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FOREST Pest LEAFLET

Pacific Forestry Centre

Northern tent caterpillar

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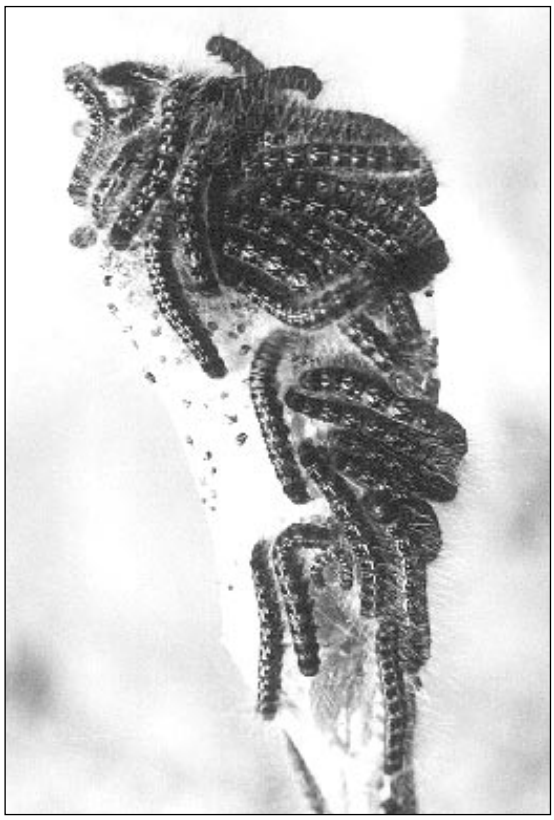
Introduction

The northern tent caterpillar[1], *Malacosoma californicum pluviale*, is a common defoliator of a broad range of deciduous trees and shrubs in British Columbia. Outbreaks have most commonly been recorded in south coastal areas, including the east coast of Vancouver Island, the Gulf Islands, the Fraser Valley and the Sunshine Coast. Major infestations causing widespread moderate and severe defoliation in some or all of the above areas were first recorded in the early 1930's. Since then outbreaks have occurred in the mid 1940s, from 1955-57, 1961-64, 1968-70, 1974-77, 1984-88 and 1992-93. Widespread, mostly light and moderate defoliation occurred in north coastal locations in the Kitimat, Nass and lower Skeena river valleys from 1969-73, 1981-83 and 1989-92. Throughout the Columbia River Valley in the interior of the province, sporadic, mainly localized infestations have been recorded in a broad range of deciduous species since 1948.

[1] Formerly known as western tent caterpillar in B.C.



Mass of larvae on tent

Hosts and Distribution

The northern tent caterpillar is a native North American insect. It occurs throughout the southern half of British Columbia, and its range extends as far east as Quebec. In the United States it is primarily found west of the Cascade Mountains, through Washington as far as southern Oregon. Populations are known in northern Idaho, western Montana and several northeastern states also.

Preferred hosts in south coastal and interior areas include alders, poplars, willows and fruit trees, but it is found on a wide range of deciduous trees and shrubs during outbreaks. In north coastal areas most of the damage has been in valley bottom black cottonwood and willow. There is also a "bog" form of the insect that feeds exclusively on swamp birch, and associated willows in marshy areas in central and northern parts of the province.

The northern tent caterpillar is one of six recognized subspecies of the western tent caterpillar, *Malacosoma californicum*, which ranges from southern Oregon through southern California. A related species, the forest tent caterpillar, *Malacosoma disstria*, is a major defoliator of trembling aspen in the British Columbia interior (Forest Pest Leaflet No. 17).

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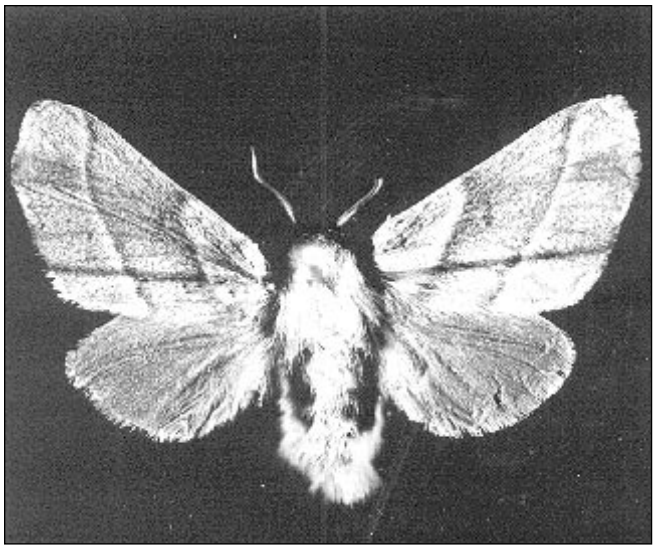
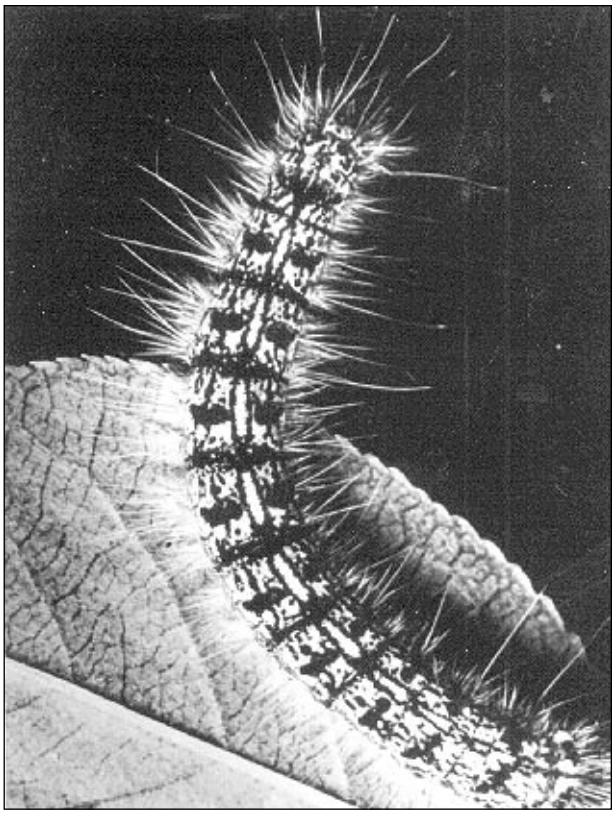


Adult



Mature larva

Description

Larva: larvae are about 3 mm long when newly hatched, and are uniformly dark with conspicuous whitish hairs. Fully grown, they are 45-55 mm long, have a dark brown base color overlain with a series of narrow light blue-grey elliptical patches along the midline of the back, corresponding to each body segment. Each of these is bracketed by a pair of orange patches and a further pair of blue dots lower down on the sides. Beneath these patterns, and low on the sides of the body runs a single orange stipe. The above description fits an average specimen, though the patterns are highly variable.

Pupa: A dark reddish-brown pupa 15-20 mm in length rests inside a pale oval silken cocoon which is dusted with a yellowish powder.

Adult: Moths are stout bodied with a wingspan of 25-37 mm. Colors range from pale yellow to dark reddish brown. A single dark line radiates at right angles to the body, bisecting the forewings. Two lighter lines running parallel to the outer edge of the forewings, further divide them into three segments of equal width.

Eggs: Egg bands averaging about 15 mm in width are laid, partially encircling small branches and twigs. Between 150 and 250 eggs are laid within a foamy silver-grey matrix called spumaline which protects them and bonds them to the branch.

Life History and Habits

The northern tent caterpillar has a one year life cycle. First-instar larvae emerge in the spring between mid April and early June, having passed the winter fully formed within the eggs. Larval emergence is timed to coincide with budbreak on the host trees. Young larvae feed gregariously on the new foliage, and weave a large silken tent in the crotch of a branch. Larvae from several egg masses may construct a single tent. Tents are enlarged as the larvae grow, providing protection from predators during resting and molting phases and shelter in periods of bad weather.

Larvae pass through five or six instars during the six week feeding period. In the final instar they lose the gregarious habit and disperse in search of a suitable pupation site. Pupation occurs inside a tightly woven cocoon attached to a tree, shrub or other sheltered location. Moths emerge two to three weeks later and mate. Females subsequently lay their eggs on the branches of a suitable host.

Damage

Defoliation intensifies as larvae mature, and trees often become stripped of foliage by mid June or early July. Significant damage to the trees occurs only after prolonged severe infestations, and is limited primarily to loss of growth potential and some branch dieback. Defoliated trees usually refoliate in mid-summer, but leaves are often smaller in the second crop. Trees weakened by feeding damage are more susceptible to secondary effects such as infection by fungi and the environmental stresses of drought and frost.

Detection

The most obvious signs of infestation are the conspicuous silken tents that are present throughout the late spring and summer. During the feeding period, larvae can be seen massing in

large numbers on the trunk and branches. Just prior to pupation mature larvae leave the host tree and are seen crawling in all directions in search of a suitable pupation site. Following emergence from the cocoons, moths often cluster around outside lights in infested urban areas. Egg bands remain evident on small branches and twigs throughout the winter.

Control

Infestations are controlled naturally through the action of viral and bacterial diseases, parasites, predators or by unfavorable weather conditions. In the latter category, late spring frosts have caused the overnight collapse of infestations, particularly in north coastal areas.

In urban areas and backyards the most simple and effective means of artificial control is by physically removing the egg masses in the winter or early spring, or destroying the tents and young larvae, through either direct removal or the pruning of branches.

A recommended control for large trees or in severe infestations where mechanical control means are not feasible, is the naturally occurring bacterium *Bacillus thuringiensis* var. *kurstaki* (Btk), a spray-applied bio-insecticide which is selective to Lepidopteran insects, and harmless to all fish, birds, mammals and other insects. Btk can be purchased at garden supply outlets under various trade names. For best results, or for additional information on damage prevention or control, please consult your local forest health, horticultural, or pesticide management authority.

Severely infested tree

Selected References

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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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