TREES & SHRUBS

Ponderosa Pine Budworm no. 5.567

by R.E. Stevens [1]

Quick Facts...

Ponderosa pine budworm larvae feed on new growth of ponderosa pines, in extreme cases causing severe tree damage.

This budworm has a one-year life cycle. Moths fly in midsummer and the insects overwinter as tiny larvae in protected niches in bark crevices.

Control with insecticides may be appropriate in some cases.

The ponderosa pine budworm, *Choristoneura lambertiana* Obraztsov, is a common pest of ponderosa pine in Colorado and New Mexico. It is a member of a species group that confines its attention to pines. Some foresters know it as the sugar-pine tortrix; it is also called the pine budworm. It is closely related to the western spruce budworm (see fact sheet 5.543, *Western Spruce Budworms*), which in Colorado is a major pest of Douglas-fir.

In Colorado, expect outbreaks in most ponderosa pine areas. Historically, activity has centered in the Pagosa Springs and Durango areas and in the St. Vrain river drainage between Lyons and Estes Park. However, it can occur wherever its host grows.

Description and Life Cycle

Ponderosa pine budworm adults are small moths, mostly golden, with wingspans of about 3/4 inch. Like all moths, they go through four life stages: adult, egg, larva (or caterpillar) and pupa. The larva, which is the feeding stage, is the form that causes damage to trees. Fully-developed larvae are about 3/4-inch long, generally tan, not particularly hairy, and have brown head capsules. Pupae are also tan and less than 1/2 inch long.

The entire life cycle takes one year. Moths are present in late July and early August. They lay eggs in overlapping, shingle-like clusters on pine needles. The eggs hatch within a few days and the tiny caterpillars immediately seek shelter in protected locations on twigs and branches, where they overwinter. The caterpillars emerge from their overwintering sites in April or May and begin feeding on newly-developing foliage. Young larvae mine within the sheaths surrounding new needle bundles. The larger larvae are more general feeders but also only on new foliage.

The larvae continue to feed as the foliage develops, going through a succession of moults before reaching the pupal stage in late June. The feeding larvae produce a great deal of silk that

Figure 1: Ponderosa pine budworm larva in infested shoot.

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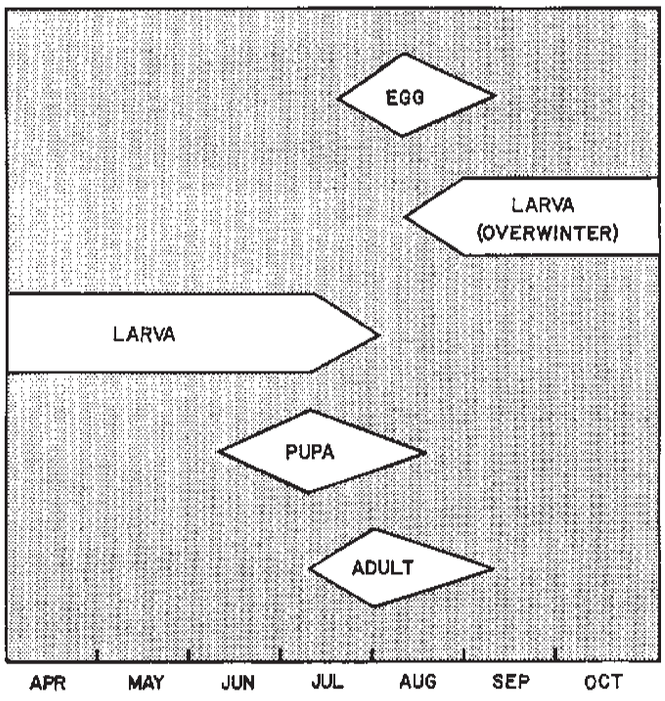

Figure 2: Generalized life history of ponderosa pine budworm.

Figure 3: Pine shoots damaged by budworm feeding.

surrounds the bases of the needles on which they feed. Pupation takes place amid the damaged foliage; the pupae are somewhat protected by the silk.

Damage

Damage is caused by the larvae feeding on the needles. If there are many larvae, they can eat much of the new foliage on a tree. If this happens several years in a row, serious tree damage can result. Severely affected trees have thin crowns with conspicuous bare stubs at the branch ends. Many trees severely stunted by ponderosa pine budworm can be found in the major outbreak areas.

The ponderosa pine budworm normally is not considered a tree-killer. Recent experience, however, has shown that it can be an important problem.

Control

Although the ponderosa pine budworm has the usual set of natural control factors (including parasitic insects, predators such as birds, and physical factors of the environment such as temperature extremes), persistent outbreaks do occur and use of insecticides may be warranted. But there is little experience with applied control of this species.

Laboratory studies and limited field applications have shown the budworm to be susceptible to several insecticides commonly used against forest defoliators. Foliar sprays have appeared more encouraging than insecticide implants, although data are scanty. Timing is particularly important in achieving good control. In general, insecticide applications should coincide with early larval feeding.

Consult Colorado State University Extension, Colorado State Forest Service or U.S. Forest Service specialists for suggested treatments.

Associated Insects

Other species of pine defoliators can coexist in the shoots along with the ponderosa pine budworm. Common species in Colorado include the pine needle-sheath miner, *Zelleria haimbachi* Busck; the pine butterfly, *Neophasia menapia* (Felder and Felder); and the ponderosa pine needle miner, *Coleotechnites ponderosae* Hodges and Stevens. As with any suspected pest, proper identification should precede an evaluation for proposed control actions — that is, know what pest you're dealing with.

References

Raimo, Bernard J. 1985. "A ponderosa pine pest complex (*Choristoneura lambertiana* (Busck), *Neophasia menapia* (Felder & Felder), *Zelleria haimbachi* (Busck), *Pityophthorus aquilis* Blackman on the San Juan National Forest and adjacent lands." *3430 Biological Evaluation R2-85-5*, U.S. Forest Service, Lakewood, Colorado 80225, 12 pp.

Robertson, J. L., and others. 1978. "Comparative toxicity of insecticides to *Choristoneura* species (Lepidoptera: Tortricidae)." *Can. Ent.* 110:399-406.

Stevens, R. E., T. K. Borg, and T. O. Thatcher. 1977. "Notes on a pine-feeding budworm, *Choristoneura lambertiana ponderosana* (Lepidoptera: Tortricidae), in the Colorado Rockies." *Can. Ent.* 109:1269-1274.

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