

An Interdisciplinary Discussion about Fire/Fuels Science and Management

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Introduction

FIRE AND FUELS MANAGEMENT HAVE BECOME INCREASINGLY CHALLENGING IN THE LAST THREE decades due to climate change, invasive species, urbanization and development, increased land use, and the effects of these factors on fire size and frequency (Westerling et al. 2007; D'Antonio and Vitousek 1992). Often, the science and information needed to carry out best management practices are lacking or difficult to find (Simpson 2009; Wright 2004). Fires do not stop burning at jurisdictional boundaries, and land managers must work with the complexities of differing agency missions, policies, resource values, social concerns, and costs (U.S. Congress 2009).

To address these challenges, many agencies and organizations have begun to adopt collaborative efforts to increase communication and share resources. These partnerships and interactions can be a cost-effective method of achieving collective goals in natural resource management (Lubell et al. 2002; Prell et al. 2008). Such efforts include the Department of Agriculture and Department of Interior Joint Fire Science Program (JFSP) network of knowledge exchange consortia. This network of regional consortia aims to connect managers and researchers within contiguous ecological regions (JFSP 2010). Participating regional consortia conducted needs assessments for fire managers during summer and fall 2009. The results of these needs assessments indicated that a common hurdle to implementing best management practices stems from the different perceptions of information consumers (resource managers) and information producers (researchers), as well as a lack of interdisciplinary and interagency communication (Kocher et al., forthcoming).

The challenges of working in an interdisciplinary environment were illustrated during a recent study of influences on the success of fire science delivery. Asked about barriers to the use of science, National Park Service (NPS) and Bureau of Land Management (BLM) fire managers often cited the different perspectives of resource managers as a barrier. For example, one fire man-

Citation: Weber, Samantha, ed. 2012. *Rethinking Protected Areas in a Changing World: Proceedings of the 2011 George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites*. Hancock, Michigan: The George Wright Society.
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ager explained, “And many of us are also, compared to the natural resource culture, doers. The natural resource culture in the Park Service, most of their job has been to stop things from happening. To protect the resources. And fire people, in contrast to that, are ‘let’s go get something done.’” (V. Wright, unpublished data).

Building relationships and two-way communication so that both managers and researchers across a range of disciplines have input into information generation, and improved access to results, will be important to the success of interdisciplinary interactions in fire and resource management. The “Interdisciplinary Discussion About Fire/Fuels Science and Management” sharing circle at the George Wright Society (GWS) Conference on Parks, Protected Areas, and Cultural Sites on March 14, 2011, was organized to facilitate dialogue about interactions between managers and researchers, as well as interdisciplinary communication among managers. This paper summarizes the two-hour discussion.

Participants

GWS conferences predominantly draw NPS managers and scientists; thus, the participants and discussion centered on the context of NPS fire and resource management. The sharing circle’s ten participants represented three JFSP knowledge exchange consortia (Northern Rockies, Southwest, Midwest Oak Woodlands) and included three university representatives (including one cooperative ecosystem studies unit), three national-level NPS fire program staff, one national-level NPS wilderness program staff, two park-level resource management chiefs, and one graduate student studying climate change communication.

Participants in the 2011 GWS sharing circle session were interested in learning more about the JFSP knowledge exchange consortia. They supported the mission of the JFSP Consortia to improve connections between fire science and fire management, and were interested in broadening the discussion to include natural resource managers and other interdisciplinary positions that work with fire management, either directly or indirectly.

Sharing circle introduction

The session facilitator and principal investigator of the Northern Rockies Fire Science Network, Vita Wright, began the sharing circle with an overview of the JFSP knowledge exchange consortia, including both active and planning-phase regional consortia. The vision of the JFSP knowledge exchange consortia network “is a national network to accelerate the awareness, understanding, and adoption of wildland fire science information by federal, tribal, state, local, and private stakeholders within ecologically similar regions.” Recognizing the JFSP’s commitment to incorporating input from the management community, Wright described the needs assessment phase as important for each regional consortium to determine the most appropriate and relevant science-delivery products and methods for their stakeholders. The needs-assessment phase was highlighted as an opportunity to establish a flow of communication among stakeholders so that important relationships could be established in preparation for the transition to an active consortium. Wright explained that some of the eight currently active regional consortia have focused their needs assessments specifically on fire and fuels managers, whereas others (for example, Great Basin) have expanded beyond this focus to include an interdisciplinary audience. The focus of the GWS sharing circle discussion was, therefore, to help guide the needs assessment for the Northern Rockies Fire Science Network, which is currently in its planning phase, and to provide input to the national consortia network. It was framed as: “What does it mean for the consortia to involve a more interdisciplinary audience?”

Suggestions for improving science communication

Participants began the sharing circle discussion by brainstorming potential activities and prod-

ucts of the JFSP consortia, and discussed the related issue of how to address current barriers to effective communication between scientists and managers. Websites, natural resource topic summaries, fact sheets, journal article databases, social media, and workshops were discussed as potentially useful consortia products. These suggestions are consistent with the results of earlier consortia needs assessments (Kocher et al., forthcoming). NPS participants noted that accessing journal articles was quite difficult, and that providing centralized access to online articles would be helpful.

Several participants suggested that engaging university extension specialists, or reaching university partners through existing CESU agreements, could be an effective way to bridge the gap between researchers and end users in fire management, and other NPS resource areas. Supporting the current approach to consortia development, participants agreed it is important for the consortia to assess how managers currently access information before determining how to improve this access, and many were in agreement that the current model was not effective. Participants also recommended that information produced by the consortia should be targeted to diverse user groups, both within the fire management community and among fire management agencies, so that the information would not be too broad to be useful.

Wright described an ongoing social network analysis conducted by the Northern Rockies and Southwest consortia as a potential tool to identify how people in different roles within fire management communicate about fire science information.

Serving an interdisciplinary audience

The session facilitator guided the next part of the discussion by asking, “What would it mean for the JFSP to serve a broader, more interdisciplinary audience?” The JFSP’s science delivery strategy identifies the largest group of consumers of JFSP products as federal “specialists and line officers (GS-7 to GS-15) who plan and implement activities associated with wildfire and natural resource management on federally administered land, and their counterparts who manage state and private lands” (JFSP 2007, 3). Many of the JFSP knowledge exchange consortia have initially focused on fire managers, including roles such as fire management officers, assistant fire management officers, fuels specialists, fire ecologists, fire planners, staff officers, and line officers. In order to serve the group described in the science delivery strategy, these consortia might need to broaden to also serve natural resource managers (for example, wildlife biologists and botanists).

Participants shared their interdisciplinary interactions from their careers, citing differences in work culture and educational background between fire and natural resource managers. Zion National Park was used as an example of an interdisciplinary approach that worked well, in which fire operations managers and natural resource managers regularly communicated by having a fire liaison at natural resource meetings and vice versa. In this park, the fire ecologist role was given a prominent voice and was used as a means to bring applicable fire science to fire operations managers. The resource management and fire programs in Zion were able to work collaboratively to respond to a large fire and broadscale herbicide treatment project, which allowed them to realize further commonalities between fire and resource managers. One participant responded to this example by suggesting that often the fires which become crisis situations at the national level are the ones in which the different program areas or agencies have established only weak lines of communication between disciplines. Participants agreed that scheduling opportunities to meet and collaborate on projects was a key factor to move fire management into a more interdisciplinary context. However, participants recognized that time, funding, and institutional support were necessary drivers to promote such collaborations. Participants also suggested that the JFSP consortia develop case studies, where there has been good communication and collaboration between researchers, management, and interdisciplinary audiences, in order to identify “best practices.”

Participants noted that within fire management, there was a wide spectrum of use and understanding of current fire science and ecology concepts. Fire operations managers were seen as less connected to fire science, and one suggestion for increasing their awareness of fire science and ecology was to have certain upper level courses required as training for fire operations positions. This would promote a common platform of concepts, language, and terminology that would in turn facilitate communication among different fire management positions, different resource disciplines, and even different agencies.

Potential consortia activities

Participants identified potential consortia activities to facilitate communication among interdisciplinary audiences. A primary idea was an interdisciplinary workshop bringing managers from different disciplines together to develop case studies about the use and application of science, and possibly to engage in role-playing scenarios. Another idea was to encourage natural resource managers and fire managers to work together by having a pot of research money to specifically fund interdisciplinary fire management research projects. For example, the JFSP funded several interdisciplinary studies in Zion National Park. Other suggestions included creating JFSP briefs tailored to managers of different resource areas, and compiling a robust, searchable database with regional case studies.

When asked to identify activities that would make the consortia appeal to a broader audience than fire and fuels managers, participants responded by revisiting the idea of a highly specialized workshop or web seminar that was promoted as a go-to resource and information clearinghouse, at the cutting edge of interdisciplinary fire management. Some participants advocated having such a workshop organized around a main “hot topic,” such as a cross-discipline whitebark pine management strategy, or around a crisis situation requiring an interdisciplinary solution. Another suggestion was a workshop specifically addressing differences in the language and terminology used to communicate fire science and management concepts.

Participants recommended several ways to encourage participation in these proposed activities, including providing travel grants for workshop attendance, actively recruiting potential attendees from diverse disciplines, suggesting attendance as part of a resource manager’s career development plan, and collaborating with already-established and well-respected conferences and workshops.

Three themes

Near the end of the session, the group identified three themes emerging from the discussion:

1. How do fire and resource managers engage each other and provide the right education and training to do so?
2. Where can we find expertise and information to inform fire management decisions and tackle interdisciplinary issues?
3. Can we look at case studies at a regional level and engage people from different resource areas around a topic or species?

Southwest Consortium workshop

Andi Thode offered insights from her perspective as the principal investigator of the Southwest JFSP Consortium, which is an active consortium. The Southwest Consortium had recently conducted the Southwest interagency fuels workshop, which drew 155 managers and researchers from across disciplines and agencies. At this workshop, participants joined breakout sessions about lessons learned, new research, and the future, in each of five vegetation types. Feedback from the workshop suggested that fuels treatment and restoration information was effectively dis-

seminated across an interdisciplinary audience of resource and fire managers in the Southwest. This inspired the Southwest Consortium project team to expand their activities beyond the original planning-phase mission, of bringing fire researchers and managers together, to include a more interdisciplinary audience, and to change the composition of their executive board to include specialists from other disciplines. In addition, based on recommendations from this initial large workshop, the Southwest Consortium is considering organizing additional specialized workshops and synthesis materials to serve interdisciplinary audiences.

Sharing circle conclusion

The session concluded by reviewing the sharing circle discussion and welcoming additional suggestions for the JFSP consortia. The sharing circle had been an opportunity to explore some of the contemporary challenges to communicating science within the fire and resource management communities, and to brainstorm methods to get relevant information and ideas to fire managers, and managers from other disciplines involved in fire or fuels management. Participants concluded the session by applauding the regional emphasis of the JFSP consortia, and by requesting that JFSP funding structure be shifted to emphasize more regional research, collaborative projects, and workshops centered on the networks created by each regional consortium. They also expressed support for the planned evaluation of the consortia's activities.

Follow-up

Session organizers summarized the GWS sharing circle discussion for the national network of JFSP consortia principal investigators and coordinators at the 2011 annual consortia principal investigator meeting. The GWS session was timely, as the JFSP consortia network is exploring how to engage and provide fire information for people outside the traditional fire community (for example, natural resource managers). At the annual meeting, the consortia continued to consider ways reach resource managers, including inviting them to participate in workshops and conferences about fire and fuels science and management, an approach that the Southwest Consortium had used for the Southwest Interagency Fuels workshop. The consortia reiterated their commitment to being inclusive to all parties interested in fire and fuels science. Several regional consortia have defined themselves as interdisciplinary consortia (for example, the Great Basin, California, and Lake States), soliciting input from resource managers during their initial needs assessments. In addition, the Great Basin Consortium has resource managers on both their steering committee and advisory board, and the Southwest Consortium has decided to add resource managers to their executive board.

In conclusion, one resource manager queried during the Northern Rockies Fire Science Network's needs assessment stated that "at the end of the day, fuels management occurs in an interdisciplinary environment" and said fire and resource managers will be most effective if they identify research needs collaboratively, and draw from the same science sources. The JFSP consortia offer a promising venue for facilitating this goal.

References

- D'Antonio, C., and P. Vitousek. 1992. Biological invasions by exotic grasses, the grass/fire cycle, and global change. *Annual Review of Ecological Systems* 23:63–87.
- JFSP [Joint Fire Science Program]. 2007. Joint Fire Science Program science delivery and application strategy. www.firescience.gov/documents/Science_Delivery_Strategy_Final_June_2007.pdf.
- . 2010. Fire science first look: Introducing the JFSP fire science delivery network, under "Vision and Goals." www.firescience.gov/JFSP_Consortia.cfm.

- Kocher, S., E. Toman, S. Trainor, V. Wright, J. Briggs, C. Goebel, A. Oxanart, D. Peppin, E. MontBlanc, T. Steelman, A. Thode, and T. Waldrup. Forthcoming. Wildland fire science and management in the U.S.: Spanning the boundaries through the regional knowledge exchange network.
- Lubell, M., M. Schneider, J.T. Scholz, and M. Mete. 2002. Watershed partnerships and the emergence of collective action institutions. *American Journal of Political Science* 46:1, 148–163.
- Prell, C., K. Hubacek, C. Quinn, and M. Reed. 2008. “Who’s in the network?” When stakeholders influence data analysis. *Systemic Practice and Action Research* 21:6, 443–458.
- Simpson, Kevin. 2009. March 19th hearing entitled “Restoring the Federal Public Lands Workforce.” http://westinstenv.org/wp-content/testimony_simpson.pdf.
- U.S. Congress. 2009. *The Federal Land Assistance, Management and Enhancement Act of 2009* Report to Congress. www.forestsandrangelands.gov/strategy/documents/reports/2_ReportToCongress03172011.pdf.
- Westerling, A.L., H.G. Hidalgo, D.R. Cayan, T.W. Swetnam. 2006. Warming and earlier spring increase western U.S. forest wildfire activity. *Science* 313:940–943.
- Wright, V. 2004. Barriers to science-based management: What are they and what can we do about them? In *Protecting Our Diverse Heritage: The Role of Parks, Protected Areas, and Cultural Sites*, ed. David Harmon, Bruce M. Kilgore, and Gay Vietzke, 34–37. Hancock, MI: George Wright Society.
- . 2010. Influences to the success of fire science delivery: Perspectives of potential fire /fuels science users. Final report to the Joint Fire Science Program Project #04-4-2-01. www.firescience.gov/projects/04-4-2-01/project/04-4-2-01_vw_jfsp_final_report.pdf.