

“OPERATION PUSHOVER”

Not long ago on the Wasatch National Forest, near its northernmost boundary where Utah and Wyoming share a state line, a fleet of 15 bulldozers tore into a stand of lodgepole pine, knocking down and uprooting trees one after another, then piling roots, logs, and limbs into long windrows which were fired and burned to ashes.

Designated as “Operation Pushover” and used on the Wasatch for the first time in any National Forest, this drastic action was a dramatic step in the planned strategy designed to save as much as possible of a mature stand of lodgepole pine from a devastating infestation of the mountain pine beetle, one of the deadliest enemies of the forest.

In the year of “Operation Pushover” alone, the mountain pine beetle destroyed enough standing timber to build an

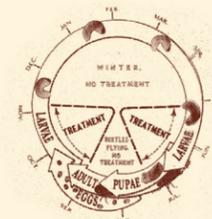
entire town the size of nearby Evanston, Wyoming, and to furnish pulp for its daily newspaper besides. Ultimately threatened by the beetle infestation was some 150 million dollars worth of lodgepole pine, representing lumber for at least 300,000 homes. In addition to the commercial value of the timber, the trees provide cover for important watershed areas and streambanks; furnish food and habitat for wildlife of many kinds; and offer pleasant environment for people who enjoy the out of doors.

Bark beetles are a normal component of the forest fauna, but in outbreak proportions they can prove to be almost as destructive as fire. In a completely wild and untouched forest of virgin timber, the beetles serve the purpose of hastening the end of aging and diseased trees which take up space needed by young, growing trees. But from the standpoint of the Foresters, who supervise

the timber harvest in an effort to achieve a controlled situation in utilizing the mature trees for lumber, the beetle is a constant menace. Ordinarily this pest is kept below outbreak proportions by means of weather, birds and other predators, parasites and disease. Occasionally, in certain circumstances of population explosion, when the trees themselves seem more than ordinarily susceptible to invasion, the beetle attacks thrifty, growing trees as well as mature and over-mature, and can, if unchecked, destroy almost an entire stand, killing every tree larger than a sapling.

Life Cycle

The beetles literally eat themselves out of house and home, since each generation kills the tree in which it was born and nourished, forcing the next generation to look for other trees in which to rear the succeeding generation. The female beetle, upon emerging from a tree as an adult, immediately flies to another tree and bores a hole through the outer bark into the soft, nourishing, living tissue, the lifeline by means of which food and water pass from roots to leaves, from sunshine to soil. Here Mrs. Beetle begins to bore upward in a straight channel and welcomes the father of her brood who has followed her into the tree bark. She continues to bore vertically for several inches, laying eggs in little niches along the way. The eggs soon hatch into legless, white, grub-like larvae, which in turn start immediately eating a channel at right angles to the parent gallery, growing as they chew their way through the vital circulatory system of the tree. Since each square



foot of the infested tree harbors up to 400 progeny, the larvae soon griddle the tree at many points as their tiny feeding tunnels meet, severing the lifeline and killing the tree.

After the larvae has completed its growth, it constructs for itself a pupal cell in which it develops into a mature beetle, emerging at the end of a year’s cycle to search for another tree in which to start its own brood.

Surveys made by Forest Rangers in 1957 on the Wasatch National Forest indicated that neither logging nor natural controls were proving adequate to halt the growing beetle infestation. Consequently, the following spring, suppression by means of chemical spray was begun on the eastern and western fronts of the infested area.

Early Efforts

In 1959 efforts were directed toward checking the spread of beetle on the western front of the infested area and extending control. Working tree by tree, from the Hoop Lake area located at the eastern end of the infestation as far westward as funds and weather would permit that year. To the north and south natural features of the land checked the spread of infestation and confined the concentration to a strip of timber from four to 15 miles wide and 15 to 30 miles long, lying east and west. Progressive control within the area of concentration was necessary because funds, manpower, and equipment were not sufficient to cover the entire area in any one session.

By the spring of 1960 a population explosion was occurring in the heart of the untreated areas with the result that the beetles attacked trees of very small size in addition to all the mature trees. Once these trees were killed, the beetles would move out in great numbers in search of new breeding grounds. To combat the rapid spread of the beetle, “Operation Pushover” was scheduled for the fall of 1960.

Like every well-run business or household, the Forest Service operates on a strict budget and must do the work of protecting the National Forests from every kind of



U. S. FOREST SERVICE
Intermountain Region
Ogden, Utah

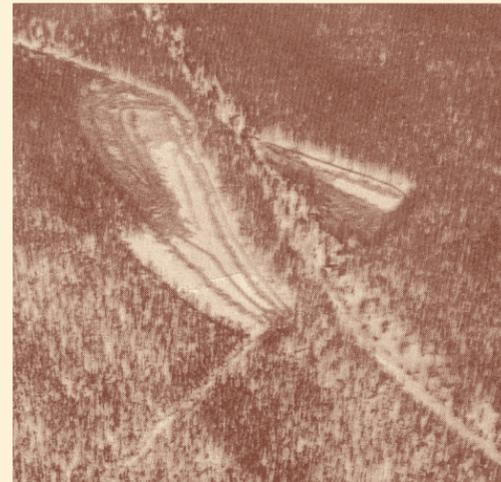


Department of Agriculture

DPS, Utah General Depot



Spray treatment is effective in most areas of infestation



Bare spot shows where a section of the forest was cleared of a heavy infestation of beetles as part of "Operation Pushover"



Dozens of jeep-cans are filled many times before the beetle spraying project is completed for the season

danger, including fire and beetles, on a limited amount of money and as economically as possible. The chemical spray treatment, whereby a strong insecticide is sprayed on each infested tree to kill the larvae, was costing about five dollars per tree. By uprooting and burning trees in the areas of heaviest infestation – twenty to one hundred or more to the acre – the cost amounted to about one dollar per tree. By this method, then, five trees could be treated for the cost of spraying one.

In preparation for "Operation Pushover", Foresters blazed the perimeter of the hot-spots of beetle concentration, which in point of actual size made up only a small fraction of the total threatened area. Beyond the boundaries marked for "Operation Pushover" treatment of individual trees y chemical spray continued on areas where infested trees numbered less than 20 per acre.

Inside the "Pushover" limits, trees were uprooted by two tractors, linked by a heavy chain, moving steadily along parallel paths and flattening everything in the swath between them. In the wake of these machines, other bulldozers piled the debris into six-foot-high windrows for burning.

Soil Protection

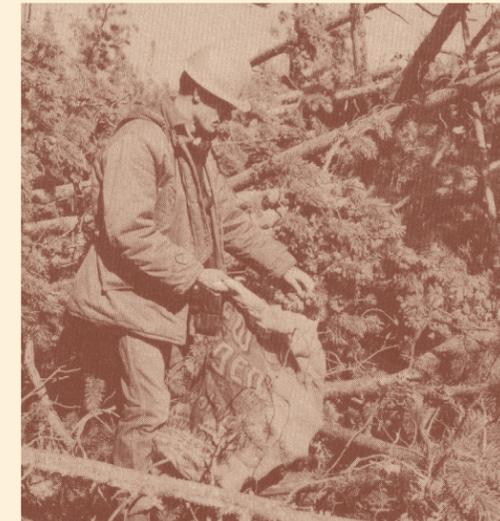
Once the ground was bare, Foresters took immediate precautions to protect the soil mantle of the watershed. On the areas where there was a possibility of erosion because of the land formation, they made use of contour trenching on the theory that an ounce of prevention is worth a pound of cure. No "Pushover" work was done on terrain with a slope of more than 30 per cent because contouring would be impossible and soil would be lost in run-off of water. On land bare of vegetation for whatever reason, contour trenching on sloping surfaces slows the run-off of rain and snow, allowing the water to soak into the ground and preventing the soil from sluicing off into gullies to be washed down the hills.

By burning the piles of beetle infested trees the way was cleared for a new crop of lodgepole pine trees seeded from the mature trees felled during "Operation Pushover". The young trees will grow up with plenty of sunlight, free from the competition from older trees, to furnish a fine stand of tall, straight, lodgepole pine trees.

Improved Habitat

On the cleared land wild creatures will find a good source of food in the grass and browse plants which grow much more rapidly than the young trees. Later, as the lodgepole pines mature, the natural habitat will be restored to the animals, free of clutter and barriers formed by fallen trees killed by beetle attacks. In such a jackstraw of logs, food supply is short and big game animals hesitate to enter because of the difficulty of escaping quickly is danger threatens.

Continuing efforts to hold the beetle in check is part of the multiple use program of protecting valuable timber



Seeds from the felled trees sown in cleared areas will, in a few years, cover the beetle-damaged spots with new growth of lodgepole pine.

stands and at the same time guarding the welfare of attendant watershed areas, maintaining a healthful fish and wildlife habitat, and preserving recreation sites for people to enjoy.

"Operation Pushover", by making use of total control methods, prevented the destruction of the forest on the Wasatch by removing the concentrated infestation of the beetle as neatly as a doctor might snip out a pair of diseased tonsils.

Only by constant watchfulness and care can the forests of the land remain green and flourishing, producing a sustained yield not only in timber but in water resources, wildlife and forage, and in providing immediate and future enjoyment for the thousands of people who find in the National Forests a place for relaxation and recreation.

