

Restoring the Subalpine Mosaic

by Ward McCaughey, Cathy Stewart and Colin Hardy

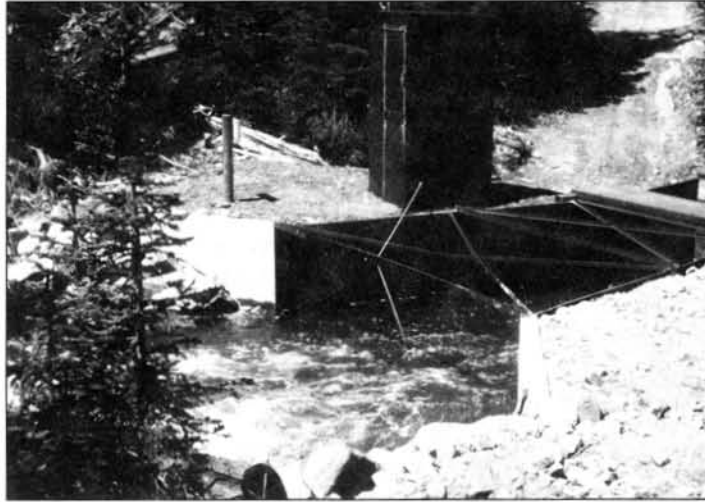
Fire dependent lodgepole pine communities are an important component of upper elevation forests of the Bitterroot Mountains and the Northern Rockies in general. A study of 1937 aerial photos from the Bitterroot National Forest is describing the pre-1900 disturbances that shaped lodgepole pine mosaics. The 1937 photos will be compared with stand history information provided by Mike Hartwell and Paul Alaback of the University of Montana to describe shifts in species dominance and age-class structure during the past half century. This information will be used to design management that reflects to some extent the landscape patterns of subalpine forests in the centuries prior to 1800.

Tenderfoot Creek Experimental Forest near White Sulphur Springs, MT, has been chosen as a demonstration site for landscape-scale silvicultural and fire treatments in lodgepole pine ecosystems. Like the lodgepole pine

forests of the Bitterroot National Forest, those at Tenderfoot are spatially complex. A fire history study by Steve Barrett indicates that most stands are one- or two-aged, with two-aged structures caused by historic fires of mixed severity. This project will evaluate the effects of alternative harvesting methods in lodgepole pine stands on water, wildlife, forest health, fuels, and vegetation. Innovative fire

applications will be used, including fuel augmentation and spring prescribed burning. Research on the Tenderfoot is based on the premise that treatments should be based on knowledge from past fire-shaped vegetation mosaics. Prescriptions found effective in this project can be adapted to other lodgepole pine forests, including those of the Bitterroot National Forest.

An important aspect of the Tenderfoot project is its historic database. Hydrologic monitoring since 1992 provides information on water flow, sediment production, and water quality. Two weather stations and seven hydrologic stations are in operation. Fisheries, fish habitat, stream channels, neotropical birds, meadow vegetation patterns, snow accumulation and interception patterns, geology, and soils have been studied. A geographic information system describes the landscape. Prescriptions found effective at Tenderfoot can be used on other sites, including similar lodgepole pine ecosystems in the Bitterroots.



Flume for measuring stream flow in Tenderfoot Creek Experimental Forest. Photo courtesy of Ward McCaughey.



ECO-News of Summer 1995 included a photo series showing this Lick Creek stand before treatment and at various stages in the first year after treatment. This followup photo pair shows the pretreatment stand (left) and the treated stand two years after harvesting and prescribed burning (right).



Monitoring at Lick Creek