

Larch trees with unseasonably reddish-brown crowns are an occasional midsummer sight in the upland valleys of the Central Alps. This discolouration is caused by the larvae of the larch budmoth (*Zeiraphera griseana*), a moth whose caterpillars feed on larch needles. A mass outbreak of this small moth takes place approximately every nine years. At the peak of an outbreak, the hungry caterpillars can damage all needles of the larch trees. However, the infested trees quickly recover.

Biology of the larch budmoth

Larch budmoths fly in late summer and then lay their eggs. These overwinter and hatch into caterpillars the following spring. The larvae feed inside clusters of larch needles spun together. In their final larval stage, the caterpillars are up to 15 mm long and greyish-black. In this stage, they feed outside the needle clusters along the twig axes. Once fully developed, they drop to the soil and pupate in the litter layer. The complete development lasts about ten weeks.

During an outbreak, many needles are only partially devoured by the caterpillars, and the drying needles turn the canopy reddish brown.

A mass outbreak every nine years

Optimal living conditions for the larch budmoth are at elevations greater than 1700 m a. s. l. in inner-Alpine valleys. In these areas, a strong proliferation of larch budmoths occurs every 8 to 10 years, causing the unusual summer discolouration of larch forests. In the tree rings of cut larch trunks, these cycles can be traced back to the Roman era.

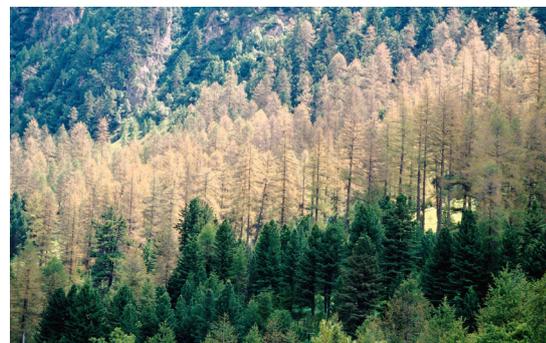
For 2 to 3 years after a mass infestation, the larch trees produce shorter needles that are of inferior nutritional quality for the caterpillars. In addition, increasingly higher proportions of eggs and caterpillars are attacked by parasitic wasps. These mechanisms prompt the larch budmoth population to collapse. Thereafter the larch budmoth population can build up again and peak once more. These regular cycles are synchronised by the dispersal of moths from neighbouring valleys across the entire Alpine arc.

Significance

Although the larch budmoth causes periodic feeding damage, it is not considered a pest because the affected larch trees flush new needles and easily tolerate the regular infestations. Individual infested trees may die, but this only happens rarely. Controlling the larch budmoth is neither possible nor necessary.



This poster, along with detailed information (in German) about the larch budmoth, can be found on the WSL homepage (www.wsl.ch/laerchenwickler).



Infested, reddish brown discoloured larch stand.



The larch bud moth.



The dark-grey caterpillar of the larch budmoth.



Heavily damaged larch needles with faeces and spun threads.
Photo credits: B. Wermelinger, WSL