Bugs & Diseases

November 1997

info note

Much ado about budworm in NWB

Spruce budworm second instar (L2) surveys were completed this September within the Upper Hay and Mackenzie Districts, Northwest Boreal (NWB) Region. They were conducted to determine the effectiveness of the 1997 spray program and to determine the budworm population levels within previously sprayed and unsprayed areas of the districts.

Within the Upper Hay District, a total of 169 L2 plots were sampled. Most plots were accessed by rotary wing aircraft and all funds used for this sampling were provided by High Level Forest Products through the Forest Resource Improvement Program (FRIP).

Within the sprayed stands, 18 plots were located in areas sprayed with the biological insecticide Thuricide 48LV® (B.t.k.), and 6 plots were located in areas sprayed with the chemical insecticide Mimic 240LV®. These plots were located in areas that received either one or two applications of the product.

Low L2 counts, i.e. less than 188 budworm larvae per $10m^2$ of foliage, were found in 17 of the 18 plots sprayed with Thuricide and in all 6 plots sprayed with Mimic. Nil-light defoliation can be expected in these areas in 1998, thus meeting the spray program objective of reducing surviving budworm populations to endemic levels.

Results from previously sprayed areas indicate that most areas sprayed within the last three years continue to be protected from the damaging effects of the budworm. An exception to this is the West Sousa Creek - Chinchaga River area where some defoliation and high L2 counts were found this year. This area was sprayed in 1991 and 1995 but has shown budworm resurgence shortly after spraying.

Results from this year's unsprayed areas indicate an increase in budworm populations in the Steen River - Indian Cabins area and the John D'or Prairie Indian Reservation but a general decline in other areas.

Within the Mackenzie District, two plots were sampled in the Hawk Hills area along Highway #35 and three plots were sampled in the Paddle Prairie Metis Settlement. Results indicate that moderate to severe defoliation can be expected in the Paddle Prairie Metis Settlement and severe defoliation can be expected in the Hawk Hills area in 1998. ◘

Mike Maximchuk
NWB Forest Health Officer

Alberta
ENVIRONMENTAL PROTECTION

Spray products: B.t.k. or Mimic ?

As part of the 1997 budworm management program, Land and Forest Service (LFS) sprayed a chemical insecticide to determine its operational suitability in comparison to the traditional B.t.k. products used in past years. Mimic 240LV® was sprayed either in one or two applications at 2.0 litres per hectare per application, which was identical to that of B.t.k.

Like B.t.k., Mimic affects specifically lepidopteran (butterfly and moth) larvae and must be ingested to be effective. Spores and crystals of B.t.k., once ingested, break down the gut-lining of the budworm larva and poison the body cavity. However, Mimic differs in its mode of action. Mimic works as a molting hormone by disrupting the developmental process of the budworm larva. Once ingested, Mimic causes the larva to begin molting but, because of the nature of the chemical, the larva is unable to complete the molting process and dies of starvation.

Unlike B.t.k., Mimic cannot be sprayed within 30 metres of an open body of water. This limits where Mimic can be sprayed. Also, there is a significant difference in the persistence of the two products within the environment. Activity of B.t.k.is reduced by half in one to three days on tree foliage whereas Mimic can take up to 48 days.

In respect to its operational suitability, Mimic is an excellent product for spruce budworm control. Due to its long half-life, it may achieve spray program objectives with one application under good conditions. However, the cost of the application of Mimic is notably higher than the application procedure used with B.t.k, because of the additional costs associated with the dilution and mixing processes.

Therefore, although Mimic provided excellent budworm control, the associated costs of using this product may not make it suitable for all spray operations. ◘

Mike Maximchuk
NWB Forest Health Officer

Making predictions using budworm L2 in NEB

In the Northeast Boreal Region, LFS staff **along with** *Jeff Scammell* from Millar Western Industries Ltd., sampled spruce budworm L2 in 22 plots. The second instar L2 counts from these plots have been used to help predict budworm defoliation in 1998.

In the Waterways District, results indicate that three plots are expected to have severe defoliation. One plot in the Waterways District and three plots in the Athabasca District are expected to have moderate defoliation. The rest of the plots will have nil to light defoliation next year. ◘

Jennifer Lukianchuk
Forest Health Technical Assistant

Using pheromones to keep an eye out for pests

Spruce budworm

During the summer, a total of 258 spruce budworm (SBW) pheromone traps

(Multi-Pher 1®) were set up throughout the province in 129 plots. The results were as follows:

Region	No. plots set	Risk of 1998 budworm outbreak			
		Nil -Low	Mod.	High	Damaged
NWB	76	52	22	2	0
NEB	28	20	3	1	4
SES	10	10	0	0	0
NES	15	15	0	0	0

One of the two high risk sites in the Northwest Boreal Region was confirmed by the L2 survey. In the Northeast Boreal Region, the L2 survey results rated the one high risk pheromone site as only moderate risk.

SBW pheromone for 1998 will be purchased from the CFS at the Great Lakes Forestry Centre at a cost of $2.30 per lure.

Bugs & Diseases *info note*

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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.

A Multi-Pher 1® pheromone trap

Gypsy moth

Land and Forest Service staff once again set up 50 Delta traps across the province to monitor the presence/absence of gypsy moth. This was part of a multi-agency program coordinated by the Canadian Food Inspection Agency (formerly Agriculture Canada). As last season, there were no reports of gypsy moth.

Spruce beetle

Lindgren funnel traps baited with spruce beetle pheromone lures were placed at six sites within the MacKenzie District of the Northwest Boreal Region. Beetle presence was noted in five of these sites but population levels were fortunately endemic. Interestingly, checker beetles (a predator of spruce beetle) were found in most of these traps.

Mountain pine beetle

Mountain pine beetle pheromone baits were placed throughout the Southern East Slopes and Northern East Slopes Regions in June, 1997. Of

the 56 sites established, 4 sites in the Southern East Slopes and 10 sites in the Northern East Slopes Region had beetle attacks. The Foothills District will closely monitored the area in 1998, because 10 of the 17 plots that were located close to the BC border had up to 60 beetle hits. This year's annual aerial survey showed no mountain pine beetle infestations in the area. ◘

Jennifer Lukianchuk
Forest Health Technical Assistant

Forest tent caterpillar trapped with pheromones

A commercial formulation of forest tent caterpillar pheromone was field-tested this summer in the Northwest Boreal and Northeast Boreal Regions. The objectives of this study were:

- To test the efficacy of the pheromone as a tool to monitor forest tent caterpillar populations;
- To compare three types of traps for field use with this pheromone.

Most of the tent caterpillar populations in the province collapsed during 1997. Thus, the trap catches of forest tent caterpillar moths were relatively small.

The statistical analysis of trap catches showed that pheromone-baited traps caught significantly higher number of moths compared to the unbaited check traps. Out of the three types of traps, Delta® traps (Phero Tech Inc., B.C.) were more suitable to monitor low level forest tent caterpillar populations; Pherocon II® traps and Multi-Pher I® traps were not as efficient at low population levels. Delta traps are relatively cheaper compared to Multi-Pher I traps. However, the sticky surface of Delta traps is limited and may get saturated under high population levels. Multi-Pher I traps have a much larger capacity; and are also reusable, unlike the Delta traps.

This study was carried out in collaboration with *Mike Maximchuk* (FHO/ NWBR) and *Rob Stronach*, (FHO/NEBR). ◘

Sunil Ranasinghe
Forest Entomologist

Rob Stronach (FHO/NEBR) setting a Pherocon II ® trap for forest tent caterpillar

Insect leaf munchers monitored from above

NWB Aspen stands...

An aerial survey was conducted between June 17 - 26, 1997 to record the extent of aspen defoliator damage to aspen and poplar trees within the Northwest Boreal Region. This survey was completed by staff members of the Canadian Forest Service and Land and Forest Service. A small fixed wing aircraft was used for this survey.

A total of 28,518 hectares of forest tent caterpillar defoliation was recorded within the region this year. Of this area, 20,154 hectares had light defoliation, while 8364 hectares had moderate to severe defoliation. There was also 51,852 hectares of aspen leaf roller defoliation recorded in the region. Of this area 2829 hectares had light defoliation, while 49,023 hectares had moderate to severe defoliation. The total area defoliated by these two pests (80,370 hectares) was slightly lower in 1997 than that recorded in 1996.

NWB Spruce forests...

An aerial survey was completed within the region between July 8 - 11 to record the extent and severity of budworm defoliation in white spruce stands. This survey was completed in July when the reddish-brown appearance of the damaged trees enhanced the observer's ability to estimate defoliation.

In the Upper Hay District, an estimated 24,606 hectares of defoliated white spruce stands were recorded in 1997 in comparison to the 89,735 hectares recorded in 1996. Of this area, 1020 hectares of host stands were moderately defoliated (35% - 70%) and 23,586 hectares were severely defoliated (>70%). Most of the reduction in defoliation levels is due to the 1996 spray program as the majority of the sprayed areas (84,129 hectares) did not show visible signs of defoliation this year. There were a few areas within the district where the defoliated area increased from 1996 levels. These areas include West Sousa Creek, James Creek, Perry Creek and near the John D'or Prairie Indian Reservation.

In the Mackenzie District, the defoliated area was similar to that recorded in 1996. An estimated 8540 hectares of severely defoliated white spruce stands were recorded within the district in 1997. This included 5976 hectares in the Paddle Prairie Metis Settlement that was not sprayed in 1996. This area was previously included in the Upper Hay District calculations. Other areas of defoliation included an area of 2529 hectares within the Hawk Hills area along Highway #35, and 35 hectares on the north side of the Peace River, by the Dunvegan Historical Park. ◘

Mike Maximchuk
NWB Forest Health Officer

Aerial survy of budworm in NEB

Spruce forests...

Budworm-defoliated area in the Northeast Boreal Region (NEB) was aerially surveyed in July 1997, by the Forest Health Technicans of Canadian Forest Service (CFS) and LFS staff. Moderate to severe defoliation was observed along the Athabasca and House Rivers in this Region. The extent of the defoliated area is still being calculated.

Park forests...

The budworm outbreak in Wood Buffalo National Park increased considerably during 1997, according to the aerial surveys carried out by CFS. The extent of this defoliation is estimated to be 134,707 ha, mainly along the Peace River. Spruce budworm defoliation in Cypress Hills Provincial Park was light and was not surveyed in 1997. ◘

Sunil Ranasinghe
Forest Entomologist

Pest specialists meet at 1997 Management Forum

This year's Forest Pest Management Forum took place November 17-20, 1997, in Ottawa. Some noteworthy information presented by managers from other Canadian provinces includes the following:

Highlights of Quebec and Maritimes programs

Unexpected outbreaks of white marked tussock moth, in Nova Scotia, and of satin moth, in central Newfoundland, occured this summer. Likewise, balsam fir sawfly populations were on the rise.

No spruce budworm (SBW) problems in the maritime provinces this year, but perhaps some concern for 1998.

Planned spray operations for hemlock looper in Newfoundland and Quebec were cancelled because of population decline.

Activities in Manitoba

A successful spruce budworm spray operation using Mimic 240LV® took place this summer on 13,225 ha. Population reduction reached as high as 86%.

Dutch elm disease (DED) remains high in many river areas across the province. Sanitation and research teams within Winnipeg continue to be active in management of the disease.

Vancouver Island -- 'hot spot' for vacationing gypsy moth

The Canadian Food Inspection Agency reported the presence of gypsy moths and eggs in two areas on Vancouver Island. Appropriate course of action still needs to be determined.

Officials get excited over wood 'boring' insects

Numerous quarantine and potential quarantine pests were intercepted in wooden packing and crating materials. Plant Protection officials from Canada, the US and Mexico are working together to harmonize regulations in an attempt to prevent the spread of these pests into North America by this means. ◘

Hideji Ono
Forest Health Branch Manager

Guidebook helps improve FTCsurveys

The forest tent caterpillar (FTC) eggband survey guidelines have been compiled. These guidelines were field-tested recently in the Northeast Boreal Region at locations where tent caterpillar moths were caught in pheromone-baited traps during the summer. A two person crew could complete one plot within 30-45 minutes depending on the severity of the tent caterpillar infestation.

Anyone who wants a copy of this publication should contact me at (403) 422-8000 or e-mail your request to sranasin@env.gov.ab.ca. ◘

Sunil Ranasinghe
Forest Entomologist

Pull up a chair to view new LFS videos

The Forest Health Branch is planning to produce a series of videos on major forest pests and their management in Alberta. These

videos are aimed at educating LFS staff, forest industry personnel and the general public.

The first video in this series is on Armillaria root rot. It has already been produced and will be available for distribution soon. The second video, on lodgepole pine dwarf mistletoe, is currently in production. Plans are being made to produce a video on aerial spraying to manage spruce budworm infestations in Alberta. A comprehensive booklet on the subject will accompany each video.

Sunil Ranasinghe
Forest Entomologist

Scope of Branch changes

In previous years, restricted and noxious weed management was the responsibility of the Forest Management Division. Now the Forest Health Branch, previously known as the Insect and Disease Management Branch, has been given the mandate to manage weeds. This name change reflects a more proactive approach to managing the health of forests.

New officers in the Regions

Northeast Boreal Region now has a new Forest Health Officer (FHO): *Sarah Schwartz.* Sarah will play a dual role of FHO and Athabasca District Forester. For the Southern East Slopes Region, *Rick Stewart* has been temporarily designated as the FHO. The Northern East Slopes Regiois currently in the process of selecting an FHO.

Bugs on the Web

Forest Protection is revamping the internal and external websites. Forest Health will be included in the new design that should be out next spring. We will be using the sites to inform everyone about current forest health issues.

The external website for the public will include top forest pests in Alberta, current quarantined pests, forest health conditions, current publications, and links to related organizations.

The internal website, intended for Land and Forest Service staff, will also include forest health policies, procedural manuals, and program activity updates. We will let you know more details in the next issue.

Pictures say a thousand words...

Another project that will surface on the internal website is the Forest Protection image library. This library will contain digitized Forest Protection slides to be used by Land and Forest Service staff for presentations. This initiative is being coordinated by *Rick Strickland* and *Christine Kominek*. If you have interesting original forest health slides that you would like to contribute, contact *Jennifer Lukianchuk* (427-7046) and she will arrange to have them digitized with the collection.

Some Regions are also digitizing their own slide collections for their staff. To avoid copyright infringement, please do not digitize duplicate slides! If you have any questions

about forest health-related slides, contact *Christine Kominek* at 422-8802.

All the pictures in the Canadian Forest Service publication, "A field guide to forest insects and disease of the prairie provinces" by Y.Hiratsuka, D.W. Langor, and P.E. Crane, 1995, have been digitized and saved on CDs. Once we receive final copies, we will be distributing them to each Region for use in presentations. These pictures will not be available on the internal website. ◘

Forest Health jumps on board

A Forest Health component has been combined with the FIRES (Fire Information Resource Evaluation System) component to form a divisional computer information system. Regions and districts can now enter their pesticide analysis and supply contracts, spray projects, and pest surveys into a central database. This should enable field staff to get results quicker and more efficiently.

The Forest Health component should be in the Regions shortly. All forest health historical data will be entered over the next couple of months; staff can view this data with the new version. Formal training will be available some time in February or March. If you have any questions, contact *Christine Kominek* at 422-8802. ◘

Forest health sites on the Net

USDA site

The USDA Forest Service has provided a site that summarizes the status of forest insect and disease activity in the Intermountain Region (Idaho, Utah, Nevada, Wyoming and California). Our mountain districts share similar concerns.

http://162.79.41.7/r4/fhp/conditns/cond96_2.htm

Cornell University site

Cornell University in New York has a site with information and pictures about biological control agents (predators, parasitoids etc.) of pests.

http://www.nysaes.cornell.edu/ent/ ◘

COMING UP NEXT ISSUE...

- 1998 Forest Health projects
- Update on winter meetings