

harvested (quality, quantity, availability, etc.), identifying existing markets for materials, and exploring the potential for new markets that could utilize this resource.

## **Research on Stand Management Options for Reducing Fuels and Restoring Two-Aged Lodgepole Pine Communities on the Tenderfoot Creek Experimental Forest**

**Ward McCaughey, Forestry Sciences Lab, USDA Forest Service, Rocky Mountain Research Station, Bozeman, MT**

Fire-dependent lodgepole pine stands comprise significant acreages of mid- and upper-elevation forests in the Northern Rockies, providing wood products, wildlife habitat, livestock forage, water, recreational opportunities, and expansive viewsheds. Many lodgepole pine stands are in late-successional stages and at risk to pests and catastrophic-scale fires. Tenderfoot Creek Experimental Forest is located on the Lewis and Clark National Forest in the Little Belt Mountains of Central Montana. Twenty percent of the lodgepole pine stands on the experimental forest were found to be two-aged and another 30 percent were in an indistinct mosaic of a dual-fire complex. This paper describes preliminary results of the Tenderfoot Research Project designed to evaluate two-aged harvest methods in lodgepole pine stands by integrating silviculture and prescribed fire. Research studies evaluate the effects of harvesting and prescribed fire on several resources such as water quality and quantity, wildlife, forest fuels, and vegetation response.

## **The Role of Wildland Fire and Subsequent Insect Attack on Ponderosa Pine Mortality**

**Joel McMillin, Linda Wadleigh, and Carolyn Hull Sieg, USDA Forest Service, Rocky Mountain Research Station, Flagstaff, AZ; José Negrón, USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO; Ken Gibson, USDA Forest Service, Region 1; Kurt Allen, USDA Forest Service, Region 2; and John Anhold, USDA Forest Service, Rocky Mountain Research Station, Flagstaff, AZ**

The unprecedented fire year of 2000 provided an opportunity to quantify cumulative impacts of wildland fires and subsequent insect attack on ponderosa pine mortality over a large region. In 2001 we established plots in four National Forests: Black Hills in South Dakota, Custer in Montana, Arapaho-Roosevelt in Colorado, and Coconino in Arizona. In each area, we sampled 1500+ trees in burned areas and 500 trees in unburned areas. For each tree, we measured height, dbh, pre-fire live crown ratio, percent crown scorch, percent crown consumption, percent scorched basal circumference, scorch height on the bole, and insect presence. In addition, we collected four phloem samples from each of 200+ additional trees in each area to quantify the relationship between exterior signs of fire-caused damage and cambium damage. Tree mortality will be monitored for three years post burn. Our goal is to provide land managers with quantitatively based guidelines for assessing potential tree mortality following wildland burns.