



August 2009

2009 Research Funding Awarded

Each year the Joint Fire Science Program (JFSP) solicits proposals to conduct critical research that is important to fire managers. The process is very competitive with peer review panels comprised of scientists, senior managers, and technical experts who provide recommendations to the JFSP Governing Board for further review. You will notice that many of the projects listed this year have a climate change component. This document provides an overview of JFSP research project investments in 2009.

Life Cycle Fuels Line-of-Work

The longevity of fire and non-fire fuels treatments and comparing the effectiveness and economics of treatment regimes is an emerging need. Understanding how climate change may influence treatment effectiveness is a focal point of this line of work. Four projects were selected.

Project ID	Project Title
09-1-01-1	Effectiveness and longevity of fuel treatments in coniferous forests across California
09-1-01-19	Landscape analysis of fuel treatment longevity and effectiveness in the 2006 Tripod Complex Fires
09-1-01-2	Does season of burning affect fuel dynamics in southeastern forests?
09-1-01-7	Fuel lifecycle and long term fire behavior responses to fuel treatment in southeastern US pine

Fire, Fish, and Aquatic Organisms

Although many aquatic organisms are adapted to periodic disturbance, changes in frequency, magnitude and spatial extent of disturbance can fundamentally alter the capacity of habitats and populations to respond. It is critical to understand the scaling of disturbance and the processes influencing recovery of aquatic habitats and organisms.

Project ID	Project Title
09-1-02-8	Fire and fish dynamics in a changing climate: broad- and local-scale effects of fire-induced water temperature changes on native and nonnative fish communities

Smoke Management Line-of-Work

The program continues to make research investments in the area of smoke management. Superfog, smoldering combustion and the production of secondary aerosols can affect public and firefighter health and safety. Four projects were funded.

Project ID	Project Title
09-1-03-1	Experimental determination of secondary organic aerosol production from biomass combustion
09-1-04-1	Development of Modeling Tools for Predicting Smoke Dispersion from Low-Intensity Fires
09-1-04-2	Sub-canopy transport and dispersion of smoke: A unique observation dataset and model evaluation
09-1-04-5	Superfog formation: laboratory experiments and model development

Trade-off Assessments of Fire Response Decisions

What are the long-term effects and consequences arising from alternative wildland fire management decisions on fuel loads, future fire behavior, large-fire incident management costs, post-fire rehabilitation and restoration costs, and land management objectives or goals?

Project ID	Project Title
09-1-05-2	Consequences of alternative response strategies to wildland fires in the northern Rockies and Southwest in 2007 and 2008

Fire, insect outbreak, and windstorm effects on fuel profiles and fire behavior

Managers expressed a need to investigate the complex relationships between mortality, fuel dynamics, and fire behavior resulting from insect outbreaks and windstorms. What are effective management strategies for addressing fuel hazards arising from insect outbreaks? What are the effects under varying climatic scenarios, including prolonged drought.

Project ID	Project Title
09-1-06-17	Temporal dynamics of ground, surface, ladder, and crown fuels and their potential effects on fire behavior, following <i>Dendroctonus ponderosae</i> epidemics in the <i>Pinus contorta</i> zone of south-central Oregon.
09-1-06-2	Effect of fires and insects on fuel structures in piñon-juniper and post-fire invasive communities
09-1-06-3	Bark beetles, fuels and future fire hazard in contrasting conifer forests of Greater Yellowstone
09-1-06-5	Interactions of insects, fire and climate on fuel loads and fire behavior in mixed conifer forests
09-1-06-16	Management options for reducing short and long-term fire risk in pine beetle-infested forests

Predictive Fire Severity Maps

Prediction of fire severity prior to the fire actually burning through an area may allow managers to better evaluate potential responses to wildland fires, to better plan projects to mitigate fire effects in areas of concern, and to reduce both fire suppression and post-fire rehabilitation costs. Although there has been research on this topic, there is no tool in operational use for predicting fire severity. The Wildland Fire Decision Support System (WFDSS) currently provides probabilistic estimates of fire spread and evaluates the likelihood of property losses, but does not predict fire severity. The intent of this work is to provide data layers compatible with WFDSS.

Project ID	Project Title
09-1-07-4	A Fire Severity Mapping System (FSMS) for real-time fire management applications and long term planning

Compatibility of Fuel Treatments and Fire Management with Conservation of Threatened and Endangered Wildlife Species

While many perceive that T&E wildlife species conservation frequently conflicts with fire and fuels management, recent work has shown that the goals of maintaining T&E habitat and restoring fire-adapted ecosystems can be compatible. Key questions are:

- What fire or fuel management activities can be successfully implemented while maintaining key habitat features?
- Where on the landscape can fuel management activities be planned to maintain and improve key habitat features?
- How can habitats be sustained across broad landscapes that experience fire, particularly in areas that have experienced increased fuel loads from past fire exclusion?
- How does fire spread and severity from fire and fuels management activities vary in their impacts to desired habitat features?
- How might these relationships vary with potential climate change?

Project ID	Project Title
09-1-08-2	The Effects Prescribed Fire on Roosting Habitat of the Endangered Indiana Bat, <i>Myotis sodalis</i>
09-1-08-26	A decision support system for assessing the impact of fire management on threatened and endangered species
09-1-08-31	Assessing the compatibility of fuel treatments, wildfire risk, and conservation of Northern Spotted Owl habitats and populations in the eastern Cascades: a multi-scale analysis
09-1-08-4	Decision-support tools for conserving Greater Sage-grouse during fire and fuels management projects in pinyon and juniper woodlands

Prevention Effectiveness

Fire prevention activities have been funded for the last 10 years based in large part on the presumed effectiveness of prevention techniques published in “Wildfire Prevention Strategies” (NWCG Publication PMS 455/NFES 1572, 1998). These effectiveness ratings have been carried forward into the Fire Program Analysis (FPA) Prevention Module, which is intended to guide future prevention funding allocations. What is the relationship among dollars spent for a specific prevention technique(s) and the reduction in number of fire starts?

Project ID	Project Title
09-1-09-2	A Fire Prevention Effectiveness Assessment for Multiple Ownerships

2008 Wildfires and Wildland Fire-use Fires: Re-measurement Opportunities

We learn much from wildfires and wildland fire-use fires when they burn through previously existing research plots. These sites can provide unique opportunities for post-fire studies to evaluate the effects of pre-fire condition on fire behavior, fire severity, and ecosystem or resource impacts. Key questions from these investigations are:

- What were the effects, effectiveness, and costs of post-fire stabilization or rehabilitation activities?
- What were the effects of previous land management activities, fire, insect outbreaks, windstorms, or icestorms on fire behavior, fire severity, or fire effects?
- What were the physical, biological, social, or economic effects of wildfires or wildland fire-use fires?
- How effective were Firewise or other defensible space treatments?

Project ID	Project Title
09-1-10-1	Impacts of Repeated Wildfire on Vegetation in the Southern Appalachian Mountains
09-1-10-7	A comparison of fire severity patterns in the late 19th and early 21st century in a mixed conifer forest landscape in the southern Cascades
09-1-10-3	Economic Effects of Large Wildfires from 2008

For more information or to view the project proposal abstracts visit the JFSP website at:

<http://www.firescience.gov>

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