assessments:

“[West Virginia Firewise in the Classroom] gives the students a sense of ‘This is my community, this is where I live.’ A sense of responsibility that, ‘Hey, I have to take care of this.’”

(Hedgesville High School staff member)

“Now that the methodology [for students doing Level I assessments] is established, and it’s been used in another state than Minnesota, then it starts to gain validity... The beauty of it is that they can sit in Hedgesville and do another community 250 miles away in another part of the state... If I was able to get that in key areas, and be able to stick that into GIS, and generate a map that [indicates] these are your hot spots, this is where you need to start focusing your program, that would be invaluable.”

The classroom program also provided Level II assessments for The Woods that WVDOF staff can use when visiting with local property owners about wildfire fire risk. WVDOF staff told us that they are anticipating completion of the WHOA Firewise Web site because they believe that it will be extremely useful for communities across the state.

The Hedgesville High School students do not have to wait until they own their own homes to help create a fire-adapted community—by providing Level II assessments and a Web site with locally relevant information, the students are contributing to The Woods being more adapted to fire today. People interviewed for this study acknowledged a role for children in creating fire-adapted communities, and the contributions made by the students participating in the Firewise in the Classroom program. In addition, as a result of the Firewise in the Classroom program, partnerships were developed and new resources identified that the community can draw on in the future for other wildfire and civic projects.



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Division of Forestry staff have been involved in the West Virginia Firewise in the Classroom project by providing assistance in applying for grants, providing fire management expertise, and participating in the Level II assessment field trip.

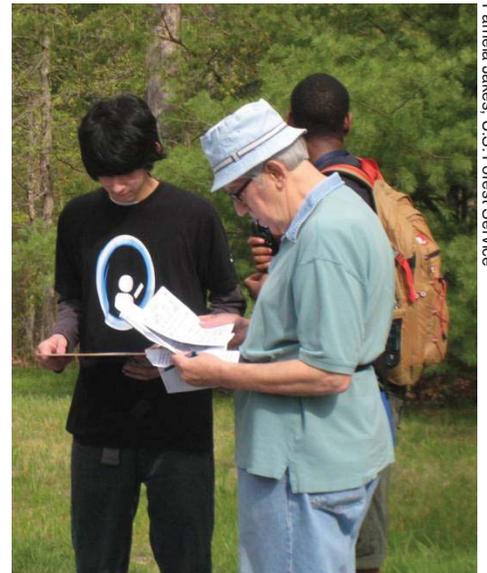
COMMUNITY CONTRIBUTIONS TO WEST VIRGINIA FIREWISE IN THE CLASSROOM

A number of community groups and organizations came together to support the WV Firewise in the Classroom project. The following partners were mentioned most frequently, and their ability to work together was identified as key to the West Virginia program’s implementation and positive outcomes:

- Eagle Promise (non-profit organization)—applied for and managed grants
- WVDOF—provided assistance applying for grants, a local home assessment framework, and fire management expertise
- Minnesota Firewise in the Classroom Program coordinator—adapted the Minnesota curriculum for West Virginia, and trained and partnered with the West Virginia teacher to conduct the program
- West Virginia University— provided access to aerial photographs
- WHOA Firewise Committee—members accompanied students on field trips and are available to visit with homeowners about assessments
- WHOA—will host the student-designed Firewise Web site
- Board of Education—helped the high school obtain computer hardware necessary to the program
- Hedgesville High School staff—provided a home for the program, made time in classroom schedules to present the curriculum, and were program champions
- Local champion— provided vision, focus, and enthusiasm, and helped ensure that all necessary resources were available

“Children have got to be the answer. So, hopefully some of those kids [who have been involved in the program] will be. I’m hopeful that the message is getting across. We learn as we go that you’ve got to start with [children] and get the [knowledge] out.”

(Member of The Woods Firewise Committee)



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Members of The Woods Homeowner Association Firewise Committee assist students during their Level II assessment field trip.

NEXT STEPS FOR WEST VIRGINIA FIREWISE IN THE CLASSROOM

School administrators and teachers, WVDOP staff, and local residents admitted that they do not know what the future holds for the WV Firewise in the Classroom program. They do agree, however, that the program could have had a greater impact if the Level II assessments were more fully utilized. As observed by a WHOA Firewise Committee member:

“The best thing in my experience is to sit down with the homeowner and use the risk assessment form that the state has and go through it with the homeowner. Walk around his house. Then, right away he knows what has to be done, what his risks are, and how bad it is. That’s the best way. [Currently] the high schoolers fill out the form, it goes into a database, and it never gets to the homeowner, and in most cases, the homeowner isn’t even there when it’s done. It helps the [Division of Forestry] but it doesn’t do much for the homeowners in the community.”

People interviewed provided ideas on the next steps that could help sustain and expand the program and its impacts:

- WVDOP staff continue to integrate Firewise in the Classroom into their efforts to work with communities to reduce wildfire risk.
- Hedgesville High School administrators support and teachers continue to use the program to teach students about wildfire and provide the WVDOP Level I assessments for other West Virginia communities.
- Hedgesville High School administrators support and teachers continue to update the Web page annually as a classroom activity and explore the possibility of developing future content for the Web site.
- Hedgesville High School Firewise in the Classroom teachers assign Level II assessments of each student’s home as homework to facilitate intergenerational learning and document student learning.
- WHOA Firewise Committee members provide feedback to students on progress made in reducing wildfire risk as a result of students’ efforts.
- WHOA Firewise Committee members organize Firewise block committees and identify block champions who can use the Level II assessments to work with neighbors to reduce wildfire risk.
- WHOA Firewise Committee members work with the Hedgesville High School students to reassess properties evaluated earlier to determine the extent to which wildfire risk has changed and communicate findings to property owners (potential activity for Firewise block committees, identified above).

LESSONS FOR OTHER YOUTH WILDFIRE EDUCATION PROGRAMS

Analysis of the WV Firewise in the Classroom program suggests several steps that will help new programs increase their significance:

- Increase locally relevant outcomes on the ground by partnering with a local wildfire management group (In The Woods, the Firewise Committee was the critical local partner, but other partners could include the volunteer fire department, community wildfire protection plan committee, or Fire Safe Council).
- Increase intergenerational learning by having take-home assignments and parents sign off on wildfire-related family activities (also useful in documenting program impacts).
- Document and monitor student learning and accomplishments (this will help in program evaluations and future proposals or requests for resources).
- Improve student understanding of the impacts of service-learning projects by soliciting feedback from those benefiting from the project (for example, local residents or the Firewise Committee could document actions taken in the community as a result of student projects)

“[The students] absolutely eat it up... It’s cool. It’s just really neat to see them, to feel like they’re making a difference, which is something, you know, they never get that opportunity.”
(Hedgesville High School staff member)



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Since the program began in 2007, Hedgesville High School students, accompanied by members of The Woods Firewise Committee, have visited the development annually, completing more than 700 Level II assessments.

PROGRAM INFORMATION AND CONTACTS

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- M. Rodger Ozburn, WV Division of Forestry, State Firewise Liaison, M.Rodger.Ozburn@wv.gov
- Firewise West Virginia Web site, http://www.wvforestry.com/fire_prot.cfm?menucall=fire
- Firewise Communities Web site, <http://www.firewise.org/>



Members of The Woods Homeowner Association Firewise Committee have been instrumental in conducting West Virginia Firewise in the Classroom activities and will continue to be active in the future reducing wildfire risk in the community.

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ABOUT THIS SERIES

This is one in a series of Forest Service publications presenting descriptions of individual case studies included in the National Fire Plan study “Promoting fire adapted human communities through youth wildfire education programs.” Other research notes in the series can be found by searching the title “Youth Working with Communities” at Treesearch, <http://treesearch.fs.fed.us>, or by contacting a member of the research team.

METHODS

This report is part of a larger investigation of how youth wildfire education programs contribute to the development of fire-adapted human communities. The National Cohesive Wildland Fire Management Strategy defines a fire-adapted community as consisting of “informed and prepared citizens collaboratively planning and taking action to safely co-exist with wildland fire” (Wildland Fire Leadership Council 2011, p. 33). A working group of the Wildland Urban Interface (WUI) Mitigation Committee of the National Wildfire Coordinating Group⁴ has identified four types of adaptations a community must make to become adapted to fire: (1) social adaptations, (2) political adaptations, (3) ecological adaptations, and (4) emergency management adaptations. In studying wildfire education programs for youth, we looked for ways in which the program contributed to adaptations in these four areas.

We explored the environmental education and community wildfire management literature and developed a model to explain how education programs and fire-adapted human communities interact (Fig. 1). The case study reported here is helping us further define and characterize the model. Our first step was to describe the program, focusing on program content and the extent to which the program employed experiential, place-based,

⁴The WUI Mitigation Committee provides coordinated leadership, input, and recommendations to public wildfire management agencies for the achievement of fire-adapted communities in the wildland urban interface. <http://www.nwccg.gov/branches/ppm/wuimc/index.htm>

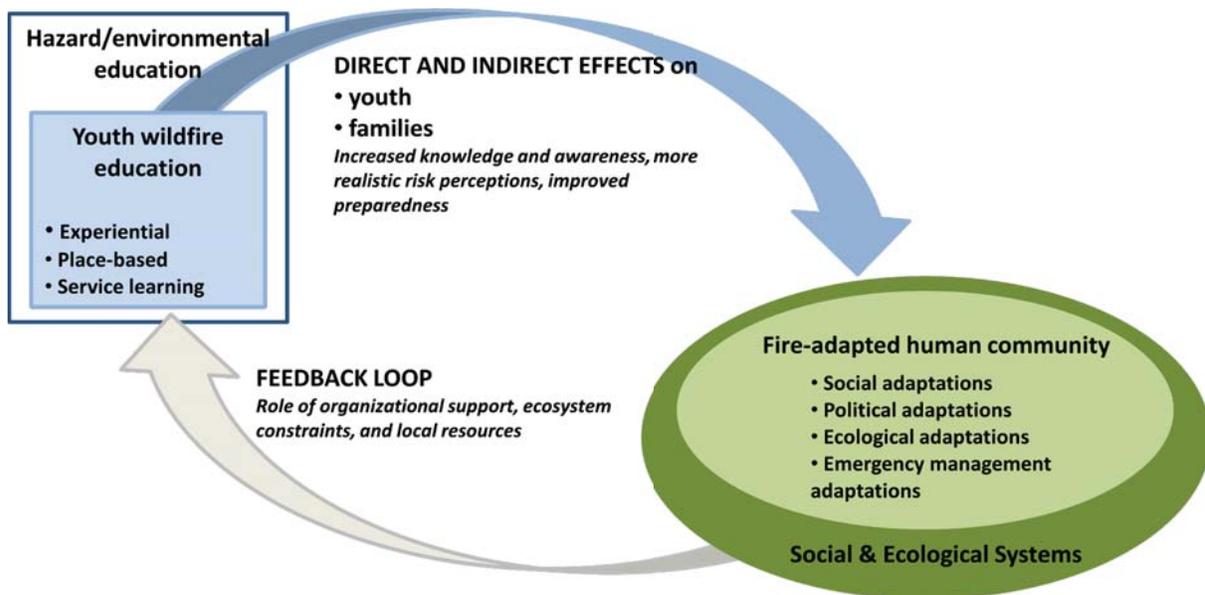


Figure 1.—Research framework for understanding the link between wildfire education programs for youth and fire-adapted human communities, where youth wildfire education programs, using environmental education methods, influence students and families and contribute to communities becoming adapted to fire, with local community resources supporting the wildfire education program.

and service learning activities (blue box in Fig. 1). Next, we collected data on whether and how the program increased knowledge and awareness of the physical, ecological, and social aspects of wildfire, promoted more realistic risk perceptions, and improved wildfire preparedness for youth and their families (down arrow in Fig. 1). We then looked for ways the program may be contributing to the local community being more adapted to fire (green oval in Fig. 1). Finally, we identified community resources that supported the program (up arrow in Fig 1).

The case study approach is a common research method applied when scientists want to study “who, what, how, and why” for a contemporary event within a real-life context (Yin 2003). We selected programs for case studies that would represent (1) programs that are contributing (even in a small way) to the development of a fire-adapted human community or have the potential to do so in the near future, (2) a range of program types (based in schools, clubs or organizations, and NGOs), and (3) different regions of the country. We used purposive sampling to select interviewees (Lindlof and Taylor 2002). This selection process is appropriate when scientists need to identify people who have specialized knowledge about the program being studied. Data were gathered using semi-structured, face-to-face interviews following an analytic induction approach (Glaser and Strauss 1999). Analytic induction is ideally suited for this study because it allows us to identify patterns and themes surrounding concepts that have received little empirical study. For the WV Firewise in the Classroom case, we interviewed 19 individuals, including local residents, members of The WHOA Firewise Committee, people associated with the school (administrators, teachers, and students), and WVDOP staff. Additional data were collected from secondary sources such as the WV Firewise in the Classroom curriculum, The WHOA Wildfire Protection Plan, presentations or handouts on the program, and newsletter or newspaper articles.

LITERATURE CITED

- Glaser, B.G.; Strauss, A.L. 1999. **The discovery of grounded theory: strategies for qualitative research.** New York: Aldine de Gruyter. 271 p.
- Jakes, P.J. In press. **Minnesota Firewise in the Classroom: youth working with communities to adapt to wildfire.** Res. Note NRS- . Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. p.
- Lindlof, T.R.; Taylor, B.C. 2002. **Qualitative communication research methods. 2nd ed.** Thousand Oaks, CA: Sage Publications. 357 p.
- Wildland Fire Leadership Council. 2011. **A national cohesive wildland fire management strategy.** <http://www.forestsandrangelands.gov/strategy/national.shtml>. (Accessed August 12, 2011).
- Yin, R. 2003. **Case study research: design and methods.** Thousand Oaks, CA: Sage Publications. 181 p.

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