Individual and Organizational Influences to the Use of Fire and Fuels Research by Federal Agency Managers

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Introduction

The Joint Fire Science Program (JFSP) and the National Fire Plan (NFP) spend considerable amounts of money on fire and fuels research. From Fiscal Year 1998-2006, the JFSP spent approximately $145 million, and from Fiscal Year 2001-2005, the NFP spent approximately $104 million on research. For the costs of research to be fully realized, it is critical that science communicators effectively deliver relevant research results and that potential users apply them.

Fire and fuels research scientists most commonly deliver results by publishing scientific articles, hosting information on web sites, and presenting their results at conferences, workshops, and trainings. Federal agencies also provide access to scientific information and tools by offering free publication distribution (e.g., http://www.treesearch.fs.fed.us), library and document delivery services (e.g., http://www.nal.usda.gov/digitop; http://library.doi.gov/ill.html), and searchable web syntheses (e.g., http://www.fs.fed.us/database/feis). However, the use of research by fire and fuels managers is dependent on more than awareness and information accessibility.

There is a wealth of research on interpersonal and organizational communication, organizational learning, social psychology, and public administration that can provide insight into how and when federal agency managers adopt scientific information and tools. This literature is dispersed throughout a variety of social science disciplines and has not yet been synthesized and integrated to inform fire and fuels science delivery efforts.

For example, the *Diffusion of Innovations Theory* explains that adoption of new ideas and approaches is a multi-stage process with the potential for active or passive rejection at several points during the innovation-decision process. This theory recognizes that diffusion takes time. The time it takes for diffusion to occur is influenced by a variety of factors, including potential users' characteristics at both the individual and community levels (Rogers 1995; Wright 2004).

Additionally, communication research reveals that the potential for misunderstanding during communication is high. Scientists and managers can be misunderstood as a result of language ambiguity, inference and guesswork, inadvertent secondary messages, selective attention, and preconceived notions (Sillars 2006; Wright 2007). By better understanding and predicting potential users' beliefs and reactions to the introduction of innovations, science communicators may be able to reduce the potential for misunderstanding, thereby shortening the time for diffusion to occur (Berger 1997; Wright 2007). More effective science delivery should lead to better use of relevant science, better accountability, and ultimately, better stewardship.

The study presented here aims to understand perceptions of potential users about influences to the use of fire and fuels research, to evaluate the relative strengths of these influences for different user groups, and to develop recommendations for prioritizing limited fire/fuels science delivery resources. Studied user groups include decision makers and assistant decision makers,

fire management officers, fuels specialists, and fire ecologists at regional/state and field offices in the United States Forest Service (USFS), National Park Service (NPS), and Bureau of Land Management (BLM).

Methods

This study employs a multi-method approach. First a literature review and agency meetings were held to identify the range of perceived influences to science application. Next, regional case studies with in-depth interviews are being used to gain a deeper understanding of identified influences by targeted user groups in each agency. Finally, a survey will be used to evaluate the strength and prevalence of influences among the studied potential users groups.

Four agency meetings were held in the western United States during Spring 2005. The results were used to develop an interview guide. During Spring 2007, 34 interviews were conducted at 5 USFS study sites and 3 NPS study sites. An additional 20 interviews are planned at 5 BLM study sites during Fall 2007, and the survey will be administered during Winter 2007/2008.

Interview topics include the role and relevance of research for fire and fuel management goals; organizational culture regarding science and innovation; individual comfort with trying new approaches; history with, and perceptions of, science and scientists; balancing time spent to apply research with other priorities; weighing research results against experiential knowledge; the uncertainty of science; professional communication networks; the limitations of science; and public influences to the use of research.

Drawing from the interviews as well as relevant literature, the survey will measure potential users' perspectives on their past experiences with scientists, beliefs and attitudes about research and scientists; cultural and process attributes of innovative/learning organizations; organizational culture regarding science; leadership; and external influences to the use of science.

Results

Data collection and analysis are ongoing.

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