



Bugs & Diseases

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August 2008

*Alberta's
eye on forest
health*

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It “hasta be a Shasta” ...Or does it?

When you think of a daisy, what do you picture? A big flower head with dazzling whiteness, broad rays and a smooth stem? These are just some of the characteristics that Luther Burbank was looking for in 1884, when he began his 17-year journey to create the “perfect” daisy.

Burbank’s quadruple hybrid is well known as the Shasta daisy, but what is less well known is where the Shasta came from...a plant that is considered a noxious weed in Alberta: *Chrysanthemum leucanthemum* better known as ox-eye daisy.

Burbank originally wanted to improve on the look of the ox-eye daisy. He saw it as “something waiting to be made more beautiful.” As a first step to improvement, he dusted the ox-eye with *C. maxi-*

mum, but disliked the flower and petal colours this created. He then crossed the hybrid with *C. lacustre*. Even after 6

“... to underestimate the weedy nature of the Shasta would be naive.”

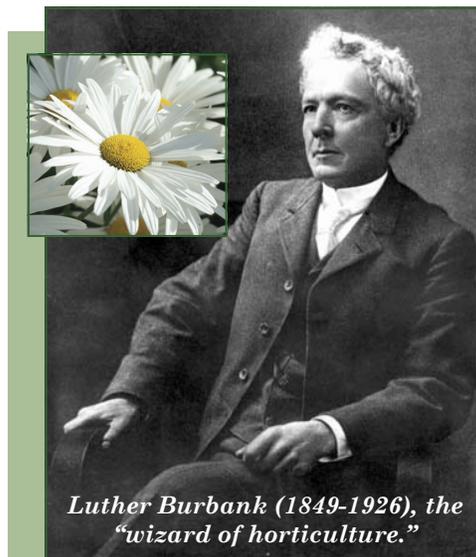
years of breeding, he was still convinced that the flower lacked the “glistening whiteness” that he had sought for so long. To this mix he then added *C. nipponicum*, a

Japanese daisy that finally provided him with the end result he desired.

Few consider the Shasta daisy to be a threat, but to underestimate the weedy nature of the Shasta would be naive. Since the Shasta is sterile, it never seeds itself; this means that the plant seeds can “revert to type.” To retain its original character, the Shasta has to be propagated vegetatively. If the Shasta is pollinated by another daisy, let’s say ox-eye, some of the seed produced by the new plant will produce ox-eye daisies. Even the purest of Shastas have the potential to introduce weeds into a site.

So even though the Shasta has a rich history and can be considered a model of selective breeding, it goes to show that you can’t escape your genes. And that maybe the Shasta deserves a little push onto Alberta’s noxious weed list.

Natalie Butler



Luther Burbank (1849-1926), the “wizard of horticulture.”

MPB decision support system enhanced

Due to the number of mountain pine beetle (MPB) infested trees in Alberta and the large geographic area these trees are spread over, Sustainable Resource Development is using a decision support system (DSS). This system helps determine where and how many resources to allocate to fight infestations in specific parts of the province.



The DSS was developed in co-operation with Drs Terry Shore, Les Safranyik, and Allan Carroll of the Canadian Forest Service.

Four main factors are considered in the DSS to determine if specific mountain pine beetle sites require survey and treatment. These factors are:

1. Location
2. Number of infested trees
3. Susceptibility of the trees
4. Connectivity to other suitable host trees

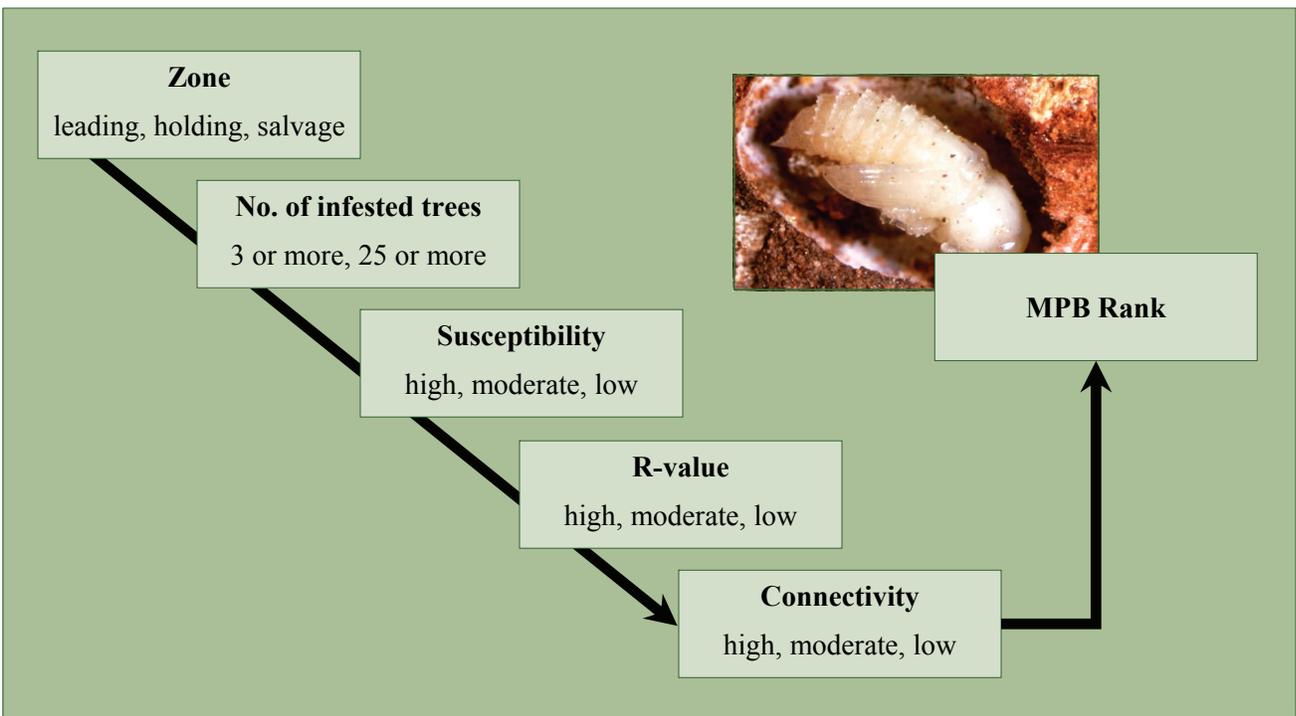
An additional step will be added to the DSS for the 2008 Beetle Year to account for the possibility of

additional in-flights of MPB from British Columbia. Previously, only red/fading tree counts were used to estimate the number of green-attacked trees at sites. Now, the new DSS will also take into account green trees that may indicate an in-flight.

Surveys will collect green:red ratio data throughout the province. This ratio will be used to determine the number of green or current-attacked trees at sites. If the number of green-attacked trees is higher than what should have been produced by the previous infestations (red/fading trees), it can be determined that an in-flight has occurred. This information will flow through the DSS and be included in the final ranking of sites.

Sites are analyzed and assigned a MPB rank of extreme, high, moderate, low, and very low. In the leading edge zone, all of the extreme, high and moderate ranked sites are surveyed and treated. In the holding zone, 100 per cent of the extreme and high ranked sites are surveyed and treated. Lower ranked sites are surveyed and treated if resources are available and time allows.

Erica Lee



Do you know what causes this damage?



Killed terminal bud of white spruce.

The spruce bud midge (*Rhabdophaga swainei*) is a common boreal forest insect that is rarely seen, but its whereabouts and damage are easy to spot if you know what you're looking for.

The adults are small, reddish brown flies that emerge from spruce buds in late spring. Adult females lay eggs near the tips of the newly developing spruce shoots, usually one per shoot. Larvae feed at the tips of the new shoots throughout the summer and are nearly fully developed by late fall. They overwinter as late instar larvae, and pupate in the bud the following spring. The adults emerge shortly after completing the one year life-cycle.

The spruce bud midge attacks white and black spruce within Alberta. Killed terminal buds often result in multiple leaders, bushy growth forms and minimal height loss.

Mike Maximchuk



Spruce bud midge larvae.

2008 - The year of the caterpillar

This year has proved to be a very good year for caterpillars in northeastern Alberta. In June one could be forgiven for thinking winter had come early to many areas. Forest tent caterpillars had stripped bare vast areas of aspen.

Preliminary results from our aerial overview flights indicate that in the Waterways and Lac La Biche Area, approximately 1.5 million hectares were defoliated this season. This is up from just under one million hectares in 2007.

In addition to the forest tent caterpillar, substantial areas were affected by other defoliators. In southern portions of the Waterways and Lac La Biche Area, Bruce spanworm and large aspen tortrix were quite active. Spruce budworm also appears to have flourished in 2008 (especially in the Waterways area).

Severe defoliation of the spruce is clearly evident along most of the drainages flowing into the Athabasca River, and along much of the Athabasca River itself. Within, and around, the City of Ft. McMurray many of the spruce and fir were severely defoliated this year.

“...approximately 1.5 million hectares were defoliated this season.”

All in all, it would appear that 2008 was, indeed, a very good year for caterpillars in the northeast.

Tom Hutchison



Forest tent caterpillar blues... help is around the corner

This summer there were forest tent caterpillars galore in Fort McMurray. Unfortunately these caterpillars and moths can become nuisance pests. Last year in Ft. McMurray these caterpillars were everywhere – in basements, in garages and crossing the highways, thus becoming a traffic hazard.

Usually, when their numbers increase these critters are more prone to a viral infection that can do them in. In the meantime, researchers at the State University of New York at Cortland have found that disruption of the trail-based communication system of

the forest tent caterpillar caused disintegration of young forest tent caterpillar colonies. These researchers sprayed a mimic of the caterpillar trail pheromone on tree stems either just before or soon after caterpillar hatch. About 80 per cent of tent caterpillar colonies on treated trees either vanished or disintegrated into fragments. However, it may be a few years before this product becomes commercially available for homeowner use.

Sunil Ranasinghe

Red belt tightens around the Clearwater Area

The Clearwater Area's lodgepole pines are beginning to show red – and not from the mountain pine beetle.

Closer to the mountains, where Chinook winds are common, it is not unlikely to see a band or pocket of red trees known as red belt.

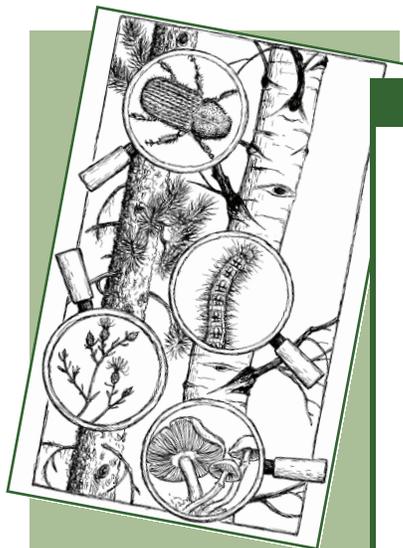
This climate-related phenomenon results when Chinook winds cause trees to feel a sudden increase in temperature. In more severe cases, it can cause the trees to lose their winter preparedness and essentially wake-up. As the trees begin to photosynthesize, they attempt to replace the moisture that is lost. If the ground water is frozen and not available, the needles begin to dry out and die, creating a very distinctive red appearance.

Red Belt can either stunt the growth of the tree or, in more severe cases, cause mortality.

Trisha Stubbings



Red belt along the foothills of Alberta's Rocky Mountains in 2008.



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Shelter belt confidential

I know, that soon I'm gonna break.
The wind that makes me shake,
Will snap me off one day.

And you think, I still look pretty good.
But deep in my heartwood,
There's a larva, a pupa, spores and some
hyphae.

I'm just a shelter, a shelter belt aspen.
Open grown shelter, shelter belt aspen.

Resin flows, streaming down my sides.
Inside me now resides,
Things that cause me to decay.

I will fall, long before my time.
I should be in my prime,
But these intruders, the way they gnaw and
bore they eat my core away!

I'm just a shelter, a shelter belt aspen.
Poor exposed shelter, shelter belt aspen.

Tom Hutchison