

Shrublands Under Fire: Disturbance and Recovery in a Changing World

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These proceedings are part of a series corresponding to fourteen symposia sponsored by the Shrub Research Consortium and published by the U.S. Forest Service, Intermountain Research Station (1983–1996) and Rocky Mountain Research Station (1999 to present). Themes for each symposium were selected to focus on various aspects of the biology, ecology, and management of wildland shrubs and shrubland ecosystems. The Fourteenth Wildland Shrub Symposium was held at Southern Utah University in Cedar City, Utah, on June 6–8, 2006.

Patterns of disturbance and recovery function to shape the composition, structure, and integrity of all ecosystems, including shrublands, and are strongly influenced by both natural (for example, climate) and anthropogenic (for example, livestock husbandry) controls. Although these processes vary naturally, rapid or persistent change in either disturbance regimes or successional pathways may result in a loss of ecosystem functionality or resiliency and subsequently result in ecosystem degradation.

Humans affect shrublands by altering natural disturbance regimes, creating new disturbance processes, and by altering succession. Anthropogenic activities produce both intended and unintended consequences. For example, fire might be used as a tool to favorably modify heavily stocked forest environments for hunting. Unintended consequences of widespread burning would include altered habitat for numerous wildlife species and decreased availability of fuel wood. Over time, the nature and magnitude of human-caused impacts on shrublands reflect changes in the values associated with shrub-dominated landscapes and the capacity of evolving cultural systems and associated technologies to enact change. Impacts have been significant and often severe in regions of the world where human activities have been both intense and persistent over long time periods. In a plenary address, David Charlet (this proceedings) describes the results of long-term degradation of arid and semiarid

shrublands, woodlands, and forests in Iran, and contrasts that to the recent and relatively low levels of degradation in the arid and semiarid ecosystems of western North America's Great Basin. He warned, however, of the potential for severe degradation not unlike that found in Iran and in similar old-world environments if management and use of this region do not reflect a stronger conservation ethic than that observed from extraction-based economies introduced by Euro-American settlers in the 19th century.

Worldwide, shrub-dominated ecosystems are increasingly at risk of degradation and loss as human-related impacts increase and natural patterns of disturbance and recovery are truncated due to the cumulative and interacting impacts of changing climate, CO₂ fertilization, altered fire regimes, invasive species introductions, fragmentation and conversion. Indeed, it is not overstated to say that shrublands are under fire. The shrublands of western North America are no exception. Proactive measures to curtail losses of functional shrubland ecosystems must include the development of scientifically sound strategies and practices for restoration and rehabilitation. Of necessity, the development and application of these strategies and practices will require adaptive approaches as paradigms shift in an ever changing world.

Sessions of the symposium were organized based upon three sub-themes: (1) Invasive Species and Shrublands, (2) Shrubland Community Dynamics and Restoration, and (3) Fire Recovery in Shrublands. Additional papers addressing these themes and related topics were presented in a poster session. Twenty-four papers were prepared for publication in these proceedings.

Two mid-symposia tours were offered to participants. A Great Basin cold desert tour included stops to observe a pigmy rabbit colony in basin big sagebrush, post-burn recovery in a mountain big sagebrush community, 20th century juniper expansion in mixed desert shrub-grassland, various aspects of the ecology and management of salt-desert shrublands, and the effectiveness of mechanical thinning (bull hog) and reseeded treatments (native and introduced species mixes) in restoring Wyoming big sagebrush communities. The tour included stops at the historic U.S. Forest Service, Desert Experimental Range headquarters and the abandoned mining community of Frisco, Utah. A second tour featured the shrublands that occupy the transitional zone between cold and warm desert ecosystems with particular emphasis on the impacts of fire and introduced annual brome grasses on blackbrush communities. Stops were made to examine short and long-term results of seeding disturbed sites in this transitional zone to introduced perennial grasses and

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to the Eurasian sub-shrub, forage kochia. Additional stops were made to examine the effects of drought and a severe wind event on erosion in a Wyoming sagebrush community and adjacent subdivision, the ecological transformation (degradation) that has occurred to the wet meadows at the Mountain Meadows historic site, and the fire-adapted,

interior chaparral communities on the east flank of the Pine Valley Mountains.

The fifteenth Wildland Shrub Symposium will be held June 17–19, 2008, in Bozeman, Montana. The theme will be, “Shrublands: Wildlands and Wildlife Habitat.”

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.
