

Defoliating Insects in the Northern Rocky Mountains in 1955

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THE INTERMOUNTAIN Forest and Range Experiment Station, through its Forest Insect Laboratory at Missoula, Montana, maintains annual aerial surveys of forest insect infestations in the Northern Rocky Mountain Region.¹ In 1955 the Station logged a total of 169 flight hours for defoliating insects in this region. Additional ground survey work was done to confirm the aerial observations and, in some cases, to determine the exact nature of the pest in question.

With exception of the spruce budworm, defoliating insects have been of little importance in the northern Rocky Mountain forests in recent years. The year 1955 has been unusual in that two species, the larch budmoth and an unknown gelechiid moth, which were previously unknown from this region, or not recorded as having caused severe damage, have risen to epidemic status. This may be attributed to an actual increase in their abundance, or to further refinements in or intensification of aerial survey observation.

The spruce budworm, *Choristoneura fumiferana* (Clem.), continues to be the major defoliating pest of the region. Over three million acres of Douglas-fir (*Pseudotsuga taxifolia* var. *glauca* Beissn.), true fir (*Abies* spp.), and spruce (*Picea* spp.) in western Montana and northern Idaho are infested. Of this total, 520,800 acres are classified as heavy damage, 1,315,200 acres medium damage, and 1,224,000 acres as light damage. In 1955 a total of 367,900 acres of budworm-infested Douglas-fir forests were sprayed from the air with an insecticide at the rate of 1 pound of DDT (dichlorodiphenol trichloroethane) per acre. Plans are being made to treat a much larger acreage in 1956. The present epidemic was first noticed near Helena, Montana, in 1949, and the infested acreage has steadily increased each subsequent year. The point has been reached where appreciable areas of Douglas-fir have been killed by this insect, especially in the younger age classes, although the greatest loss is the reduction in increment in stands of all ages.

¹This region comprises all of Montana, northeastern Washington, northern Idaho, northwestern South Dakota, and Yellowstone National Park, Wyoming.

Another budworm of the genus *Choristoneura* was found attacking limber pine (*Pinus flexilis* James) at Mammoth Hot Springs, Wyoming. Many large trees within the town had over 50 per cent of their buds attacked. Strangely, there was little evidence of 1954 feeding, and an examination of limber pine and lodgepole pine (*Pinus contorta* Dougl.) in the vicinity showed only a light infestation in limber pine on the plateau above the springs and a trace in lodgepole pine to the south near Bunsen Mountain. This species was also found, in association with the spruce budworm, to be attacking lodgepole pine and ponderosa pine (*Pinus ponderosa* Laws.) near McCart Lookout on the Bitterroot National Forest, Montana. Previously this insect infested 47 square miles of lodgepole pine at Yellowstone National Park, Wyoming, from 1927 to 1929.

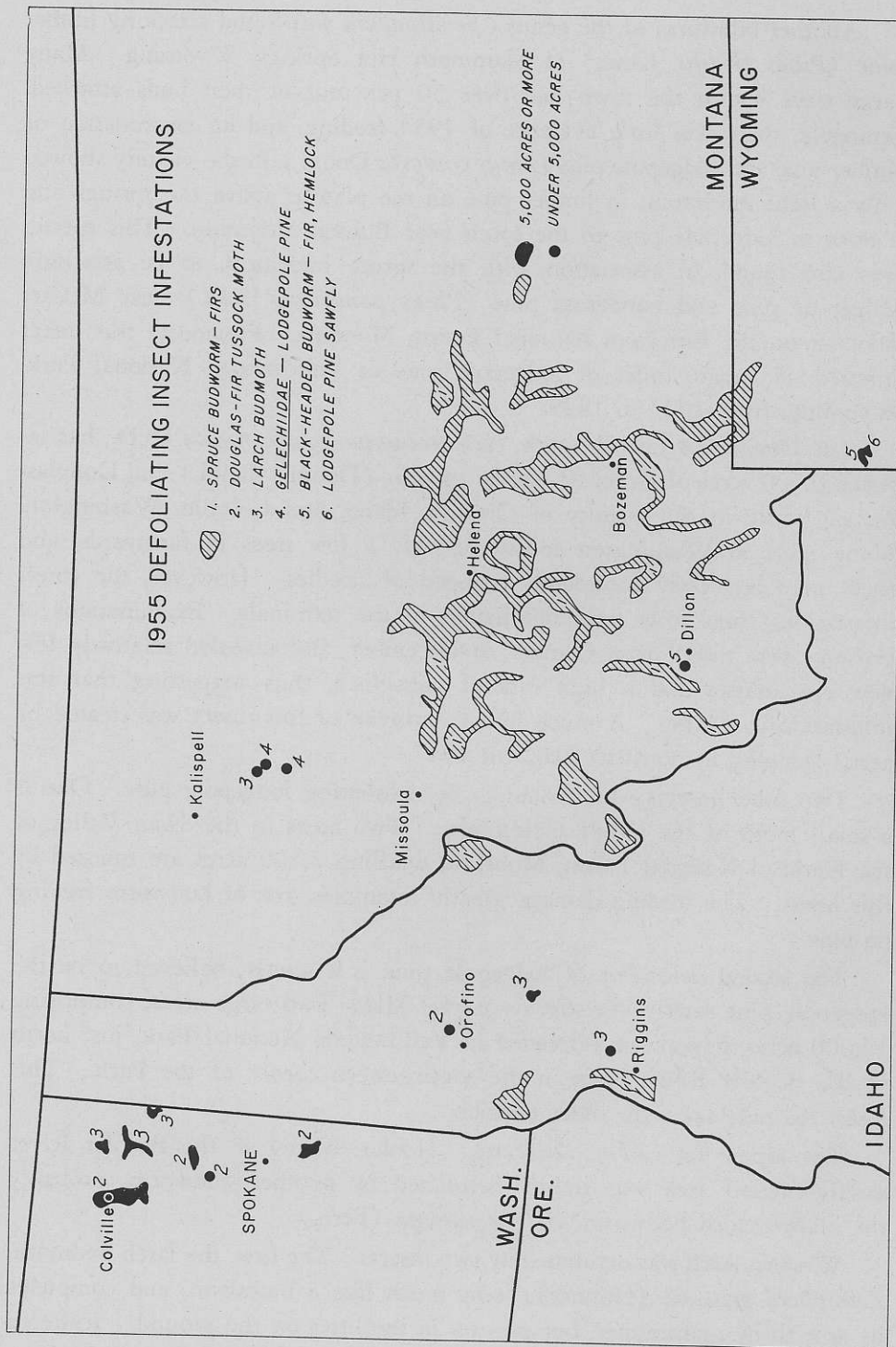
The Douglas-fir tussock moth, *Hemerocampa pseudotsugata* McD., has infested 9,700 acres of grand fir (*Abies grandis* (Dougl.) Lindl.) and Douglas-fir, especially in the vicinity of Orofino, Idaho, and Colville, Washington. Many spots in Washington consist of only a few trees in farmyards, and these may be nearly completely stripped of needles. However, the forest infestations show only light defoliation in the terminals. Examinations of cocoons were made from October to December, and revealed relatively few new egg masses and a high rate of parasitism, thus suggesting that this infestation is waning. A much larger outbreak of this insect was treated by aerial spraying in northern Idaho in 1947.

Two other insects were found to be defoliating lodgepole pine. One is a small moth of the family Gelechiidae. Two areas in the Swan Valley of the Flathead National Forest, Montana, totalling 3,500 acres are infested by this insect. The feeding damage greatly resembles that of budworm feeding on pine.

The second defoliator of lodgepole pine is a sawfly, believed to be the lodgepole pine sawfly, *Neodiprion burkei* Midd. Two large areas, comprising 14,000 acres, have been defoliated in Yellowstone National Park, just north of the Bechler River Basin in the southwestern corner of the Park. This insect fed only upon the older needles.

The alpine fir (*Abies lasiocarpa* (Hook.) Nutt.) in the Bechler River sawfly-infested area was lightly defoliated by another budworm, probably the black-headed budworm, *Acleris variana* (Fern.).

Western larch was defoliated by two insects. The first, the larch budmoth, *Zeiraphera griseana* (Hübner), feeds much like a budworm, and completes its growth by midsummer, but pupates in the litter on the ground. Scattered patches of defoliation, totalling 33,000 acres, attributed to this insect, have



been aerially mapped in northern Idaho and western Montana, and other large areas were reported by ground observers.

The other observed defoliator of larch is a looper or spanworm (family Geometridae) which occurs late in the season. The caterpillars have been taken at Missoula, Montana, and at Bunco Guard Station, Coeur d'Alene National Forest, Idaho, and were reported to be stripping the trees at Binarch Mountain on the Kaniksu National Forest, Idaho. Since this caterpillar occurs so late in the season (September), its feeding damage is not expected to be important on the deciduous larch.

Two undetermined species of sawflies were associated with the "larch looper" on the Coeur d'Alene Forest; their importance, as compared with that of the caterpillar, has not been determined.

The ugly-nest caterpillar, *Archips cerasivorana* (Fitch), occurred on cherry (*Prunus* sp.) at Drummond, Montana, and a few collections of tent caterpillars (*Malacosoma* sp.) on alder (*Alnus* sp.) were made at various points. However, there were no reported outbreaks of defoliators on other deciduous trees or shrubs.

A budworm, identified as *Tortrix cockerellana* Kearf., was found in numbers on cedar (*Juniperus* sp.) in Missoula. This is the first record of occurrence of this native insect in Region One. It was described from Colorado.

Summary

The spruce budworm is the most important defoliator active in the northern Rockies at present, infesting over three million gross acres of Douglas-fir, true fir, and spruce in this region.

All species causing damage which was aerially mapped are listed with the respective acreages, as follows:

MAJOR DEFOLIATORS

<i>Insect</i>	<i>Order & Family</i>	<i>Principal Host</i>	<i>Acreage</i>
Spruce budworm	Lepidoptera: Tortricidae	Douglas-fir, true fir, and spruce	3,100,000
Douglas-fir tussock moth	Lepidoptera: Lymantriidae	Grand fir, Douglas-fir	9,700
Larch budmoth	Lepidoptera: Olethreutidae	Western larch	33,000
A sawfly (<i>Neodiprion</i>)	Hymenoptera: Tenthredinidae	Lodgepole pine) 14,000
Black-headed budworm (?)	Lepidoptera: Tortricidae	Alpine fir)
Unknown Species	Lepidoptera: Gelechiidae	Lodgepole pine) 3,400