

# Bugs & Diseases

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## Aerial Overview Survey Workshop of Other Forest Health Damaging Agents

Usually, the Forest Health Section of Alberta Sustainable Resource Development (SRD) carries out aerial overview surveys of damage caused by major conifer and aspen defoliators, and the mountain pine beetle. In view of anticipated changes in forests and forest pests due to impending global climate change, recently the Forest Health Section decided to expand these traditional forest health surveys to include other forest health damaging agents. Such damaging agents would include biotic agents such as other bark beetles and major disease centres, and abiotic damaging agents such as drought, hail, and windstorms. The objective is to maintain a long-term record of these damaging agents to relate those to changes that may occur in forests and pests related to climate change in Alberta.

A workshop on how to conduct these aerial overview surveys of other forest health damaging agents is scheduled to be held in June, 2011 in

Rocky Mountain House. This workshop will compose of a classroom session and an aerial survey session. The classroom session will cover details on how to recognize, monitor and assess these damaging agents from the air. The aerial survey session will provide an opportunity to learn how to put knowledge gained in the classroom lessons into practice. At the end of the training program, the trainees will be evaluated on their newly acquired skills.

Due to the limited number of seats available in the aircraft available for these flights, this workshop will be limited to SRD staff members who are involved in aerial surveys of forest pests. If you are a member of the aerial survey team interested in attending this workshop, please contact Sunil Ranasinghe at [sunil.ranasinghe@gov.ab.ca](mailto:sunil.ranasinghe@gov.ab.ca).

*Sunil Ranasinghe - Edmonton*

*Alberta's  
eye on forest  
health*

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## Forest Health Aerial Overview Surveys

**D**o you ever wonder what your area forest health officer is doing up in that small fixed wing plane from mid-June into early August? Well, let me tell you! It all links back to the SRD Business Plan 2010-2013:

**Goal 5 – Alberta’s forests remain healthy and productive, and sustain healthy ecosystems**

**Strategy 5.2 - Implement pre-emptive strategies in Alberta’s forests to maintain their health and manage infestations of disease, invasive plants and insect pests, such as the mountain pine beetle.**

How does forest health fit into this? The forest health section is mandated to manage infestations of disease and forest pests. We want to ensure that there is a benefit received from the province’s forests by managing forests effectively and protecting their health.

One of the guiding documents used to undertake this task is the “Forest Health Aerial Survey Manual”. Aerial overview surveys are an efficient way to monitor for new or existing forest health agents. “What is an aerial overview survey” you might ask? The survey consists of a visual assessment made from the air to record the location, extent and severity of damage caused by forest pests. This information is used by forest managers across the province to aid in forest management planning and decision making.

Aerial surveys are defined by two classes:

- 1) Overview aerial surveys – where large areas are covered typically in a fixed wing aircraft at low altitudes to monitor areas of pest infestation. The location, extent and severity of damage is recorded and in some cases identifying the agent itself.
- 2) Detailed aerial surveys – are done over the areas identified with known disturbances, typically in helicopters at low altitudes. Specific management actions and control measures will be planned from the information collected. (e.g. MPB aerial surveys).

Reasons behind all this low level flying include:

- 1) Capturing pest presence, extent, severity;
- 2) Comparison to historical information on forest health damaging agents;
- 3) Monitoring trends in forest pests;
- 4) Collecting information for use in forest management planning and decision making.

Depending on the damaging agents being assessed, survey timing will vary. For example if bark beetles are being targeted (i.e. MPB), aerial surveys will take place mid-August into early September. If defoliators are being assessed, surveys will take place mid-July for spruce budworm and early to mid-June for aspen defoliators (forest tent caterpillar, large aspen tortrix, Bruce spanworm).

The resulting data are then submitted to our team of skilled GIS agents where trends can be monitored, plans devised and statistics calculated. The information then becomes available for forest managers to make informed planning decisions about forest pests.

## Red Belt in Kananaskis County

Warm Chinook winds are a welcome relief to most of us during the otherwise arduous winter but lodgepole pine and other coniferous tree species tend to disagree. The sharp rise in air temperature created by the warm winds while the ground is still frozen is the suspected cause of large scale foliage discolouration referred to as red belt. Red belt was reported and described from the Clearwater Area in Bugs & Diseases in 2008 so this article will be brief.

Red belt is a specific type of winter desiccation created by a combination of climatic conditions. The name refers to the band of red trees created by an inversion effect where warm air sits on cold air at the valley bottom. The warm, desiccating air dries the trees but cold air below keeps ground frozen so that the trees can not draw water causing the needles to turn red and die. The effect is strongest on the upper part of

the crown and the side of the tree exposed to the southerly winds. The tree typically recovers with some reduction in growth and mortality rates are low if the buds are not damaged. Within a year or two the red needles will drop and the trees will green-up.

This year red belt is being observed throughout the eastern slopes of southern Alberta. It is especially evident in the high-profile area of the Kananaskis valley across from the Nakiska ski hill. Other notable patches include the southern face of Goat Mountain across the highway from Blairmore in the Crowsnest Pass and in the West Castle valley. The severity is patchy and actual injury to trees should be minimal. However, with mountain pine beetle on the mind of most mountain recreationalists, there should be a flood of phone calls asking if the temperature fluctuations are actually helping the beetles!



*Brad Jones / Bart McAnally / Troy Johanson - Calgary*

# Forest Health Staff—Hard @ Work



# Forest Health Staff—Hard @ Work



## Spruce Budworm Survey Results

Until Mountain Pine Beetle came to the fore, Spruce Budworm (SBW) was considered the most destructive conifer insect pest in Alberta. For many years SBW caterpillars have been feeding voraciously on the needles of trees over much of the north eastern part of the province. White spruce is the preferred host tree species for SBW in northern Alberta. Trees of this species, in some areas, have been severely affected by many years of severe defoliation. The cumulative effects of this feeding have negatively impacted many spruce stands. Repeated SBW caused defoliation has resulted in: visible decline; branch and top die-back; and, in some areas, mortality in the mature spruce stands. Over an even greater extent, understory spruce and fir have been devastated.

Sustainable Resource Development (SRD) conducts surveys to monitor SBW populations and population trends. Going into the 2010 season, survey information was indicating that severe defoliation could be expected over much of SRD's Waterways and Lac La Biche area (particularly in Waterways). By June, this was confirmed with on the ground observations. Many white spruce had huge amounts of silk webbing in their canopies, and defoliation evident over 100% of their live crowns. Understory trees were almost completely defoliated. As well, black spruce (not a preferred host tree species) were being attacked – all of the preceding are indicators of severely high SBW populations. Overview flight surveys (conducted in July) showed that the severity and extent of SBW caused defoliation had increased dramatically from the previous year's observations. In August, pheromone monitoring trap counts also indicated that SBW populations were very high. Some traps contained greater than 6000 moths (which is three times our threshold value for indicating a high risk of outbreak populations occurring). All of these survey results, coupled with evident damage to spruce forests over a wide area, compelled SRD Forest Health Staff to consider a spray control program. Toward this end, a business case was proposed in order to secure funding for such a

program. Input for this case was gathered from industrial and government stakeholders. In December, the SBW epidemic in the NE was declared a "Provincial Emergency" and funding for a spray program was approved.

Although previous survey results pointed toward continued epidemic population levels a more accurate prediction of SBW populations, to be expected in 2011, was needed. Predictive surveys (typically egg mass or second larval (L2) surveys) not only would help to confirm the need for a spray program, but also would help to identify priority areas to treat. Some egg mass surveys had been conducted in November using samples from 11 sites in the Waterways Area. The results of these, rather surprisingly, showed that low SBW populations could be expected in 2011. In January, it was decided there was a need to conduct a more extensive L2 survey – these are a more reliable predictive survey than are egg mass surveys. Branch samples were collected from 78 sites scattered over a very large portion of the Waterways and Lac La Biche Area. These were then sent to a laboratory in Ontario to be processed. An average number of L2s/10m<sup>2</sup> of foliage was generated to predict SBW population levels for 2011 at each site. Of the 78 sites, 84% predicted that populations would be moderate to low in 2011. In fact 49 sites (63%) had results indicating low-moderate to low populations.

Based on the results of the L2 and egg mass surveys a decision was made not to go ahead with a large-scale spray program. A more limited program is still being considered, for some reclamation areas close to Fort McMurray and around the Hangingstone recreation area. It appears that for the first time in many years, there will be less SBW caused defoliation in 2011. Hopefully, the predictions are correct and Spruce Stands throughout the Waterways and Lac La Biche area will get a chance to recover.

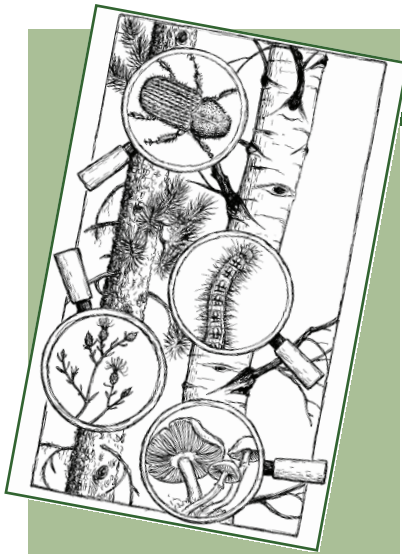
*Tom Hutchison —Athabasca*

## L2s at Minus 33

There are strange things done in the midwinter sun,  
By the folks out looking for pests.  
Through snowy gales and drifted in trails,  
They get out to comb our forests.  
Now in northern climes, this can lead to strange times.  
One of the strangest I did see,  
T'was, when a tad coldish, a crew from La Biche,  
Sought L2s at minus 33.

Now minus 33 is quite cold, you see,  
Especially when the wind gusts and blows.  
So, how they still left from home, to go out and roam,  
With their poles – God only knows.  
But the timelines were tight, to do the job right.  
So I am grateful they went out that day.  
To gather some branches, and increase our chances,  
To forecast the pops come this May.

That cold winters day, they were pruning away,  
Working to get the job done,  
Talk of the cold, through the outerwear's fold,  
I don't think it was very fun.  
The cutting head froze, wouldn't open or close,  
And the poles chilled their hands to the bone.  
Still they pushed on their best, hardly taking a rest,  
Lest they'd freeze up a hard as a stone.



## L2s at Minus 33

When they got back that night, to their homes snug and tight,  
And away from the cold and the snow,  
With bellies well fed, I'm sure at least one then said,  
"I don't want to do that again, you know!"  
Now these northern climes, can lead to strange times.  
But I don't think again I will see,  
A crew going out, and tramping about,  
For L2s at minus 33.

*Tom Hutchison—Athabasca*

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