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FOREST Pest LEAFLET

Pacific Forestry Centre

Green-striped Forest Looper

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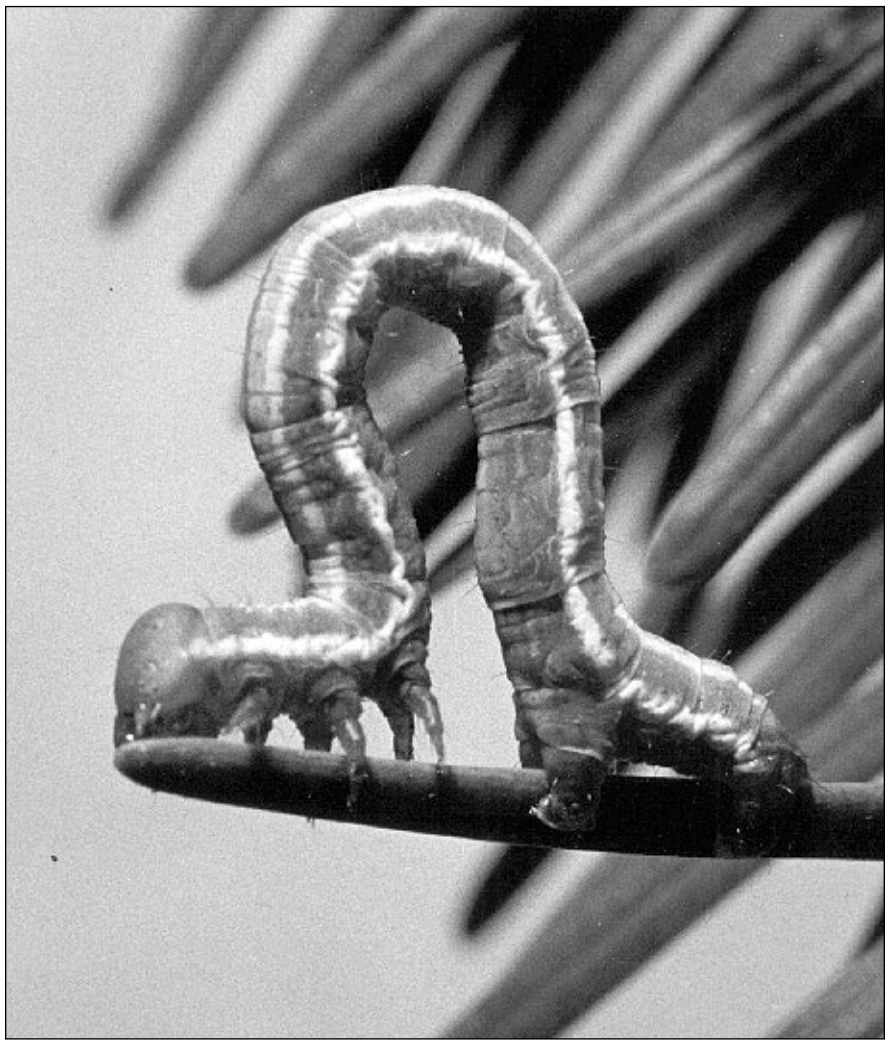
Introduction

The green-striped forest looper (*Melanolophia imitata*), a common defoliator of conifers in British Columbia, was not considered a destructive forest insect prior to 1960. In that year, top-kill and tree mortality of western hemlock and western red cedar occurred on the west coast of Vancouver Island north of Tofino. Since then, this pest has reached damaging infestation levels at several locations. In 1963 and 1964 heavy defoliation and tree mortality were encountered on the Queen Charlotte Islands on the east coast of Graham Island. In 1968 and 1969 a marked population increase along the northwest coast of Vancouver Island resulted in heavy defoliation of western hemlock along Neroutsos Inlet and at Victoria Lake. Scattered tree mortality occurred in localized pockets. The infestation collapsed in 1970 and no outbreaks have been recorded since.

Hosts and distribution

The green-striped forest looper is distributed along the Pacific slope from Alaska to California. In British



Mature larva

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Mature larva

Columbia, it is most common along the coast and in the interior wet belt. Larvae feed mainly on conifers, preferring western hemlock, western red cedar and Douglas-fir. Most other native conifers as well as many broadleaved trees and shrubs may also be attacked.

Description

Egg: Length about 1 mm, width 0.5–0.6 mm, pitted, elliptical, frosted bluish green, pink at one end.
Larva: Young larvae are dull olive-green with darker lines above and below, changing to deep apple-green as they mature. The body is marked with whitish sub-dorsal and yellow-green lateral stripes. Between 22 and 37 mm long in final (fifth) instar.
Pupa: Light brown, sometimes green tinged, turning dark shiny brown, from 10 to 17 mm long, 3.7-4.4 mm wide. Contained in a loosely woven shelter in duff.

Adult: Moths with a wingspan of 20-40 mm, with pale silvery brown-grey forewings marked with fine variegations and brown irregular transverse lines. Head and body grey to grey-brown, antennae of the male are feathery while those of the female are threadlike.

Life history and habits

Moths appear from mid-March through mid-June, flying at dusk and mating within one or two days of emergence. It is one of the few moths in which the male is usually larger than the female, and paler in colour with less pattern. Females lay up to 80 eggs, singly, over a two-day period, on branches and trunks of host trees. Eggs hatch in about nine days and young larvae move to the foliage, feeding on the underside of leaves. They cause damage superficially resembling that of leaf skeletonizers or miners. Older larvae chew off terminal and subterminal sections of needles, showing a preference for foliage of the previous year. When large populations are present, trees may take on a generally brown appearance because of the discoloured foliage on the branch tips. From July to mid-September, mature larvae drop to the ground, burrow into the litter where they spin a loose shelter, and pupate. Pupae overwinter in the duff.

Damage and detection

Defoliation may be noticeable by mid-July as larval feeding begins to reach a peak. In August, trees begin to brown and thinning crowns become noticeable. Feeding is usually heaviest in the upper crown, resulting in top-kill. Understory and intermediate trees may be completely stripped of foliage. In areas of population build-up, numerous moths may be noticed flying in spring, large numbers of larvae may be seen in summer, and pupae may be found readily in the duff in autumn. This looper can successfully coexist in quantity with other large forest defoliator populations.

Hemlock and hemlock-cedar stands in coastal fog-belt areas have been the most susceptible to outbreaks. Infestations have been characterized by rapid population increases, resulting in heavy defoliation in scattered isolated areas, followed by sudden and complete collapse of populations. After severe infestations, tree mortality (particularly in the co-dominant and intermediate crown classes) could occur within a year after trees were severely or completely defoliated.

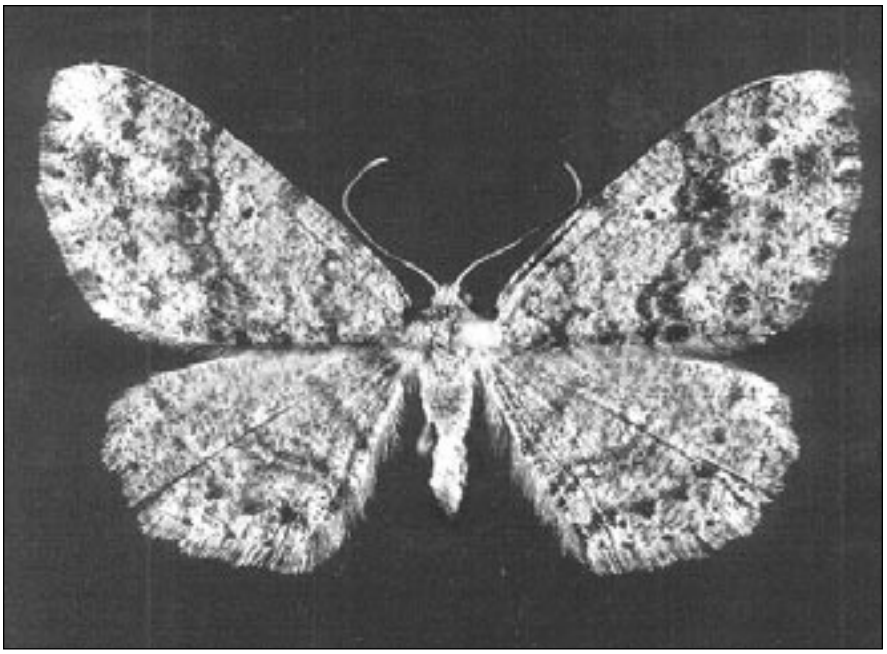
Control

Natural factors

Parasites, disease, predators, and weather play a significant role in reducing populations during infestations. Green-striped forest

Pupa

loopers are affected by at least 21 different parasites in British Columbia. Parasitism seems to be higher among pupae than larvae. Past studies have shown that diseases such as *Cordyceps militaris* have played a major role in the decline of pupae, while the fungus *Entomophthora* sp. was important in the control of larvae. Predation by voles, mice and birds has also been significant in reducing numbers of pupae. Summer droughts, periods of cold, wet weather and heavy rains may adversely affect egg laying or larval feeding.



Adult

Direct control

No forest spray operations have been conducted in B.C. since 1964 to suppress or prevent defoliation by the green-striped forest looper. As a result, there are no insecticides specifically registered for use against this insect. However, in some situations, especially in urban areas or for preservation of high value stands, application of an approved insecticide* may be warranted. Advice and technical details concerning treatment may be obtained from a local specialist in pest management, forestry, or horticulture.

* Such as the biological insecticide *Bacillus thuringiensis* kurstaki (Btk).

Selected references

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* Copies of this report are available for study at the library of the Pacific Forestry Centre in Victoria, British Columbia.

Additional Information

Additional copies of this and other leaflets in this Forest Pest Leaflets series, as well as additional scientific details and information about identification services, are available by writing to:

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