



# Larch casebearer in British Columbia

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## Introduction

The larch casebearer, *Coleophora laricella* (Hubner) (Lepidoptera: Coleophoridae), was introduced to North America in 1886, and was recorded in British Columbia in 1966. The casebearer spread to this province from infestations in northern Washington, Idaho, and Montana. Large populations have caused defoliation resulting in noticeable discoloration in portions of the Nelson and Kamloops forest regions. Casebearer attacks western larch in a variety of stands.

## Host and distribution

The casebearer is a pest of larches and is native to Europe. In British Columbia, it attacks western larch, *Larix occidentalis* Nutt., but has not been recorded on tamarack, *L. laricina* (Du Roi) K. Koch, or alpine larch, *L. lyallii* Parl.

In British Columbia, the casebearer occurs throughout most of the range of western larch. It has been reported west of Okanagan Lake (between Canoe and Sicamous), near Galena Bay south of Revelstoke, north of Kootenay Lake, near Canal Flats, at Sparwood, and along the international boundary. It has been found outside of



Damage to foliage by fourth-instar larvae

the host range in Victoria, on western larch planted as ornamentals. This single occurrence was treated, and apparently was eradicated.

## Description

**Egg:** Small, yellowish in color becoming pale cinnamon-brown; hemispherical with 12 to 14 ridges running from apex to base.

**Larva:** Dark reddish brown, with black head and thoracic shield. The larva is 5 mm long when fully devel-

oped. The first two instars needle mine; the second two live in a tubular case, which is yellowish and rectangular, and becomes grey and cigar-shaped near pupation.

**Pupa:** Dark brown; pupa lives inside the grey, cigar-shaped case, about 4 mm long.

**Adult:** Small, silvery to greyish brown moths, with narrow wings fringed with long, slender, hairlike scales; wingspread of 9 mm.



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Damaged first crop of needles and eggs on a second crop of western larch needles



Overwintering larval cases attached to a twig of western larch

## Life history and habits

There is one generation of casebearer annually. Most of the eggs are laid in June, but they may be laid in late May, depending on the weather.

The female moths lay about 50–70 single eggs. One to three eggs are laid on the underside of a needle. When the eggs hatch, the larvae bore directly through the egg shell into the needle. A larva will feed in the needle for about two months. After the needle is hollowed out, the larva constructs a case by lining the inside of the mined section with silk. This is chewed free from the rest of the needle. The larva moves the open-ended case about and feeds on foliage from mid-August onward. The case is fastened firmly to a needle with a pad of silk and the needle interior is mined as far as the larva can reach without leaving the case. Excrement is pushed out the open end of the case. After feeding on one needle, the larva will chew the case free and move to another.

The casebearer overwinters inside its case as a third-instar larva. About October, the larva leaves the

foliage and attaches its case to twigs by silk threads. When the population is large, larvae may cluster at the base of needle fascicle spurs. The larva resumes feeding in the spring, after the needles flush, and pupates by late May or early June. The pupal stage lasts about two weeks, after which the adults emerge and mate.

## Damage and detection

The most obvious foliage damage results from the feeding by fourth-instar larvae in May. When populations are small, the ends of the damaged needles turn light green to straw-colored, becoming hook-shaped as they dry. With large populations, the foliage is destroyed, the needles drying and turning reddish brown.

The larch can withstand defoliation better than most conifers because it loses its needles in the fall, refooliates in the spring, and can have two crops of needles per season. Repeated defoliation can cause reduction in terminal and radial growth, and may even kill branches or trees. Extended periods of defoliation have caused as

much as 30% volume loss. Epicormic branching is common on severely defoliated trees; branches sprout from dormant buds on the stem when main branches are killed.

In the spring, when defoliation is severe, trees appear reddish brown or fire-scorched, and areas of damaged trees are visible from a considerable distance. The presence of casebearer may be confirmed by looking for discolored, hook-shaped pupal cases in the needle clusters in June, by moths flying about host trees in July, and by larval cases clustered at twig spurs in winter.

## Control

Insects, disease, and weather are all natural controls that help reduce populations. Cold, wet weather after needle flush can cause larval mortality. Two needle diseases, *Hypodermella laricis* and *Meria laricis*, reduce the casebearers food supply, causing starvation. Parasitic insects attack the casebearer. About 30 species of native parasitic wasps, and two introduced species, *Agathis pumila* and *Chrysocharis laricinellae*, attack the



Pupal cases attached to needles



Pupal cases attached to the center of a needle cluster

casebearer. While natural controls usually do not prevent outbreaks, they often contribute to a reduced severity and an early decline.

Direct control with the application of insecticides is not usually practical. Western larch often grows with other species in scattered groups or as individuals. High-value trees may be treated with one of the registered insecticides. Information on registered pesticides may be obtained from a pesticide dealer. Any application of a pesticide must be in accordance with directions printed on the label of that pesticide as prescribed under the Pest Control Products Act. Always read the label. A pesticide should also be recommended by provincial authorities; consult them for specific advice.



Adult larch casebearer

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