

FOREST Pest LEAFLET

Pacific Forestry Centre

Satin Moth in British Columbia

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Introduction

The satin moth, *Leucoma salicis* (Linnaeus) (Lepidoptera: Lymantriidae), is an important defoliator of poplars (Fig 1). This insect is native to Europe and Asia and was first recorded in North America in 1920 in both New England and south-western British Columbia. Since then, it has spread throughout eastern Canada, and damaging outbreaks were recorded from 1967-94 in Newfoundland, Quebec, Ontario, Alberta and the Maritime provinces. In British Columbia it has spread to Vancouver Island and throughout the southern and central interior (Fig. 2). Periodic, localized outbreaks have occurred in these areas from 1921 to 1995. Although previously thought to be primarily a pest of shade, park or windbreak trees, thousands of hectares of trembling aspen, *Populus tremuloides* (Michx.), and black cottonwood, *P. trichocarpa* Torr. & A. Gray, have been severely defoliated in natural stands resulting in lost increment, top-kill and tree mortality.

Hosts and Distribution

Major hosts of the satin moth have historically been exotic poplars, espe-



Figure 1. Larva of the Satin Moth

cially European white poplar, *Populus alba* L., and Lombardy poplar, *P. nigra* L. cv. *italica*. In recent years damage has increasingly occurred in natural stands of trembling aspen, black cottonwood, and occasionally willow, *Salix* spp. The satin moth initially occurred on Vancouver Island and the southwest interior; in recent years it has moved progressively eastward to

the Rocky Mountain Trench and north to the Robson Valley, Williams Lake and Tatla Lake areas.

Description

Egg: Light green, flattened; laid in one or two layered, oval masses of 150 to 200 eggs covered with a glistening white secretion (Fig. 3).



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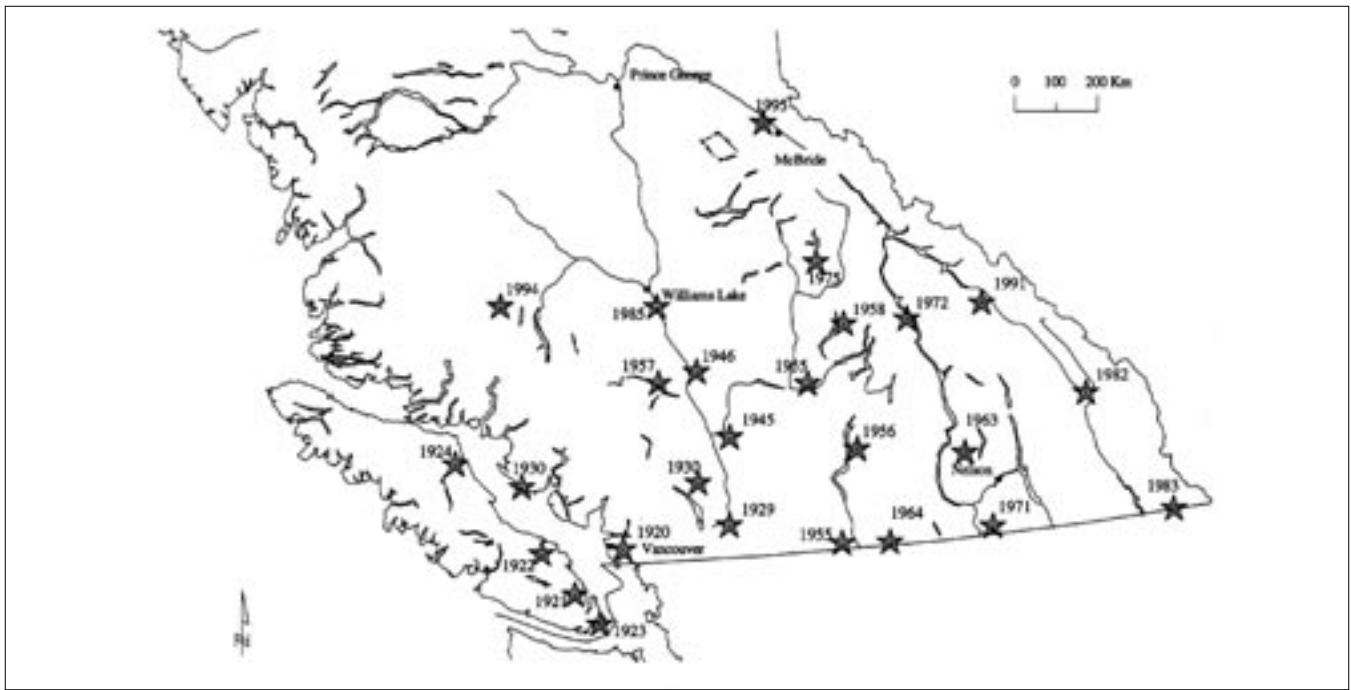


Figure 2. Dispersal of the satin moth in British Columbia from 1920 to 1995.

Larva: Pale to medium grey-brown 10 to 40 mm long, with darker head and back; one row of large oblong, double, shiny yellowish blotches along the dorsum and two subdorsal broken, yellowish lines; two lateral and two subdorsal rows of tufted brownish setae (Fig. 4)

Pupa: Shiny black 15 to 20 mm long, sparsely covered with yellowish hairs; in a cocoon of loosely spun white silk.

Adult: Large silvery white moth with dark body showing through the hairs; wing expanse 30 to 50 mm, body length 15 to 20 mm (Fig. 4); black eyes and legs, male antennae plumose, female antennae thread-like.

Life History and Habits

There is one generation annually. The flat egg mass is laid from early July to late August, on leaves, twigs, branches and trunks of host trees, or indiscriminately on other objects. They hatch in about two weeks. First-instar and second-instar larvae skeletonize foliage for about two weeks, then spin hibernaculae in sheltered

areas under moss or in bark crevices, where they moult and overwinter. Third-instar larvae emerge from the hibernaculae in late April and feed on foliage until they pupate in mid-June. Pupation occurs in loosely woven cocoons within rolled leaves on twigs or in bark crevices. The white moths begin to emerge in early July. Satin moth infestations often occur in conjunction with or immediately following infestations of other defoliators such as tent caterpillars, *Malacosoma* spp. Defoliation of aspen and cottonwood in the Robson Valley during 1994-95 was a result of combined feeding damage of the forest tent caterpillar and the satin moth.

Damage and Detection

Third-instar larvae emerge and begin feeding in late April; most damage occurs in June when late-instar larvae consume entire new leaves except the petioles and larger veins. In late summer the newly hatched larvae skeletonize the leaves; in severe infestations leaves turn brown and drop (Fig.5). Repeated severe defoliation has resulted in top-kill and some tree

mortality. Rolled leaves containing pupae (Fig. 6) and silk webbing on boles and branches, and occasionally larval skins, are indicative of satin moth infestations.

Control and Prevention

The satin moth has many natural enemies, including parasitic wasps and flies, predatory birds and viral, fungal and bacterial diseases. Parasitism



Figure 3. Satin moth egg mass on bark.

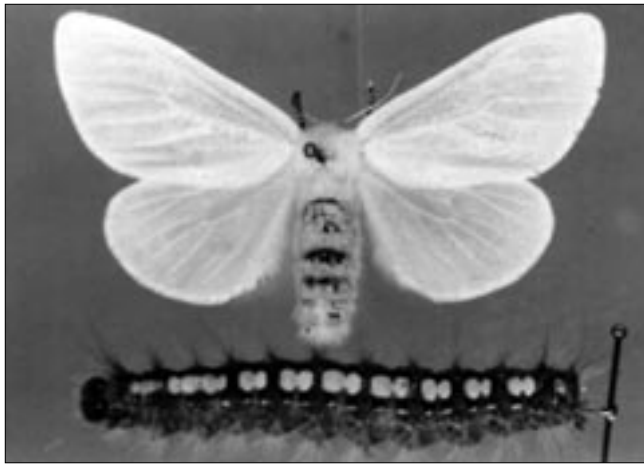


Figure 4. Satin moth adult (top); larva (bottom).



Figure 5. Feeding damage caused by satin moth larvae.

often contributes to population collapse. Four species of parasites were released in British Columbia from 1929 to 1934, including three wasps – *Apanteles melanoscelus* (Ratzeburg), *Eupteromalus nidulans* (Thomson) and *Meteorus versicolor* (Wesmael) – and a fly – *Compsilura concinnata* Meig. *Eupteromalus nidulans* is the only one which did not become successfully established. The braconid, *A. melanoscelus*, is particularly effective; 90% of some satin moth larval collections are parasitized by *A. melanoscelus*. However, it is subject to hyperparasitism, the incidence of which can reach 70% (Forbes, 1968).

A recommended control for severe infestations is the naturally occurring bacterium *Bacillus thuringiensis* var *kurstaki* (Btk), a spray-applied bioinsecticide 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.

References

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Figure 6. Rolled leaves containing pupae indicate a satin moth infestation.

Additional Information

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