Fire Science Dissemination Needs Assessment
Preliminary Findings

A needs assessment was conducted to identify the uses of fire science information by federal land management staff and where there are challenges to accessing and using information. Over 75 staff members at federal land management agencies, including the US Forest Service, US Fish and Wildlife Service, the Bureau of Land Management, Bureau of Indian Affairs, Natural Resources Conservation Service and National Park Service were interviewed over the phone, in person and at regularly scheduled meetings. In addition, project staff attended regularly scheduled meetings of the California Fire Alliance and California Association of Resource Conservation Districts to hear from members their views on fire science dissemination.

Interviewees were asked about how they access fire science information, what they consider important topics and researchers for their work, and how to improve dissemination of information to help them in their work. Most staff interviewed said they had adequate access to fire science results, however they faced challenges in keeping up with the volume of information available when writing NEPA and other planning documents, understanding the context of information, and finding enough locally relevant information for their needs. They also gave many suggestions on how to improve the continuum between research and management.

As a result of the needs assessment, the following topics were identified as the largest barriers to accessing, interpreting, and applying fire science information.

NEPA and other planning documents require scientific rigor

What are the needs?

Agencies are directed to take a “hard look” at the “best available science” when applying the NEPA process to develop land management actions and decisions. This allows agencies to design and analyze fire-related treatments based on recent, relevant science. However, resource specialists reported that they are often overwhelmed by the task of finding, reading, digesting and synthesizing research for NEPA documents. This is particularly true for the Forest Service. In order to wade through the literature, resource specialists said they often only read the abstract, discussion, and conclusion sections of scientific papers. If no “management considerations” are identified, they may not read the paper at all. In addition, fuel reduction and fire-related projects on Forest Service lands throughout the state often receive negative public comments accompanied by as many as 150 citations from scientific literature. Each of these references must be located, digested, addressed and documented in the project recordeven though they may be for ecosystems and geographies that are not very relevant to the project area. Other agencies also feel that the scientific bar has been raised considerably. For example, Bureau of Land Management staff noted that their NEPA documents, as well as the new interagency fire management plan documentation, require strict scientific analysis and documentation. The fire management plan is required by all federal agencies, for every area with burnable vegetation.

What may help:

- Annotated bibliographies that provide a descriptive statement about each citation, including information on the relevance, accuracy, and quality of the information it contains. These must be maintained to remain up to date.
- Research briefs that summarize full-length journal articles into a 1 or 2 page synthesis.
- Better agency coordination: Within the Forest Service, NEPA comments and recommended citations are sometimes repeated from project to project and forest to forest. Rather than having each project team respond to the same comments independently, regional staff could provide consistency by addressing the comments (with input from local staff).

The quality and context of fire science can be difficult to interpret

What are the needs?

Resource specialists use fire science to make their best recommendations for land management decisions. However, some staff said they need help interpreting the scientific literature and applying scientific findings to their projects appropriately. As more and more papers are published related to fire and fuel treatment effects, managers may need help synthesizing how recent findings relate to previous findings (which they may contradict), and providing local context for off-site research. Most resource specialists said that they don't feel qualified to evaluate the methods and results of research, and that they need help to determine the strengths and weaknesses of published scientific information. In the Forest Service, fire science is used to both bolster and undermine the design and analysis of fire- and fuel-related projects on federal lands. During the public comment phases of the NEPA process, competing science is often raised to oppose the proposed actions. Land managers need help deciphering and disclosing the different interpretations of the issue, and determining which science is relevant to their ecosystem, project area, or discipline.

What may help:

Better access to research scientists to help managers understand context of research and how articles fit together or don't. This could include:

- Increased face to face interactions between land management staff and research scientists through informal meetings specific to a project or geographic area, more regional conferences, symposia, workshops, and trainings.
- Development of formal liasons between research and management, such as technology transfer specialists or training for key staff in local management units by researchers, who can then go back and train their staff (train the trainer model)
- Establishment of a fire Science Help Desk, where managers can call with questions about research context
- Webinars or Ask- a-Scientist forums where managers can pose specific questions to scientists
- Annotated bibliographies that describe strengths and weaknesses of citations

Information needs to be better coordinated

What are the needs?

Resource managers said they would like to have better coordination of fire science information, so they can quickly and easily find the information they need. Access to fire science resources is readily available, particularly through the web — the challenge is in knowing where to look. Many fire science tools, publications, research briefs, and reference databases exist online, but they are scattered and there is currently no comprehensive way to find out about them. Resource specialists most commonly use the sites listed below, but many staff said they were not aware that some of these resources exist. Individuals maintain their own lists of "favorite" websites, and if they separate from a project or organization, those resources are lost too. New employees may lack networking contacts and mentors, and must search out and build their own connections for source information. More seasoned employees may not know that many of the new tools exist. Managers said they currently feel overloaded not only by the amount of fire science out there, but also by the time required to search it out and stay up to date. For the Forest Service, the added pressure of a time crunch is often related to their NEPA timeframe, such as when responding and incorporating public comments, or just before a decision document is signed.

Common web sources for fire science information

· Google, Google Scholar	· Joint Fire Science Program site
· Forest Service Library	· Association for Fire Ecology site
· National Agricultural Library	· Fire Effects Information System
· DigiTop	· National Interagency Fire Center
· Rocky Mountain Research Station	· Ultimate Tree Ring Web Pages
· Pacific Southwest Research Station	· International Multiproxy Paleofire Database
· Journal subscriptions	

What may help:

- A centrally-maintained website that serves as an annotated bibliography of fire science websites. This must be maintained to remain current.
- A centrally-maintained website with a star rating system and links to fire science websites, for example a 1-star site versus a 5-star site.
- A searchable database of fire science literature that is searchable by topic, location, vegetation type, etc.
- A regionally-produced 'starter kit' reference list that contains relevant fire science research, that could be refined locally.
- An ftp site that serves as a literature clearinghouse, where appeal records, response to comments, and other publications could be found.

Local and timely research

What are the needs?

Agency staff members said they prefer research done locally by people they know. For example, Forest Service specialists described successful post-fire studies conducted by staff from their Regional Office. These resulted in white papers or other publications they could use for planning. In another case, agency research staff conducted local studies to modify watershed recovery models, which improved the environmental analysis of proposed land treatments. Without these local studies, managers try to best apply off-site research to their local landscape. Most land

managers interviewed said that they have no idea what, if any, research is being conducted locally on their unit. Research staff may not coordinate their studies with people on the ground, and there are few formal mechanisms to present their findings to land managers. Some research groups in the Forest Service, Park Service and USGS do hold annual meetings with land managers to communicate their local research findings, discuss new ideas, and identify research gaps. While these are helpful and informative, many land managers are also looking for solid publications they can cite in NEPA documents. They said that the time lag between when the research is conducted and when publications are available reduces the utility of research for planning.

What may help:

- Annual research updates and expected publication timelines from research staff to land management staff
- Including more ground-level land management staff in research coordination. Currently, upper-level staff may know what's going on, but information is not funneling to all levels.
- Development of capacity by local units of federal agencies to track and communicate about research projects being conducted locally

Research and management are often disconnected

What are the needs?

Few managers interviewed said they were ever consulted about the research information they need to do their jobs. Managers listed many research needs especially for fire regimes and effects on diverse ecosystems or resources they manage, such as montane chaparral, desert lands, aquatic habitat, or cultural resources. Others are looking for stronger management recommendations from existing research. As previously stated, most resource specialists said that if a publication does not explicitly identify recommendations or implications for management, they do not view it as useful.

There are also institutional barriers separating researchers and managers. Agency culture can perpetuate the notion that scientists are out of touch, ivory tower Ph.D.s with limited connection to the "real world." Those researchers who began their careers in the field or in land management are more likely to be trusted sources for management-related fire science. Managers also view researchers, however, with reverence and can feel intimidated to approach them with specific questions. Some research scientists, on the other hand, see land managers as lacking the scientific background to fully understand their research. They may be more interested in dissuading them from pursuing chosen resource actions than in helping them implement treatments. At the same time, scientists view managers as a good source for local knowledge regarding potential study sites.

What may help:

There is a need for more and better dialogue between research and management staff to help each understand research and management priorities. Possibilities include:

Direct mechanisms to bring researchers and managers together

- Development of formal liasons between research and management, such as technology transfer specialists or training for key staff in at local management units by researchers, who can then go back and train their staff (train the trainer model)
- Development of capacity by local units of federal agencies to articulate their research needs to the scientific community.