



Larch Casebearer

Forest Health Fact Sheet

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Christine Buhl, ODF

Larch is a conifer that turns yellow and sheds its needles

Larch casebearer (*Coleophora laricella*) is an established, exotic defoliator that attacks western larch. Native and introduced natural enemies play an important role in controlling this pest. Damage from larch casebearer, which is heaviest at the top of the crown, may be confused with that from two fungal diseases in larch, which are heaviest at the base. Western larch occurs naturally in eastern Oregon, growing in either pure stands or as an important component of Douglas-fir and western white pine forest types. This species has rapid initial growth and is wind firm and fire-resistant, making it a preferred species in terms of both forest management and timber production.

Larch casebearer was introduced into North America from Europe in 1886 on planting stock. This moth now infests almost all species of larch in the U.S. It was first found on western larch in Idaho in 1957, and is now considered to be the most serious pest of larch in the western states.

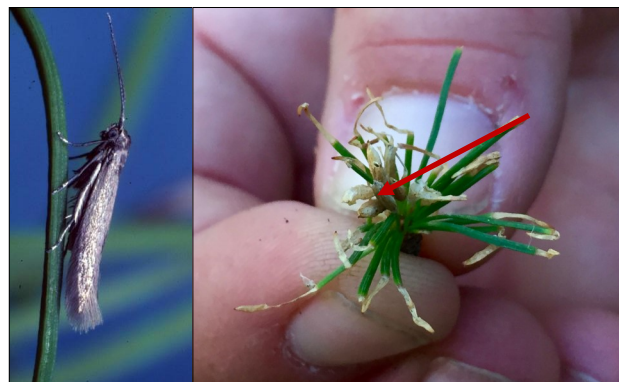
Biology

Adults are tiny, silver-grey moths with narrow fringed wings that fold along the body when at rest. Eggs are laid singly on needles from late May until early July. Eggs hatch in 2-3 weeks and the newly emerged larvae 'mine' into individual needles. A larva will hollow out a single needle and line the interior with silk to form a type of 'sleeping bag' to reside in. The larva then chews its case free and walks its case to a new needle, which it attaches to with silk. The larva then feeds on this needle without leaving its case. The larva will continue feeding on needles and developing into the second and third instars. The third instar then fastens its case to the base of buds at branch tips after the tree has shed its foliage, to overwinter.

When temperatures increase in early spring, larvae become active and resume feeding and development. The intensity of damage from larch casebearer peaks during this 3-4 week period of feeding by maturing larvae. Larvae then develop into pupae and emerge as adults in late spring. Larch casebearer has one generation per year.

Damage

Larvae feed on needles which causes withering or more



Roger Ryan, USFS, Bugwood.org and Buhl, ODF

Larch casebearer adult (left), and larval cases (right) surrounded by withered needles

complete defoliation. Sustained, severe infestations can substantially reduce tree growth. Damage is usually greatest in the upper crown. Severe attacks produce red-colored needles that cause the tree to take on a fire-scorched appearance. The new foliage of lightly-attacked needles turns straw-colored and curls at the end. Larch casebearer cases are easiest to find August-June. Cases are initially straw-colored and rectangular, but later resemble a tiny, light grey cigar.

Tree mortality from larch casebearer is generally rare, although young trees growing in the open or along forest edges can be killed. Western larch is relatively tolerant of casebearer defoliation, and will often send out a second flush of needles in late summer. After five or more years of severe defoliation, annual terminal and radial growth may be seriously reduced. Cone production may also decrease enough to affect natural regeneration occurring at affected sites.



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Larch casebearer damage in western larch

Outbreaks have occurred periodically since the 1970s, but have not been well-documented. Aerial survey records indicate that damage from larch casebearer in eastern Oregon has been detected every year since 1997, with the largest recent outbreak occurring in 1999 on 15,000 acres. (Note: aerial surveys are flown from July-August each year and may underestimate larch casebearer damage due to secondary needle flushes)

Management

Open-grown larch or trees planted along edges are most frequently attacked.

Natural

Larch casebearer survival is reduced by hot and dry summers that desiccate needles, as well as prolonged cold and wet springs with frost events, although the overwintering stage is fairly tolerant of cold temperatures.

There are many native predators and parasitoids that attack larch casebearer, but these do not appear sufficient

Management highlights

- Climate, weather and the presence of native and introduced natural enemies are the only sources of control for larch casebearer
- Avoid planting larch along edges or in open-grown situations

to control expanding populations of casebearer. In the 1960's two European parasitic wasps, *Agathis pumila* and *Chrysocharis laricinellae* were introduced into larch stands in North America. Natural enemies must reduce casebearer numbers to <1 individual per shoot to be successful although typically, only one individual per shoot can survive due to competition.

Chemical

Currently there are no pesticides registered in Oregon for control of larch casebearer.

Other damaging agents

There are two common foliar diseases of larch in Oregon that may be confused with or work in combination with larch casebearer. Damage from these diseases is usually greatest in the lower crown. Larch needle cast (*Meria laricis*) and larch needle blight (*Hypodermella laricis*) are both fungal diseases of larch, the former was introduced from Europe. Spores are produced in early spring around the time of bud-break, and are spread by wind or rain to newly emerging needles. Higher moisture levels favor fungal growth and spread. Outbreaks usually last for only 1-2 years or until drier conditions return. Fungicide application at three week intervals from bud swell until the end of July have been shown to reduce seedling infections.

Other pests of western larch include larch sawfly (*Pristiphora erichsonii*) or larch budmoth (*Zeiraphera improbana*). Sawfly damage can be distinguished from casebearer by the loss of large pieces of older foliage being consumed by larvae. Damage from budmoth larvae, in addition to defoliation, is distinguished by partial severing along one side of a shoot.

More information:

Oregon Dept. of Forestry, Forest Health
<http://tinyurl.com/odf-foresthealth>
2600 State St. Bldg. D, Salem, OR 97310
503-945-7200

Other references:

USFS Forest Health Protection
www.fs.usda.gov/goto/fhp/fidls

OSU Forestry Extension
<http://extensionweb.forestry.oregonstate.edu/>