

**Fighting fire with nature:
How resident affinity for 'natural' landscapes can be used to promote wildfire
mitigation in the wildland-urban interface**

Destiny D. Aman^A

^AThe Pennsylvania State University, Department of Geography, 302 Walker Building, University Park, PA 16802, dda118@psu.edu

Extended Abstract:

Wildfire hazard is a growing problem in many areas of the United States, especially in the *wildland-urban interface* (WUI), where homes and other structures border or intermingle with forests, shrubs and grasslands. Despite years of educational outreach by fire management officials promoting effective and affordable mitigation strategies, research shows that residents, especially seasonal residents and those new to an area, still tend to under-invest in mitigation, even when they perceive their risk to be high (McCaffrey 2004, Collins 2008). Meanwhile, the social and economic costs of wildfire have increased with fire size and intensity and far exceed the costs of mitigation. This problem has led to increased research on what factors influence wildfire hazard mitigation behavior (Collins 2008), as well as how to improve communication and facilitate public involvement in strategic planning for wildland fire (Zaksek and Arvai 2004). Increasingly, researchers are uncovering the importance of the emotional relationships that residents have with certain places and that, in turn affect the perception, communication, and mitigation of risk (McGee et al. 2009). Using qualitative methods, this research from Truckee, California addresses important questions about how emotion interacts with wildfire hazard perception to promote or hinder communication and subsequent mitigation in the WUI.

This work is oriented around three specific research questions:

1. How are spaces of home, nature, and community produced and experienced in the WUI?
2. How is wildfire hazard produced and experienced in the WUI?
3. What is the impact of these constructions on the vulnerability of the people and environment in the WUI to wildfire hazard?

A qualitative analysis of participant observation, combined with over 80 interviews with residents, fire, and community managers in Truckee, a community in California's WUI, has revealed the following:

WUI residents possess deep and complex emotional connections to 'natural' spaces. In interviews, many Truckee residents articulated a *romantic* view of nature - one in which mountains and forests are seen as beautiful, rejuvenating, and peaceful places. The terms "heaven" and "paradise" were frequently used, and residents, most of whom have migrated to the WUI from elsewhere, often described "falling in love" with the landscape. Importantly for fire management, the romantic view of nature is one in which wilderness and civilization is sharply

delineated. This means that for many Truckee residents, access to the positive emotions associated with wilderness requires the (perceived) absence of civilization. The importance of maintaining this “illusion of wilderness” on small, subdivided lots contributes to residents’ reluctance to remove vegetation that screens the residents’ view of nearby roads and houses. In contrast to residents, the fire managers interviewed were more likely to view the Truckee landscape as a series of neighborhoods or subdivisions, and use negative associations in describing nature: “Mother Nature’s winning the battle” and “I don’t think they even understand what Mother Nature has in store.” The difference in the way residents and managers perceive and experience the WUI landscape may contribute to some of the barriers to wildfire hazard communication.

Public opinion about and compliance with mitigation policy hinges on the way residents and risk managers define these spaces. In attempting to motivate residents to thin trees, fire managers in Truckee have found that residents are more responsive to verbal communication strategies that stress the importance of forest health, over that of fire risk reduction or community responsibility. In interviews, the vast majority of residents indicated that they were satisfied with their interactions with fire managers. When asked to describe exchanges during which managers instructed them to remove trees, many residents described being given careful explanations of how large trees were competing with small trees for resources, of the importance of selecting for the success of certain tree species, and that disease (as well as fire) could be prevented through these techniques. These findings corroborate previous research indicating that WUI residents are more likely to create and maintain defensible space for reasons related to ecological or forest health, as opposed to fire management specifically. The findings reported here also indicate that the success of these techniques is related to the alignment of messaging strategies with residents’ positive emotional attachment to natural spaces.

The emotional characterization of wildfire hazard is very important in hazard communication. While Truckee’s fire managers have largely aligned their verbal messaging strategies with residents’ positive emotional relationship to natural spaces, in contrast, the visual communication materials (brochures, flyers, and handouts) used for public outreach in Truckee tend to rely on fear-based communication. Photos of flaming houses and burned out forests adorn most of the materials mailed to or handed out to residents in Truckee. Findings from this project indicate that while fear-based materials may resonate with some residents, others are repelled, distracted, and annoyed by such strategies, which are then discounted as “scare tactics.” Fire managers, for their part, argued in interviews that fear is “the only way to make people care about wildfire,” despite deploying more nuanced, positive messaging in personal interactions with residents. These findings suggest that managers should take care to recognize the potential impact of these various emotional characterizations on their audience. Fear-appeals should be used thoughtfully, strategically, and as a complement to more positive visual messaging that leverages people’s strong attachment to the landscape.

A focus on certain mitigation policies over others has led to a lopsided view on the part of residents as to what measures can and should be taken to reduce risk. In interviews, Truckee

residents were largely familiar with the policy of defensible space and were able to describe the activities required to create and maintain it around their homes with varying degrees of accuracy. However, residents were almost entirely unaware of what activities they could be doing to the home itself to protect against wildfire (outside of replacing a shake roof). Recent research suggests that many activities can be done to reduce a home's structural vulnerability to wildfire, especially since many WUI structures are lost via ember intrusion (Cohen and Stratton 2008). Such activities include simple projects like changing venting materials to finer-gauge mesh and adding angle flashing to gaps between roof sheathing and fascia boards, to larger-scale activities like upgrading decking material and boxing-in eaves (Quarles et al. 2010). In their interactions with residents, however, fire managers in Truckee tended to focus almost entirely on defensible space, ignoring these other adjustments. Interview data suggest that for WUI residents, many of whom may have the interest and resources to invest in these incremental structural improvements, balancing messages advocating defensible space with those targeting the built environment could have a major impact. This strategy may be especially useful for reaching residents who are particularly opposed to thinning trees.

Since so many of Truckee's residents have come from somewhere else, this research indicates that their relationship with Truckee as a place (and their choices about how they will change or reproduce that place according to their aesthetic preferences) is in part determined by their collectively held cultural views on other spaces - forest, mountain, home, and community - ideological spaces in the cultural memory. This project shows that understanding how these spaces operate to both enable and constrain behavior can help fire managers better connect with WUI residents. Specifically, this research suggests that managers should align their outreach efforts with residents' positive emotional attachment to 'natural' spaces; limit the use of fear-based communication strategies, particularly in the design of visual materials; and balance messages advocating defensible space with those targeting the built environment.

Additional Keywords: perception, communication, mitigation, public policy, qualitative methods, WUI

Acknowledgements

This research was supported by the Association of American University Women, the Joint Fire Sciences Program, the Penn State Department of Geography, and the Sagehen Creek Field Station.

References

- Cohen JD, Stratton RD (2008) Home destruction examination—Grass Valley fire. USDA Forest Service Report R5-TP-026b.
- Collins TW (2008) What influences hazard mitigation? Household decision-making about wildfire risks in Arizona's White Mountains. *The Professional Geographer* **60**, 508-526.
- McCaffrey S (2004) Thinking of wildfire as a natural hazard. *Society and Natural Resources* **17**, 509-516.

- McGee TK, McFarlane B, Varghese J (2009) An examination of the influence of hazard experience on wildfire risk perceptions and adoption of mitigation measures. *Society and Natural Resources* **22**, 308-323.
- Quarles SQ, Valachovic Y, Nakamura GM, Nader GA, DeLasaux MJ (2010) Home Survival in Wildfire-Prone Areas: Building materials and design considerations. *Agriculture and Natural Resources*. University of California. Publication 8393.
- Zaksek M, Arvai J (2004) Toward improved communication about wildland fire: Mental models research to identify information needs for natural resource management. *Risk Analysis* **24**, 1503-1514.