

## FIRST OCCURRENCE OF BALSAM WOOLLY APHID IN THE INTERIOR OF BRITISH COLUMBIA

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### ABSTRACT

The balsam woolly aphid, *Adelges piceae* (Ratzeburg), was discovered near Vancouver in 1958, and in the interior of British Columbia in 1967. Infested planted ornamentals were found at two locations in the Okanagan Valley: three *Abies alba* Miller near Oliver and two *Abies concolor* (Gordon and Glendenning) in Penticton. These trees were either burned or sprayed. No aphids were found on native alpine fir, *Abies lasiocarpa* (Hooker).

The balsam woolly aphid, *Adelges piceae* (Ratz.), is an important pest of true firs, *Abies* spp. This native of Europe, found in North America in 1908, now occurs from the Maritime Provinces of Canada south to North Carolina and from southern British Columbia to California. Since its discovery near Vancouver in 1958, it has become firmly established in that area on the mainland and on southern Vancouver Island.

On 28 April 1967, infested bark and branch samples from three planted ornamental silver firs, *Abies alba* Mill., near Oliver in the Okanagan Valley were submitted by the owner. Additional samples taken on 15 May contained a maximum of 1,890 eggs and 45 crawlers per square-inch bark sample, and 33 crawlers per 24-inch branch.

The trees appeared vigorous in spite of the heavy stem attack. They were imported from Holland and planted at the Oliver site in 1928. They were infested either when planted and the aphids had persisted on them for 29 years, or infestation occurred at a later date, possibly from exposure to infested transplanted stock.

At the request of the B.C. Forest Service, the trees were sprayed by a pest control firm on 16 May. Wettable powder formulations of Tedion, Sevin and Thiodan were mixed at concentrations of 1 lb. each to 90 gal of water and applied at the rate of 30 gal per tree. Bark and branch samples from the sprayed trees were

examined in June; only one living aphid was found. Although the spray was almost 100% effective, it was decided to destroy all three trees and they were subsequently felled and burned.

The discovery of the balsam woolly aphid at Oliver resulted in a special survey of ornamental firs from the United States border to Penticton. The survey was conducted between 23 May and 13 August by B.C. Forest Service crews supervised by members of the Forest Insect and Disease Survey. About 1,100 ornamental fir trees were examined, resulting in the discovery of two infested white firs, *Abies concolor* (Gord. and Glend.), in Penticton. These trees were about 40 ft high and had a light population of aphids on the branches. The origin and date of transplanting of the trees were not known.

The trees were sprayed with a mixture of Thiodan and Sevin (1 lb. W.P. of each per 100 gal of water), applied at the rate of 70 gal per tree. Control was satisfactory as later sampling showed no living aphids.

All infested ornamental fir trees were less than 15 miles from stands of highly susceptible native alpine fir, *Abies lasiocarpa* (Hook.), a distance suspected to be within the airborne dispersal limits of the insect. However, aerial and ground surveys of these stands in July and August failed to produce evidence of the balsam woolly aphid. The native, non-destructive adelgid, *Pineus abietinus* Underwood and Balch, was common.

The balsam woolly aphid presum-

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ably was introduced into southwestern British Columbia on nursery stock imported from infested areas. In the Interior it apparently had a similar introduction. Steps taken to prevent further spread included a voluntary industry quarantine on the movement of *Abies* spp. logs outside of the infested areas, and federal and provincial quarantines preventing the sale or movement of *Abies* nursery stock into or within the Province. This action

should reduce the long-range spread of the aphid, leaving only natural spread by wind and possibly birds to contend with. Surveys to detect spread on ornamentals in other interior areas prior to the present legislation are necessary. Spraying or felling of such trees is recommended; if spread into natural stands far removed from the existing major infestation is detected, similar direct control measures may be advisable.

#### Reference

- Harris, J. W. E., D. H. Ruppel, S. J. Allen, and D. G. Collis. 1964. The balsam woolly aphid, *Adelges piceae* (Ratz.) in British Columbia. Infor. Rept. For. Ent. and Path. Lab., Victoria, B.C.

## PROTECTING LARCH LOGS FROM *TETROPIUM VELUTINUM* LECONTE WITH LINDANE EMULSION

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#### ABSTRACT

At Trinity Valley, British Columbia, a 1% emulsion of lindane applied on 12 June 1967, protected freshly felled *Larix occidentalis* Nuttall from attack by *Tetropium velutinum* LeConte. The same concentration, applied to infested logs on 14 August reduced damage but was too late to satisfactorily prevent larval penetration of the wood.

#### Introduction

Ross (1967) noted the importance of the western larch borer, *Tetropium velutinum* LeConte, as a wood borer in logs of western larch, *Larix occidentalis* Nuttall. As with *Monochamus*, injury by *Tetropium* may be prevented by removing recently dead trees or logs from the forest before the beetles oviposit, or by utilizing timber before larvae in the bark enter the wood. Various authors including Becker (1959), and Ross and Downton (1966), have shown that lindane emulsion protects logs from wood-borer attack, although its effectiveness had not been tried specifically against *Tetropium*. In 1967 the spray was used A to prevent oviposition by *Tetropium velutinum* and B to reduce damage of the wood by larvae.

#### Methods

Three 14-inch d.b.h. western larch at Trinity Valley were felled on 12 June 1967, and cut into 30 logs, each 4 feet long. Ten randomly selected logs for Treatment A were placed in the forest about 100 feet from the remaining 20.

*Treatment A.* On 12 June a 1% lindane emulsion<sup>2</sup> was applied with a hand sprayer to the point of runoff on all sides of each log in the group of 10.

*Treatment B.* On 14 August every second remaining log was removed 100 feet and sprayed with 1% lindane. The remaining 10 logs served as controls. By this time, numerous larvae had penetrated the wood.

In both treatments and in the control, individual logs were spaced 10 feet apart parallel to an east-west line.

Foot-long sections of the treated and control logs were peeled in mid-October 1967, and the numbers of

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<sup>2</sup> Lindane powder mixed with xylol and an emulsifier in water.