

# B

# ugs & Diseases



December 1999

*info note*

## **Budworm Management in Alberta**

In 1999, spruce budworm aerial spray operations were carried out of Mobil 11-28 airstrip in the Northwest Boreal Region (NWB), and out of Fort McMurray Airport in the Northeast Boreal Region (NEB). A biological insecticide, Thuricide 48LV® (B.t.k.) was applied once on 22,274 ha of affected stands, and twice on 48,050 ha. Mimic 240LV®, a chemical insecticide, was sprayed once on 12,932 ha of affected stands, only in the NWB Region.

A spruce budworm second-instar (L2) survey was completed this fall within the province. A total of 224 plots were surveyed to determine the effectiveness of the 1999 spray program as well as overwintering population levels. The results of this survey and the 1999 aerial defoliation survey will be used to determine the necessity for spraying in 2000.

### **L2 survey results**

The main objective of the spray program is to prevent tree mortality by reducing budworm populations to

endemic levels thus limiting defoliation in the following year to less than 35%. Low L2 counts, i.e. less than 188 budworm larvae per 10 m<sup>2</sup> of foliage, were found in 64 of the 72 sprayed plots. Of the plots sprayed twice with Thuricide, 42 out of 48 had low counts, while 13 of the 15 plots sprayed once with Thuricide had low L2 counts. Low L2 counts were found in all nine plots sprayed with Mimic. These results indicate that the spray program was successful in meeting the management objectives.

The L2 survey results indicate a decrease in budworm populations in many areas compared to 1998 levels. However, severe defoliation is still expected in the following areas in 2000: Steen River – Indian Cabins areas, Negus Creek, Chinchaga River, north of Zama City, south of Meander River, the west end of the Paddle Prairie Metis Settlement, Hawk Hills, Upper Wells and Algar Lake

### **Aerial defoliation survey results**

Within Alberta, an estimated 191,657 ha of budworm-defoliated white spruce stands were recorded in 1999. Of this area, 25,775 ha were moderately defoliated and 165,882 ha were severely defoliated. The defoliated

area recorded in 1999 increased by 50% compared to 1998. New areas of defoliation were recorded south of Basset Lake, along Dizzy Creek, and around Swan Lake in the NWB. In 1999, previously budworm-defoliated area expanded along the Peace River south of John D'or Prairie, along the Hay River from Lutose Creek to the Northwest Territories border and west of Paddle Prairie Metis Settlement to the Chinchaga River.▣

*Mike Maximchuk  
Northwest Boreal  
Sarah Schwartz  
Northeast Boreal*

## MPB in the Willmore

Successful mountain pine beetle attacks at pheromone bait locations in the Willmore decreased this year from last. In 1998, 39 trees at 13 sites had successful attacks; this year 29 trees at 11 sites had successful attacks.

Control action was taken on the 29 successfully attacked trees from November 8-10, 1999. Again this year, the program was a cooperative effort between Land & Forest Service (LFS), Weldwood of Canada Ltd., and Weyerhaeuser Canada Ltd.▣

*Erica Lee  
Northern East Slopes*

## MPB Remains Elusive in PBP

The fall aerial surveys of the Parkland, Bow, Prairie Region (PBP) showed no new MPB infestations along the foothills. Four pheromone-baited trees were attacked, however there is no evidence to indicate a large number of beetles migrated into southern Alberta last summer.

The two known infestations in Banff National Park however seem to be increasing. The beetle populations along the Brewster and Healy creeks have expanded from last year. LFS is working closely with park managers to study the overwinter mortality, and determine management options in these drainages for the years to come. Mountain pine beetle surveys of the Spray Lakes area and the Bow valley will be intensified in 2000.▣

*Dan Lux  
Parkland, Bow, Prairie*

## Biological Control Defeats Birch Leafminer in Edmonton

In Alberta, birch leafminers refer to three species of European sawflies that became established in the Edmonton area in the early 1970's. All three species cause blotch mines but have distinct age or attack zone preferences in birch leaves. Even though some native predator and parasitoid insects prey on these exotic sawflies, leafminer populations grew rapidly here in the absence of more effective natural enemies. By the late 1970's the ambermarked birch leafminer, *Profenusa thomsoni*, had become the dominant species in Edmonton, causing ornamental birches to brown off by late July. Damage by the birch leafminer, *Fenusa pusilla*, was secondary on ornamental trees in Edmonton, whereas the third species, the late birch leaf edgeminer, had always been locally scarce. By the mid 80's the ambermarked birch leafminer outbreak had become so rampant that dimethoate, used to protect ornamental birch trees, topped domestic insecticide sales in the Edmonton area.

The outbreak continued year after year until a study of the parasitoid enemies of the

ambermarked birch leafminer revealed a new enemy; an ichneumonid wasp called *Lathrolestes luteolator* was emerging from the leafminer's soil cocoons in the Edmonton area. Following its discovery in the early 90's, this wasp attack became so common that it caused a city-wide crash in the ambermarked birch leafminer population by 1995. This led the city to abandon its annual soil drench treatment of 3,600 birch trees the following year, and the trees have since looked great. ■

*Chris Saunders  
River Valley, Forestry & Environmental Services  
Edmonton Community Services*

## Armillaria Management Study Initiated

Armillaria root disease is the most damaging forest health agent in the PBP Region. The

fungus kills young and mature trees, causing substantial growth loss each year. A study to determine if one of the few management options - stump removal or stumping - is economically and environmentally feasible, has been initiated near Boggy Lake in the Bow Forest Area. Stumping is used in B.C. to manage *Armillaria*, however until now has never been used in a replicated trial in Alberta.

*Armillaria* uses stumps as a food source. After an area is logged, the fungus grows from the stump to the regenerating trees. By removing the stumps, we reduce the inoculum on site, thereby reducing the probability of infection of new trees.

The cutblock to be studied has been divided into 6 equally-sized (35m x 200m) blocks. Three of the blocks will be stumped and the other three will be left as controls. Over the next several years, we will be monitoring soil conditions, tree mortality, growth loss, incidence of other forest health agents, and economics of the treatment. The site will be examined every 5 years. For more information about the experimental design or the expected results, please call Dan Lux. ■

*Dan Lux  
Parkland, Bow, Prairie*

## Black Army Cutworm Populations Decline

Pheromone trap counts from the burned area in Virginia Hills indicate there will be little Black Army Cutworm defoliation next season. Thresholds developed in B.C. suggest that catches below 350 moths per trap predict low defoliation, between 350-1,200 moths per trap predict moderate defoliation, >1,200 moths per trap predict severe defoliation in the following

### **B**ugs & Diseases

Vol. 10 No. 3

*info note*

Published quarterly (Apr., Aug., Dec.)  
by the Forest Health Branch,  
Forest Protection Division,  
Land and Forest Service (LFS)  
Alberta Environment  
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Bugs & Diseases informs LFS, Industry  
and other forestry-related personnel  
about current forest health issues.

*Articles and ideas are welcome!  
Submission deadline is the 15th of the  
month before publication.*

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year. The highest individual trap catch in the Virginia Hills this year was 238 moths.▣

*Erica Lee  
Northern East Slopes*

## Watch Out for Aliens!

Free trade has become a mixed blessing. It has increased trade, but increased volume of imports has resulted in the introduction of exotic pest species that can seriously affect our forest resource. The most common source of exotic pest introduction appears to be wooden crates, wooden pallets and wooden dunnage used for packing. Pay attention to wooden packing material with which you come into contact, especially those with “worm-holes”. Be on the alert for these pests and report any suspicious sightings to the nearest forest protection person. This first article of a series on exotic pests describes one insect species - the pine shoot beetle - that may become a major forest pest in Alberta.

### Pine shoot beetle

The pine shoot beetle (PSB), *Tomicus pipipreda* (L.), first found in Ontario in 1992, is established in southern Ontario, Quebec and eight states in northeastern U.S. This pest can kill healthy as well as stressed native and ornamental pines. They attack trees of all ages except seedlings. The adult beetles tunnel 1-3 year old shoots, feed on the pith, killing the shoot. They also bore under the bark to construct galleries and lay eggs. The larval girdling kills the tree.

The typical symptoms are wilting, drooping, yellowing or fallen branches; pinhead-sized (2mm) adult exit holes on the main stem; galleries with eggs, larvae or pupae under the bark of stumps, slash, cut trees and stressed trees.

The adult beetles are 3-5 mm long, black or dark brown and cylindrical. They overwinter either under bark scales or in the soil. In the spring, they may fly several kilometres to feed and oviposit. They breed in freshly cut stumps, logs or slash; living trees also may be attacked. The 1mm-long eggs are found in galleries. The larvae feed on the cambium and girdle the trees. They pupate and emerge in June through pinhead-sized holes as adults.

Please note that there are other species of bark beetles that appear similar to the PSB. Only a specialist can positively identify the pest. If suspicious adult beetles are found in a pine, submit them for identification. They must be collected in vials containing rubbing alcohol, properly packed and sent to the Forest Health Branch.

Currently, there are no effective insecticidal treatments to control this pest.

For further details contact the Pacific Forestry Centre by phone at (250) 363-0600, or surf on-line at <http://www.pfc.cfs.nrcan.gc.ca>.▣

*Sunil Ranasinghe  
Forest Health Branch*

## Exotic Pest Regulatory Update

Good news, there is no evidence of Asian long-horned beetle in Canada at present. The Canadian Food Inspection Agency (CFIA) doubled the number of inspectors in Vancouver, Montreal, and Halifax from 15 to 30. CFIA has visually inspected wood packing materials in over 7,000 containers since January 1999. However, this is only 1% of all imports, and 7% of imports from China and Hong Kong.

Canada and the US implemented new regulatory requirements for non-manufactured

wood packing materials (NWPM) from China and Hong Kong to prevent the introduction of Asian long-horned beetle and other pests. All NWPM must be heat-treated. China then notified the US that they are implementing similar requirements for NWPM from the US to prevent the introduction of pine wood nematode. These requirements are likely to be applied to Canada in the near future. Canada is planning to implement NWPM treatment standards for all countries by October 2000. This means all NWPM used for Canada's exports outside of North America will require heat treatment.

Source: Presented by CFIA at the Pest Management Forum, November 1999. □

*Hideji Ono  
Forest Health Branch*

## Predicting Root Collar Weevil Damage in PBP

Some trees in young stands near Boggy Lake in the Bow Forest Area have experienced mortality caused by the root collar weevil. There is fear that the weevils will continue to damage young stands in these areas following future harvesting operations. The Canadian Forest Service has developed survey methodologies for the weevils, however the link between the number of weevils in mature forests and the damage in new stands has not been determined. In an effort to bridge this knowledge gap, a mature stand scheduled for harvest was surveyed and the number of weevils/ha determined. Next summer, permanent sample plots will be established in the cutblock and the amount of damage to the young stands will be monitored. If this type of study is replicated in several areas, eventually we will have a prediction tool for expected

damage. We can implement management options if the damage predicted is significant. □

*Dan Lux  
Parkland, Bow, Prairie*

## Aspen Defoliators Chew up the NWB

In 1999, aspen defoliation within the Northwest Boreal Region increased dramatically from the previous year. Forest tent caterpillar (*Malacosoma disstria*), large aspen tortrix, (*Choristoneura conflictana*) and Bruce spanworm (*Operophtera bruceata*) were the defoliating agents recorded. An estimated gross area of 1,359,757 ha of deciduous stands were defoliated within the region this year. Of this area, 584,260 ha were defoliated by the forest tent caterpillar around Peace River, Manning, Fairview, High Prairie and Grande Prairie. Together, the large aspen tortrix and the Bruce spanworm defoliated 775,497 ha. Large aspen tortrix defoliation occurred around Lesser Slave Lake, Valleyview, Grande Prairie, Fairview, Hotchkiss lookout tower, Fort Vermilion, Hay River and Zama City. Bruce spanworm defoliation was recorded near the Smoky lookout tower and on the east side of the Saddle Hills, north of Sexsmith. □

*Mike Maximchuk  
Northwest Boreal*

## Bruce Spanworm Monitoring along the East Slopes

This summer, a project to evaluate the aspen defoliator population in the PBP Region was initiated. Bruce spanworm caused severe defoliation throughout the region over the last

two years. Several oviposition traps were placed in five locations throughout the region. The traps were first developed by researchers from the Canadian Forest Service (Laurentian), and consist of a 10cm-sewer pipe placed in the ground with a foam band wrapped around the top end. A plastic cover is placed over the foam to protect the trap from rain and snow. The female Bruce spanworms climb up the plastic pipe as if it were an aspen tree trunk, then lay eggs in the small holes of the foam band. The bands are collected in late fall, and the number of eggs are counted. Next year, the defoliation in the monitored areas will be evaluated, and a relationship between the number of eggs and the severity of defoliation will be determined. Over several years, a powerful predictive tool should be developed.

## NES results

Bruce spanworm monitoring sites were also established north of Edson in the Yellowhead Forest Area (one on Deer Hill and two on Tom Hill). Each of the three monitoring sites consisted of five oviposition traps. The traps were collected in late November. The average egg counts for Tom Hill #1, Tom Hill #2 and Deer Hill were 8, 56, and 3,996 respectively.

## Further research

Chris Saunders, from the city of Edmonton, is examining the foam bands with spanworm eggs to study the number and species of egg parasitoids.

This information will likely provide us with valuable data regarding why the Bruce spanworm populations crash periodically. ▣

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## COMING UP NEXT ISSUE...

- ◆ 2000 project updates
- ◆ Exotic pest series continues