

Social-Ecological Study of Western Fires: Developing an Integrated Framework for Research in Times of Change. Introduction and Objectives

Winslow D. Hansen, Brian J. Harvey, Helen T. Naughton

A warmer and drier future climate in western landscapes of North America is likely to increase fire frequency and severity. Simultaneously, exurban expansion into semi-rural areas throughout the west means that more people are living in landscapes with high fire risk. Fire management and suppression costs have risen sharply in recent decades and are expected to continue increasing. Thus, there is a need to better understand the linkages between people and fire to inform more cost-effective and ecologically sound management strategies. This session will attempt to stimulate research that further integrates study of wildfire effects on ecosystem services with the associated implications for human wellbeing and fire management in the intermountain west. We ask the question: Can interdisciplinary research lead to new insights in understanding and managing wildfires, and what do we need to know to conduct rigorous interdisciplinary wildfire research?

Ecologists have characterized how western wildfires and post-fire successional trajectories alter important ecosystem services such as carbon storage, wildlife and wildflower abundance, water quality, air quality, forest-stand density, and nutrient cycling. In parallel, social scientists have explored how wildfires influence people, quantifying the economic impacts of wildfire, the influence on human wellbeing, and improving our understanding of community vulnerability and adaptive capacity to wildfire. Rarely, however, has research been conducted that directly quantifies the reciprocal interactions between ecological fire effects and peoples' responses to fire. For example, people often have economic, risk-management, and aesthetic concerns with post-fire landscapes, which can lead to salvage logging. Salvage logging is likely to alter successional trajectories, which can alter ecosystem structure and function, and change surface-fuel profiles, influencing future wildfire dynamics.

The objectives of this session are to 1) develop a conceptual framework that identifies key reciprocal interactions between people and fire-driven ecosystems; 2) determine the similarities and differences between these reciprocal interactions in geographic regions where fire regimes and human communities differ; 3) Identify future research needs to better understand these reciprocal interactions and improve social and ecological outcomes in fire-driven ecosystems. To address these objectives, the session will consist of a series of individual talks by fire ecologists and social scientists, grouped by geographic region. Interspersed throughout the talks will be brief conceptualization sessions focused on synthesis across talks and conceptual framework development.