# Bugs & Diseases

April 2001

*info note*

## North American Forest Insect Work Conference

Alberta Sustainable Resource Development, the Canadian Forest Service (Northern Forestry Centre) and the University of Alberta are pleased to announce the 2001 North American Forest Insect Work Conference (NAFIWC). It is a great honour for Edmonton to be the host-city for an international entomological event of this stature. The conference will take place on May 14-18, at the Crowne Plaza-Chateau Lacombe Hotel.


The overall objective of the NAFIWC is to consider and discuss the current status and future needs of forest entomology education, research, forest health and forest pest management in North America. A series of plenary sessions, concurrent workshops, and a poster session will focus on changing local, regional, and global conditions and consider their implications on future directions of forest pest management within the context of sustainable forest management to mitigate and minimize adverse effects of global change.

For more information on registration, program details, field trips, social and companion events and more, visit the NAFIWC website at http://nofc.cfs.nrcan.gc.ca/nafiwc/.

## MPB Landscape Management Plan in the Works

In February, Alberta Sustainable Resource Development hosted the first Mountain Pine Beetle (MPB)/ Habitat landscape plan steering committee meeting. The steering committee is made up of professionals from LFS, NRS, Alberta Conservation Association and Banff National Park. The goal of the steering committee is to identify opportunities to reduce mountain pine beetle hazard across the region and to improve the habitat of bears, wolves, and elk (with aspen). The committee will also consider the visual quality and the impact on fire risk.

Eventually a 20-year plan will be developed, but for now we are focusing on three areas: the South Spray Lake, the Bow Valley, and the Red Deer River Valley. We chose these sites based on the current beetle hazard and their proximity to the current beetle infestations in Banff. ◘

*Dan Lux*
*Parkland, Bow, Prairie*

## Fire on the Mountain … Pine Beetle

It is unclear if fire-injured trees are more attractive to mountain pine beetle than uninjured trees during a population building period.

Beetle population dynamics play a role in host preference. Under endemic population conditions, stressed or weakened trees are preferentially attacked (Amman and Schmitz 1988, Amman 1978). However, during building or outbreaking populations it is unclear if beetles prefer stressed trees (including trees damaged by fire) to healthy trees. Safranyik (1998) suggests, in general, pioneer beetles randomly attack trees and host stress factors do not direct tree selection. Similarly, other research indicates that beetles do not preferentially attack fire-injured trees (Amman and Ryan 1991, Blackman 1931, and Hopkins 1905). Other evidence however, indicates that fire-injured trees may be more attractive to beetles, although these results are less statistically convincing (Amman and Ryan 1994).

If Alberta Sustainable Resource Development and Banff National Park are to use prescribed burning as a landscape level tool for reducing beetle hazard, the effect fire weakened trees have on a growing beetle population should be understood. If trees damaged by fire are more attractive to beetles, existing populations may concentrate around the perimeter of the burn – where fire stressed/damaged trees are located. Beetle concentrations in one area may increase insect success. Converging beetles will be mass attacking stressed trees resulting in an increase in the success of the attacks and the brood survival.

This summer I hope to study the relationship between beetles and fire. I have proposed a study in co-operation with the University of Calgary (Dr. Mary Reid and Che Elkin) and Banff National Park. We are in the early stages of the proposal, but hopefully we can begin the experiment this summer. ◘

*Dan Lux*
*Parkland, Bow, Prairie*

## Spruce Budworm Management Program

Based on the results of last season's aerial defoliation and L2 surveys, there is no spray program planned for this year in the Upper Hay Forest Area of the Northwest Boreal Region. Although there are some areas expected to have severe and moderate defoliation in 2001, these areas have only sustained two or three years of consecutive defoliation and will be extensively surveyed this year. ◘

*Mike Maximchuk*
*Northwest Boreal*

## Does Ungulate Browsing Damage Trees?

Several seedlings in the Parkland, Bow, Prairie Region suffer physical damage from ungulate browsing each spring and summer. Some cutblocks are replanted several times to

compensate for the damaged trees. Trees that are browsed, but survive, often appear forked. We are uncertain if a tree that is browsed once will out-grow the damaged leader and become a healthy tree. Similarly, will a tree that has been browsed several years in a row survive and retain an acceptable form?

**Browsed lodgepole pine**


**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.*




## Objective

Determine the impact of browsing on pine with regards to tree form and growth at 5, 10 and 20 years. This will help set guidelines for acceptability of browsed-trees in regeneration standards and will help companies determine impact of browsing on the future wood supply and aid in the creation of damage/treatment thresholds.

## Methods

A fence 180m x 180m and 2.44m (8 feet) high will be constructed to keep ungulates from accessing planted pine seedlings. A paired-plot design replicated three to four times within a block will be used. Each plot will be 300 $m^2$ in size and will be planted at the rate of 1800 stems/ha, i.e. approx. 50 trees/plot. We will simulate browsing on the fenced-in seedlings by clipping the terminal bud after one year, two consecutive years, and three consecutive years. For the multiple year trials, the dominant lateral will be clipped after the first year. If no branch displays dominance after one year, the trees will be left for another year until dominance is established.

## Timeline

We will construct the fence this summer in a cutblock west of Rocky Mountain House. The trees will be planted this June and the first clipping will occur shortly after planting. We should have some results in 5 years.

We do want to replicate this trial in other locations. If you are interested please contact Dan Lux. ◘

*Dan Lux*
*Parkland, Bow, Prairie*

# NEB Integrated Pest Management

As demands on forest resources in the Northeast Boreal (NEB) Region increase, there is a need to protect these resources from damaging agents and to adopt a more proactive approach for dealing with forest insect and disease issues. Alberta Sustainable Resource Development's forest health program in the NEB Region is committed to developing and implementing a program that integrates forest health management into the region's overall forest management activities. Integral to this objective is the need to develop partnerships with various stakeholders within the region to identify regional (and forest area) forest health management needs and to develop effective, co-operative strategies for dealing with them. As well, the roles and responsibilities of the region's forest users and managers regarding forest health issues should be clearly defined in order to best utilize available resources.

In January the first meeting of the Northeast Boreal Integrated Pest Management Working Group was held at the Wandering River Ranger Station. The meeting was well attended by industry and LFS representatives from throughout the region. All in attendance agreed that forest health management should be integrated to a greater degree into overall forest management practices. This group will be a valuable tool not only for increasing the flow of information between stakeholders, but also for setting regional priorities with regard to insect and disease management. The working group's next meeting, scheduled for late spring, will establish priorities and goals for this year. Hopefully, joint industry–government initiatives such as this working group will help to provide the direction needed to protect the NEB region's forest resources to meet future needs. ◘

*Tom Hutchison*
*Northeast Boreal*

# Getting the Most out of Bruce Spanworm Ovitraps

The collection of over-wintering stages of any native insect defoliator presents a great opportunity to capture information on some of its most important parasitoid enemies. For this reason, extension of a Bruce spanworm egg survey initiated in 1999 by LFS holds promise for some interesting added value.

## History

Bruce spanworm (*Operophtera bruceata*) is a geometrid moth with population cycles that manifest in rather unique outbreaks in the central foothills region. To explain such outbreaks, let us look at what we know. In Edmonton we've observed the parasitoid enemies of a similar geometrid hardwood defoliator, the fall cankerworm (*Alsophila pometaria)*, which over-winters in the egg stage. Undoubtedly the key element of this system's enemy complex is the well-studied egg parasitoid *Teleonomus alsophilae*.

Studies in Edmonton between 1990 and 1998 showed 40-80% of fall cankerworm eggs are killed by *T. alsophilae* annually. We have come to expect ecto- and endoparasitoids most heavily attack fall cankerworm larvae during the over-wintering stage. This is probably due to this stage of the host being a relatively static target, both physically and temporally speaking.

In addition to this, over-wintering hosts provide protection for developing endoparasitoids from the elements and from attack by hyperparasitoids that appear to concentrate on the free-living developmental stages of these natural enemies.

### Current Findings

Following egg count estimates by Forest Health Officers Erica Mueller and Dan Lux, the 1999 Bruce spanworm ovitraps were inspected for parasitoids. It was observed that small female scelionid wasps (similar to *T. alsophilae*) had died among the Bruce spanworm eggs inside the foam material of the ovitraps. The ovitraps were then stored in plastic ziplock bags in an outdoor Stevenson screen in Edmonton from November 1999 until the following June when they were scored for egg hatching. Implosion of the eggs suggests desiccation may well have been a factor in very low egg hatching rates of the thousands of eggs in the ovitraps. Only a total of 35 caterpillars and 77 wasps emerged successfully. Dr. Georges Pelletier of Quebec's Laurentian Forestry Centre identified the Bruce spanworm egg parasitoid as *Telenomus coloradensis*.

Exploring the dynamics of *T. coloradensis*, particularly the availability of an alternate host to Bruce spanworm in the Alberta foothills region could provide some useful insight into localized outbreaks of the defoliator.

### Predictions for 2001

Greatly reduced egg numbers on last fall's spanworm ovitraps indicate a strong downturn in the defoliator's numbers in the Alberta foothills. Low numbers of entrapped spanworm eggs are again being maintained (under improved over-wintering conditions) to gain further information on Bruce spanworm egg parasitism. ◘

*Chris Saunders*
*Edmonton Community Services*

## MPB in the Willmore

The cut and burn control program to control the mountain pine beetle in the Northern East Slopes Region is typically carried out in the fall of each year. Last year, cutting and burning of the 14 beetle-hit trees was postponed until spring of this year. This will allow a beetle mortality survey to be conducted on the beetle-hit trees to determine if beetle larvae and adults can survive the harsh winter climate in the Willmore Wilderness Park. The survey will be carried out in conjunction with the spring aerial survey. ◘

*Erica Mueller*
*Northern East Slopes*

## NWB Forest Health Workshop

The Northwest Boreal Regional Integrated Pest Management working group is organizing a forest health workshop for regional industry and government staff for the upcoming season. The workshop is planned for May 4 and will be held in Peace River. The goal of the workshop is to improve knowledge of important forest insect and disease pests for the purpose of identification and management. Guest speakers from the Canadian Forest Service will be the main presenters. ◘

*Mike Maximchuk*
*Northwest Boreal*

## SBW Final Figures

Reported in the last issue (December 2000) were preliminary estimates of spruce budworm (SBW) defoliation in the Northwest Boreal Region. The final figures for spruce budworm defoliation in 2000 are as follows:

Upper Hay Forest Area – 72,984 ha
Mackenzie Forest Area – 10,127 ha ◘

*Mike Maximchuk*
*Northwest Boreal*

## Budworm Haiku

Foliage feeder
Winter's slumber almost done
Juicy buds await ◘

*Tom Hutchison*
*Northeast Boreal*


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**Beautiful Jackpot Creek in the heart of 'budworm country' in the NWB.**

## COMING UP NEXT ISSUE...

- Preliminary survey results
- MPB update
- Armillaria root rot limerick