# Ecological Impacts of Season of Prescribed Fire in a Sierran Mixed Conifer Forest

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Prescribed fire is an important tool for reducing fuels and restoring structure and function to forested ecosystems of the Sierra Nevada. Unfortunately, only a fraction of the acreage necessary for maintaining a natural fire return interval typically gets burned each year, due air quality concerns in adjacent populated areas, and the limited time before winter snows. Most prescribed burning is currently conducted in the fall to coincide with the normal historical fire period. This is also the time of year with the poorest air quality. Expanding the prescribed fire window to include early season burns might reduce air quality conflicts and allow more acres to be treated. However, the impact of early season burning on many important ecosystem components is poorly understood. Nine 15 ha plots were established in Sequoia National Park in 2001. Three plots were burned in the fall of 2001, three plots were burned in June 2002, and three remained unburned (controls). Data on fuels, overstory tree density and composition, understory vegetation, small mammal and bird populations, bark beetles, root pathogens, and soil nutrient cycling were collected by USGS researchers and other collaborators prior to the prescribed burns and are being collected post burn. Initial data indicate a great deal of heterogeneity in fire intensity and subsequent tree mortality within both the early season and late season burn units. Multiple regression analysis showed that the proportion of the tree basal area composed of pines, together with the total basal area of all trees explained 26% of the variation in crown scorch height in the late season burn plots. Areas with high abundance of pines and more trees burned with the greatest intensity, while areas dominated by fir trees and having fewer trees burned with lower intensity. Data on tree mortality, fire damage, and area burned are presently being collected in the early season burn plots. These numbers, and comparisons between the early and late season burn treatments will be reported. Preliminary data indicate that early season burns resulted in less fuel reduction and left more of the area unburned. These islands of unburned habitat may be important for recolonization by some plant and animal species post fire.