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FOREST Pest LEAFLET

Pacific Forestry Centre

Silver-spotted Tiger Moth

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Figure 1. Silver-spotted tiger moth and egg mass

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Figure 2. Mature larva

Figure 3. Cocoon on Douglas-fir branch

Introduction

The silver-spotted tiger moth, *Lophocampa argentata* (Packard) (*Lepidoptera: Arctiidae*), is a common defoliator of conifers in southwestern British Columbia. Larvae are frequently observed in winter and early spring when most other insects are inactive.

There is no evidence that this pest has ever caused serious damage and it is regarded as economically unimportant. The chief injury it causes is the unsightly stripping of foliage on scattered branches of infested trees. Infestations do occasionally occur; one outbreak occurred from 1953 to 1956 on southern Vancouver Island.

Hosts and distribution

Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco, is the preferred host, but western hemlock, *Tsuga heterophylla* (Raf.) Sarg., lodgepole pine, *Pinus contorta* Dougl., grand fir, *Abies grandis* (Dougl.) Lindl., amabilis fir, *Abies amabilis* (Dougl.) Forb., western red cedar, *Thuja plicata* Donn, Sitka spruce, *Picea sitchensis* (Bong.) Carr. and some other conifers are also defoliated occasionally. Mature trees are favored, although all age classes may be attacked.

The silver-spotted tiger moth is native to western North America and is widespread except in the northern areas. In British Columbia, it occurs primarily in the southwestern corner of the province at altitudes below 450 m. However, it has been occasionally collected inland as far as Chilliwack and as far north as Prince Rupert.

In the U.S., the species occurs south from B.C. to California. Related varieties, *L. argentata sobrina* Stretch and *L. argentata subalpina* French, are occasional defoliators of Monterey pine in coastal California and several conifers in Utah and Colorado, respectively.

Description

Egg: Hemispherical, about 1 mm diameter; pale green, gradually becoming light brown. (Figure 1).

Larva: First stage green-brown, fuzzy, less than 6 mm long; later stages up to 37 mm long, thickly haired and strikingly tufted in shades of red-brown, yellow and black. (Figure 2).

Pupa: Light amber, becoming glossy, dark red-brown, 12-20 mm long and about 12 mm diameter; loosely contained in an avoid brown cocoon of woven hairs, about 25 mm long. (Figure 3).

Adult: Wingspan averaging 40 mm in male, 47 mm in female. Robust and conspicuously patterned: forewings dull to dark brown, conspicuously marked with numerous cream-yellow spots, including five pale yellow spots along the leading edge and six paler spots at the sides; hind wings cream-colored with faint brown markings on the front margin. The thorax is covered with fine hairs and patterned with cream-yellow and brown stripes; the abdomen, also silky-haired, is pale yellow above and brown-spotted below. Antennae are comb-like in the male and thread-like in the female.

Life history and habits

The attractive, strong-flying moths appear from July to late August; they frequent the upper branches of mature trees. Eggs are laid along needles and twigs in tightly packed clusters that contain as many as 450 eggs; these hatch in 3-4 weeks. The larvae are colonial in the early stages, and they form loose webs containing dead needles and other debris (Figure 4). With the onset of cold weather, the larvae, then in the third or fourth stage, retire to the shelter of the web where they remain inactive on all but the mildest winter days. During these

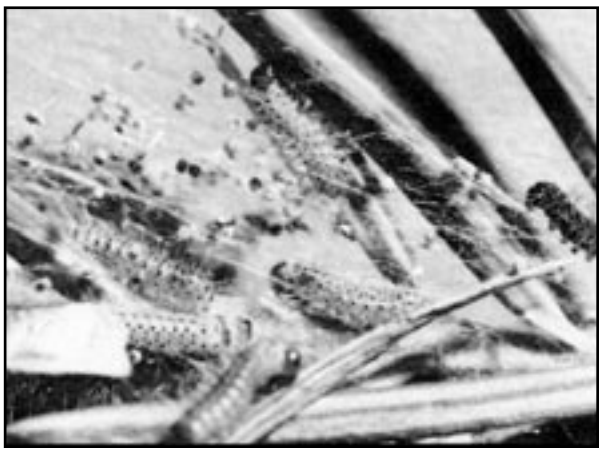

Figure 4. Web and debris with second-stage larvae.

Figure 5. Colonial fourth-stage larvae

mild and sunny winter days, temperatures in the web rise and the larvae may then leave to feed in the open (Figure 5); the coming of spring warms them into increased activity. Typically the larvae defoliate one section of a branch at a time, usually on the south or west side of the tree. As the larvae mature they venture farther from the web and finally, when in the seventh and eighth stage, they disperse over the tree and become solitary in habit. In June or July the mature larvae leave the foliage to seek sheltered spots in which to pupate. The mature larvae spin ovoid cocoons which are attached to tree trunks, branches, fence rails, sides of houses, or other sheltered spots.

The insects remain in the pupal stage for over a month.

Damage and detection

Defoliation of individual branches is caused by the colonial feeding stages of the larva during the period from fall to early spring and before new growth occurs on the host tree. The larvae do not feed on the buds which remain alive and continue normal growth later in the spring. In time, the defoliated branches usually recover fully. Solitary mature larvae disperse over the tree and do not cause noticeable damage.

Branches supporting larval colonies can be recognized at a considerable distance by the ragged-looking webs near the ends of branches (Figure 6). In the early spring, the tawny hairy caterpillars are sufficiently conspicuous to be easily seen and are often noticed before most other insects are active. Later, the caterpillars may be found massed on a lower branch or scattered over the tree.

Relatively large numbers of caterpillars were observed feeding on valuable Douglas-fir seed trees near Victoria in 1991. It is in such settings that damage, even though not life-threatening, may be unacceptable.

Control

Natural factors

Considerable natural mortality normally occurs during the larval and pupal stages of this species. Contributing factors include cold winter weather, and the long larval stage which increases the chance of attack by disease, parasites and predators. About a dozen parasites have been reared from silver-spotted tiger moth in British Columbia, including both dipterous and hymenopterous species.

While a significant outbreak did occur on southern Vancouver Island in the 1950s, damage was spotty and most trees fully recovered from defoliation. The records of the Forest Insect and Disease Survey confirm the short duration of the attack period (often only 1 year). The major factors terminating outbreaks are natural enemies and weather.

Direct control

To date, forest spray operations have not been conducted in B.C. to suppress or prevent defoliation by the silverspotted tiger moth. As a result, chemical insecticides are not specifically registered for use against this insect, and the effectiveness of the bacterial agent *Bacillus thuringiensis* var. *kurstaki* as a spray treatment is unknown. Consult with local pesticide management or forestry authorities to determine whether spray applications can be used to protect special trees.

On small trees, or in settings where aesthetic values are high (i.e. ornamental trees), clipping and destruction of branches containing the caterpillars and their webs may be advisable.

Figure 6. Defoliated branch and webbing

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* A reference copy of this report is 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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