

FIRE RESEARCH

1 Introduction

The primary objective of fire research in the National Park Service is to ensure that fire management plans and activities are informed and supported by the most current scientific information. Research plays a critical role in fire management programs by defining the historic role of fire; identifying fire regimes; determining whether human activity has affected native ecosystems; assessing the effects of excluding fire from the landscape; defining desired conditions of park resources; developing/improving techniques for predicting fire behavior; documenting and analyzing fire effects; assessing treatment effectiveness; predicting how climate change may impact fire management planning; determining how management actions can contribute to overall ecosystem resilience, and many other topics. This information is critical for formulating and implementing fire management plans and actions.

While research studies can include those producing new general scientific knowledge, the priority for fire research is studies that will directly address information gaps needed to improve management capabilities. Through research, fire managers gain a better understanding of how our natural and cultural landscapes are changing, what factors play a role in these shifts, which management actions best address the changes, and what may be the consequences of any actions.

2 Responsibilities

2.1 National

- Identify critical fire research needs for the NPS and interagency fire community and advocate for funding to meet these needs.
- Facilitate funding of park-level research.
- Facilitate knowledge transfer throughout the NPS and interagency fire and resource management community.
- Support national-level fire-related research programs and initiatives.

2.2 Regional

- Identify critical regional and park-level fire research needs for the NPS and interagency fire community and advocate for funding to meet these needs.
- Communicate research funding opportunities to the parks.
- Track ongoing park-level fire-related research.
- Facilitate knowledge transfer within and among regions and with interagency partners.

2.3 Park

- Identify critical fire research that will inform park management decisions and improve collaboration with other parks and partners.
- Integrate fire research results into park management plans.
- Communicate research needs and share research results with park staff and cooperators.

3 Research and Park Planning Documents

Fire management and natural and cultural resources staff must work together to ensure that fire research needs are clearly identified in park resource stewardship strategies and other foundational planning documents. In particular, research identified in cultural and natural resource planning documents needed to implement or refine the fire management program must be included in the fire management plan. Any research needed to implement fire management objectives that are not included in resource management plans should also be clearly identified in the fire management plan. Emerging research, such as that related to climate change, is especially critical to guide fire and resource planning efforts.

Key questions that these plans should address are:

- What fire-related information is lacking or more detailed information is needed to provide direction or inform management decisions?
- How will the park staff integrate past and current research into its decision making process?
- What do park staff and other experts think are the priority research needs relating to fire and what are the factors that influence these priorities?
- How do the priority research needs relate to current or past studies within either the park or the eco-region?
- How can the park staff leverage current and future research with adjacent and regional landowners and institutions to strengthen these studies?

4 Collaboration and Research Design

Research is a collaborative process, and fire management staffs play a significant role in initiating this process and ensuring that research results are used effectively. Collaboration includes participating as a co-principal investigator or NPS contact, implementing a research burn, writing a letter of support for a proposal, providing logistical support to visiting scientists, or assisting with fieldwork. NPS fire management staffs need to work with other park staff when facilitating research to ensure that the research conforms to park policy and to take advantage of potential opportunities to

collaborate with other ongoing park research studies. In addition, local research may have implications for adjacent and regional land managers, so park staff should work with these groups to ensure the widest application of results. This type of working relationship will enable the leveraging of local research to meet broader needs and strengthen answers to the questions being asked.

When developing a research project, it is important that the research question is framed correctly. A properly framed question will facilitate collaboration, increase funding opportunities, improve project design, and increase the overall level of success for the project. Using the following guidelines can assist in effectively framing research questions and help ensure that research projects address important fire management information ¹:

- 1) Questions need to be **answerable** within the time available to inform decisions.
- 2) Questions need to address a research hypothesis that has some **meaningful basis** in common sense and logic.
- 3) Questions should address the priority unknown elements associated with the **management need** for information.
- 4) Questions need to be expressed in **simple** but scientifically accurate, everyday language that will help managers understand how the proposed research will address their management needs for information.

Research projects must be permitted under a park-issued Scientific Research and Collecting Permit. Refer to the [NPS Research Permit and Reporting System](#) web page.

5 Funding Sources and Assistance

Some of the primary resources for funding, support and assistance, and technical information and references that can help meet fire management research needs can be found in [Exhibit 1](#) on the NPS Integrated Resource Management Applications (IRMA) Data Store.

Fire management staffs are encouraged to pursue these avenues. In addition, fire management staffs may want to contact regional and national fire and resource management staffs to help identify other research funding opportunities (e.g., state and county grants) and support services.

¹ Feinsinger P. 2001. Designing Field Studies for Biodiversity Conservation. Washington (DC): Island Press.

FIRE RESEARCH FUNDING SOURCES

The Joint Fire Science Program (JFSP)

JFSP is a partnership of the Forest Service, the Bureau of Indian Affairs, the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Geological Survey. The purpose of the program is to provide credible research tailored to the needs of fire and fuel managers.

NPS Servicewide Comprehensive Call (SCC)

SCC identifies all NPS funding programs that target natural resource issues. Fire staff should work with the park's chief of resource management to coordinate submissions. Several different funding sources are available, each with different requirements.

FMPC Reserve Fund Request

The Fire Management Program Center holds a small reserve account of unallocated funding each fiscal year to be applied to accomplishing fuels projects. These funds can be used to contract research studies that will facilitate the planning and implementation of fuels projects. Park fire staff must work with either their regional fire ecologist or fuels specialist in developing these requests.

RESEARCH SUPPORT AND ASSISTANCE

Cooperative Ecosystem Studies Units (CESUs)

The Cooperative Ecosystem Studies Units (CESU) Network is a national consortium of federal agencies, academic institutions, tribal, state, and local governments, nongovernmental conservation organizations, and other partners working together to support informed public trust resource stewardship. There are seventeen CESUs covering biogeographic regions encompassing all 50 states and U.S. territories. The CESU Network supports research, technical assistance, education and capacity building that is responsive to science and resource management priorities.

NPS Research Learning Centers

Research Learning Centers (Centers) have been developed to facilitate NPS research efforts and provide educational opportunities.

Natural Resources Technical Assistance Call

The Natural Resources Technical Assistance Call provides a coordinated means for

Exhibit 1

parks to request professional assistance from the programs under the Associate Director, Natural Resource Stewardship and Science.

[USFS Missoula Fire Sciences Lab](#)

The Fire Sciences Lab is home to the Fire Behavior Project, Fire Chemistry Project, Fire Ecology/Fuels Project and LANDFIRE.

[The National Center for Landscape Fire Analysis](#)

The Center develops, integrates, and synthesizes remote sensing, social assessments, economic considerations, and other information technology applications to improve fire and fuels management at the landscape scale and develops innovative approaches for delivery of these products.

REFERENCE AND RESEARCH SERVICES

[Fire Effects Information System \(FEIS\)](#)

FEIS summarizes and synthesizes research about living organisms in the United States—their biology, ecology, and relationship to fire.

[Fire Research and Management Exchange System \(FRAMES\)](#)

FRAMES supports wildland fire professionals, by facilitating information and technology sharing, exchange, collaboration, and development through a clearinghouse and web portal.

[Tall Timbers Fire Ecology Database and Thesaurus](#)

This searchable resource includes a broad collection of fire ecology literature.

[USGS Science Topics, Fire](#)

The USGS Science Topics directory provides an alternate way to browse USGS science programs and activities.

[NPS Science and Research](#)

This web page provides a list of NPS research and science resources.

[NPS Wildland Fire Science, Ecology, & Research Web Page](#)

This web page provides a short list of fire research resources.

Exhibit 1

[NPS Library Program](#)

A comprehensive public portal that provides access to research and reference information available on the Internet that is of high relevance to NPS via links to: NPS Voyager; NPS FOCUS Digital Library and Research Station; OCLC FirstSearch; nps.gov; the Internet Public Library, public websites for individual NPS libraries; USA.gov; InsideNPS.

[NPS Social Science Program](#)

The objectives of the NPS Social Science Program are to conduct and promote state-of-the-art social science related to the mission of the National Park Service and to deliver usable knowledge to NPS managers and to the public.

[Reference Manual 77, NPS Natural Resource Management](#)

Reference Manual 77 offers comprehensive guidance to NPS employees responsible for managing, conserving, and protecting the natural resources found in National Park System units.

[The U.S. Department of the Interior Library](#)

The DOI Library provides a full range of professional reference and research services, available to Interior employees in both the Washington, DC, area and nationwide.

[JSTOR](#)

JSTOR offers researchers the ability to retrieve journal issues as they were originally designed, printed, and illustrated.