

Reduction of Wildfire Hazard

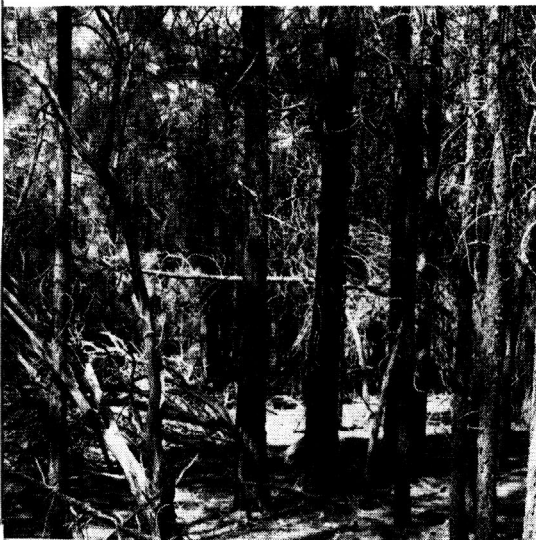
removal of dead fuel reduced damage by wildfire in treated portion of experimental second growth ponderosa pine range

H. H. Biswell

Wildfires in areas treated by prescribed burning are relatively easy to control and are much less damaging than fires in similar untreated areas.

A portion of studies on prescribed burning in ponderosa pine—as a means of manipulating brush to improve forage and cover conditions for deer—has included the reduction of the wildfire hazard by the elimination of readily available fuel. In the studies, prescribed burning has been done in fall, winter, and early spring when the soil is wet but the upper pine needles are dry enough to carry ground fire. Usually area treatment has been by broadcast burning followed by cleanup burning.

After the upper photo was taken the area was prescribed burned and cleaned of all dead material. Below: Later the area was burned by a wildfire but no trees were damaged—leaves on lower branches were not perceptibly scorched.



In broadcast burning, the fire is set so it will burn down hill. The fire does well when the relative humidity is above 25%, and the air temperature is below 65°F. Broadcast burning removes most of the flash fuel and many of the old stumps and some logs. However, most of the heavy fuel remains. In cleanup work, some of the remaining coarse material is piled in open spots away from the trees and fired. More coarse material is added as the fire burns.

Effects of Fire Compared

During the eight years the studies have been under way, the benefits from prescribed burning were demonstrated in two small wildfires: one in August and the other in April. Further studies will be needed to determine the effects of larger wildfires.

The August wildfire covered only about one-fourth acre and was in an area that had been treated two years before. Pine needles on the ground amounted to 2,614 pounds per acre. There was no other appreciable dead fuel. In this case the fire remained on the ground and was easily controlled by use of a back pump. There was no perceptible scorching of pine needles on the trees, neither was the bark on the trees damaged.

The fire in April started on a roadside, near the base of a southwest facing slope of about 23%. The fire burned uphill for about 200 yards through an area that had been treated one year before. From there the fire moved onto a moderate northwest slope, a portion of which had been treated and the other portion untreated. On this slope it was possible to compare the effects of the wildfire on the trees under the cleaned and the uncleared conditions.

In the treated area—including the southwest facing slope—the fire remained on the ground and measurements showed no significant scorching of pine needles on the trees. On the untreated area, however, the fire became very intense and killed a vast majority of the trees which were mostly 6"-8" or less in diameter. Previous to the fire, the dead material in this area amounted to an estimated 15 tons per acre and was mainly manzanita and pine slash.

From these studies it was concluded that wildfires in dead materials of the kind, structure, and amount in the untreated area give sufficiently intense heat to be highly destructive of second-growth forest stands. On the other hand, it is possible for similar areas that have been broadcast burned and cleaned, to burn by wildfire with little adverse effect.

H. H. Biswell is Professor of Forestry, University of California, Berkeley.

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Untreated areas before—1951—after—1959—a wildfire burn. An estimated 15 tons of dead brush and pine slash burned with a heat that was intense enough to kill a majority of the trees in these areas.

