

Bugs & Diseases

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Forest Health Section Offers Training Courses

Forest Health 100, a course designed to help SRD and forest industry staff with an interest in SRD's Forest Health Program, was again offered on July 6-8 at the Hinton Training Centre (HTC). It was well attended by SRD as well as forest industry personnel.

This three-day course was split equally between classroom and field portions. Four senior forest health staff members (Brooks Horne, Tom Hutchison, Sunil Ranasinghe and Mike Undershultz) served as course instructors. In keeping up with current trends in Forest Health, a section on "Climate Change and its Impact on Forest Health" was added to the course curriculum this year.

Highlights of this course included "Name that Act" by Mike Undershultz who made the section on forest health acts and regulations an interesting one; "Bug Poems" by Tom Hutchison, whose lively presentations related to pest diagnostics and diseases were interspersed by poems

that illustrated his poetry skills while entertaining the attendees, and "Classroom Exercises Based on Real World Scenarios" by Brooks Horne, who capped the gist of this course by showing how to integrate Forest Health skills into day-to-day Forest Management.

Highlights of the field portion were visits to a root disease centre in Jasper National Park on day 2 and an area with spectacular hail damage on day 3 that culminated with another "Bug Poem" by Tom.

The HTC provided course binders, classroom facilities, transport and accommodation to attendees. The course was coordinated by Dean Yakimchuk, a Training Specialist at the HTC.

Forest Health Section is planning to offer the course again. Watch for a "call for FH 100 candidates" from the HTC! We would love to see all those bug enthusiasts with an interest in forest health at the next session.

Sunil Ranasinghe - Edmonton

Young Stand Forest Pests

In June, Forest Health Section offered a course on "Young Stand Forest Pests in Alberta." This course was open to those with an interest in forest pests of young stands. It was attended by Sustainable Resource Development personnel with the Forest Health Section and Alberta Tree and Seed Improvement Centre as well as by forest industry personnel with an interest in young stand pests.



Alberta's eye on forest health

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Young Stand Forest Pests (continued)

Drs. Herb Cerezke and Sunil Ranasinghe were the course instructors. Herb covered sections on beetle and weevil damage, diseases and potential impact of climate change on young stand pests. Sunil dealt with sections on defoliators, sucking insects, gall makers, animal damage and abiotic damaging agents.

The first day of this two-day course was a classroom session where biotic and abiotic damaging agents of young conifer and broadleaf tree spe-

cies were covered. The presentations were supplemented by a collection of specimens that illustrated various types of pest damage to young forest stands. The second day was devoted to a field session where the trainees had a “hands on” experience with major stem and root diseases; weevil damage to shoot terminals and root collars in conifers; and abiotic damaging agents.

Sunil Ranasinghe - Edmonton

Forest Health 100 course
field trip near Jasper—7th July 2010



Photo—Brett Spady 2010

Adventures with a Police Car Moth Caterpillar

Given the fact that Kris and myself are both in Forestry, and that Kris is a Forest Health Officer, it is not unusual for our kids to take a lot of interest in the various insects they find. Our son came inside a few weeks ago with a hairy and black caterpillar with yellow and blue markings and asked if we could watch it turn into a moth. I dug out a glass jar, poked a few holes in the lid and the kids got a kick out of watching the caterpillar crawl around. Kris identified it as a police car moth caterpillar (*Gnophaela vermiculata*). The next day we commented that perhaps we should find some food for our new 'pet' moth. The kids tried leaves of all different sorts from shrubs in our backyard but were quite disappointed that the caterpillar refused all of our offerings. That night Kris came home with a handful of *Mertensia*, or bluebells, and we were amazed at the amount of foliage that tiny caterpillar consumed in the next few hours. Well, at least I was amazed; the kids were more interested in the amount of poop the little guy put out.

The caterpillar continued to ravenously eat its way through every leaf in the jar, leaving behind only the stalks. It doubled in size in about two days, I was just thinking perhaps we should restock his supply when our son noticed the caterpillar wasn't in his usual hangout on the side of the jar, it was up on the underside of the lid. The kids concluded the caterpillar must be tired of the jar and was trying to escape through one of the holes. Later that day we noticed a very fine white web had formed around the caterpillar, it was beginning to pupate. A few days later we were packing up to leave on a two-week vacation, our first stop was going to be in Coeur d'Alene, Idaho. At the last minute I looked at the jar on the counter and figured we better take it, since the kids were really looking forward to watching this caterpillar turn into a moth and I had no idea how long it would remain in the pupal stage.

The jar travelled with us in the front seat of the truck in a basket with other odds and ends. I didn't think about the jar at all on our two day journey to the Canada-US border until we got to the US customs gate. I pointed my finger at the jar just moments before we were to pull up to the guard and we decided to just quietly leave it there. After being thoroughly interrogated about the contents of our trailer and having most of our fresh fruit and vegetables confis-

cated, we were permitted access into the United States, our secret rogue caterpillar stowed away.

We carefully peeked inside the jar once or twice to see how things were progressing, so as not to disturb the silk around the pupa. It looked sort of shrivelled up to me; I was sure it would be dead from being left in the truck in the 27°C heat. Five days later the jar came with us back into Canada, whew - it was a good thing we didn't get caught transporting an insect across the border - twice! The jar remained in the truck, forgotten for another week as we camped in BC for the remainder of our holiday.

On the drive back to Rocky Mountain House my son asked how our caterpillar was doing. I picked up the jar and told him I didn't think it was still alive, it had been over two weeks since it had gone into the pupal stage, we couldn't see how it would have survived being left in an overheated vehicle. My son was heartbroken, we had killed his pet caterpillar and now we would never see it turn into a moth. I tried to comfort him with the hope that we could find another caterpillar and start again, but he was pretty upset. The jar came back into our house, we put it back on the counter in the same spot it had been before it came along on our holiday. I figured I'd clean it out the next day.

The next morning the kids were once again lamenting the loss of their caterpillar and went to look at the jar. I heard "Mom, mom, come quick" and inside the jar was a fairly large black and white moth. I was quite impressed at the toughness of the little insect and the kids were thrilled that Mom had been wrong. We took the moth out to our backyard and released it. I was a bit concerned that we may have provided an easy snack for the swallows that are nesting in our yard, but our resident Forest Health Officer assured me that they produce defensive chemicals that make it bad-tasting, so it was likely safe.

It was a fun experience for myself and the kids, as an adult you sometimes forget about the magic in the transformation of a caterpillar to a moth. As an added bonus we now know a lot about the black and white police car moth.

Becky Heemeryck - Rocky Mountain House

MPB Replanting Program Now in Effect

Tree Canada is working with government and industry to help Alberta's communities that have been affected by the mountain pine beetle (MPB). The Alberta Mountain Pine Beetle ReLeaf program is organized by Tree Canada in collaboration with sponsors, including Sustainable Resource Development (SRD), TELUS and Strive Energy.

Tree Canada has similar programs in other parts of Canada where donors help replant affected landscapes. The province-wide program was launched in Grande Prairie. Minister of SRD, Mel Knight, handed out the first Alberta MPB ReLeaf coupon in a tree planting ceremony on June 14, 2010.

"This program is a way to put the trees back on the land at a highly reduced cost to the individual and our communities," said Minister Knight. "The importance of having trees in a community - for wild-life as habitat, as air purifiers or simply as nice things to look at - cannot be overstated."

Tree Canada offers three programs to help replant MPB - affected areas of Alberta:

1. Homeowners can apply for a MPB ReLeaf coupon for \$80 that can be redeemed at any greenhouse that is associated with Landscape Alberta Nursery Trades Association (LANTA) for the purchase of a tree. See a list of LANTA greenhouses in your area at: <http://www.landscape-alberta.com/membership/membership-directory>

2. Landowners and acreage owners can apply for up to \$3,000 worth of seedlings to replace multiple trees lost in shelterbelts and around homes. Tree Canada may have a local SRD Forest Health Officer (FHO) visit the site to confirm MPB.

3. Municipalities can submit an application to Tree Canada for replacement trees on municipal land up to a maximum of \$5,000. Tree Canada may have a local SRD FHO visit the site to confirm MPB.

Information collected in Tree Canada's application form will ask applicants to provide proof that their trees have been affected by MPB.

PROGRAM	Can apply for:
Residential homeowner with single tree	\$80 coupons
Landowner or acreage owner with multiple trees	Up to \$3,000 for seedlings
Municipality	Up to \$5,000 for seedlings

Please visit [Tree Canada's website](#) to apply for this program. Application deadline is December 31, 2010.

Donations for the Alberta MPB ReLeaf program are accepted on Tree Canada's website.

Residents, landowners and communities in the following list of municipalities are eligible to apply to Tree Canada for the MPB ReLeaf program: municipality of Crowsnest Pass, Town of Canmore, Hamlet of Harvie Heights, the counties of Birch Hills, Clear Hills, Grande Prairie, Northern Sunrise, Saddle Hills, Woodlands, and the MD's of Big Lakes, Fairview, Greenview, Lesser Slave, Northern Lights, Peace, Smoky River, and Spirit River.

For more information on identifying the MPB please visit [Alberta's MPB website](#).

Brett Spady—Edmonton

Yellowhead Invasive Plant Initiative 2010 Update

The area east of Hinton came alive with activities in July 2010. A recognizable greenhouse scent (likely 24D!), garbage bags lining water bodies and the sound of two stroke engines running indicated someone was at work! Yellowhead County and Sustainable Resource Development (SRD) joined forces once again this year to promote invasive plant awareness and do our part to control weeds through the Yellowhead Invasive Plants Initiative (YIPI). The YIPI area encompasses approximately 3.2 townships and borders Jasper National Park, which acts as an anchor point. This area was chosen due to prevailing winds and lack of seed but, more importantly, because of its unique montane ecosystem.

The Brule area consists mainly of small grazing leases, quiet country style homes, numerous parks and protected areas and many recreational sites, including the sand dunes. Other major stakeholders included Hinton Wood Products, CN Rail, Grazing Associations, Alberta Transportation and Infrastructure and Alberta Tourism, Parks and Recreation.

YIPI kicked off the season by inviting the public and stakeholders to an open house, taking the opportunity to increase awareness about invasive plants and to discuss various control techniques. Great questions and concerns were

brought up as well as many commitments for the upcoming season.

A local grazing lease holder offered YIPI the use of his land to develop a demonstration plot with easy public access. Dow AgroSciences donated the signage and herbicides which included Restore, Grazon and other common chemicals. This test plot will allow members of the public, mainly grazing lease/disposition holders to see for themselves the various results of the herbicide applications.

In 2009, 2,500 pounds of invasive plants were hand-pulled in the area in three days. This year, members of the public and staff were invited to join YIPI for a "Pull a Weed Day." With the help of Junior Forest Rangers, SRD and Yellowhead County staff, over 1,000 pounds of invasive plants were pulled near water bodies in a single day. With the help of the SRD Mountain Pine Beetle Crew, Forest Health achieved eight full days of invasive plant control in the YIPI area. Invasive plants in public and historical access points, random campsites, and recreational sites were either sprayed or mowed.

This initiative could not have been possible without the combined efforts and common invasive plant management goals of SRD and Yellowhead County. This year was proven to be a success and we look forward to next season!

Caroline Charbonneau - Hinton



Severe Spruce Budworm Populations over much of the Waterways and Lac La Biche Area

Surveys conducted by SRD in 2009 indicate this year may see severe spruce budworm (SBW) infestation in the Waterways and Lac La Biche area. Initially, SBW aerial overview surveys, conducted by SRD in 2009, indicated that the severity and extent of defoliation caused by this insect had decreased in the Waterways and Lac La Biche Area. Given that this followed several successive years of increasing budworm activity, there was some optimism that the worst was over and perhaps the current outbreak in northeast Alberta was declining. However, this optimism was short-lived as the results of other surveys conducted by SRD later on in 2009 indicated otherwise.

Within the Waterways and Lac La Biche Area, SRD conducts an annual budworm moth monitoring program using traps baited with moth attractants (pheromones). There are 50 pheromone trap sites scattered over a large portion of the Area to capture male moths during their flight period (usually mid-June to late August). There are 28 of these sites located in the Lac La Biche program area, and 22 in the Waterways program area. After the traps are collected, the moths are counted and a risk rating is assigned based on the number of moths. This rating indicates the risk of SBW outbreaks occurring in the next season in the area around the pheromone site location. According to the 2009 pheromone plot data, the risk of SBW outbreak populations was high at 41 of the area's 50 sites. This was especially true in the northern locations (Waterways), where all but one site indicated a high risk for 2010.

In addition to pheromone monitoring, SRD conducted budworm egg mass surveys in the late fall of 2009 to help determine expected SBW populations in 2010. Egg mass surveys are predictive tools. Interpretations of egg mass densities are used to forecast budworm populations and estimate defoliation expected in the following year. Branch samples were collected from 12 locations (all in Waterways), for this purpose. At 11 of these locations the forecast for SBW defoliation in 2010 was severe (the other site's forecast was high).

So far, it appears that the pheromone plot and egg mass survey data were providing pretty good indications of budworm activity this year. Overview flights conducted July 21 to July 23 showed that severe defoliation has occurred over most of the Waterways and the northern portion of the Lac La Biche program areas. On the ground, the defoliation is extreme in many places. Around Ft. McMurray, severe defoliation is everywhere. Some trees have so much budworm webbing in their crowns it appears as if silk cloth is draped over them. Black Spruce trees (not a preferred species for SBW to infest) have been heavily defoliated in many areas. Many understory trees have little to no foliage left on them. All of these things are symptomatic of very high budworm populations. In short, 2010 may prove to be one of the worst years of SBW infestation in north-eastern Alberta. It will be interesting to see what the survey data from this year predicts on the level of SBW populations in 2011.

Tom Hutchison - Athabasca



Willow Leafminer Populations Explode in NE Alberta

This summer a lot of people are more than a little concerned about the health of willows in north-eastern Alberta. Many have observed that the foliage on a lot of willows, over a huge area, has turned brown. In fact, if you live in northeast Alberta and haven't noticed this, you probably haven't been outside for a while. A lot of people have been asking "what's killing all the willows?" The response to this, in most cases, is "don't worry; most of the willows will be all right."

This year appears to be a banner one for what is typically considered a minor insect pest – the Willow leafminer (*Micrurapteryx salicifoliella*). This is a small moth species (the adult moth has a wingspan of approximately 8mm) that is native to and has a widespread distribution in Alberta. The damage to willow foliage that is so noticeable this year is caused by the larvae of this moth feeding (mining) inside the leaves.

The browning foliage resulting from damage caused by this insect does give the appearance that severely infested willows are dead. However, this is not the case in most instances. Like most broadleaf species, willows can survive periodic events causing quite a lot of damage to their leaves. Usually, it takes several consecutive years

of severe infestation by willow leafminers before willows are noticeably impacted. Of course, the growth rate and general health of infested willows will decline in years with high populations of the moth. If leaf damage is coupled with other factors (such as drought conditions or other insect pests) some dieback of branches or even willow mortality can occur. But death is rarely the result of infestation by willow leafminer alone.

Willow leafminer activity has been noticeable in many areas in northeast Alberta for several years now, but in 2010 its population appears to have increased dramatically. Browning willows are clearly evident over a vast expanse. Reports suggest that severe infestations are occurring throughout all of northern Alberta, not just the northeast. It boggles the mind to imagine just how many of these small insects it must have taken to cause such extensive impacts over such a large area. Spectacular as this event is, keep in mind that this pest's damage does not usually cause permanent injury to the willows it infests. If population levels remain as high as they are this summer for several consecutive years, then concerns may become more justified. For now, however, despite the current unsightly appearance of many willows in northern Alberta – don't worry, most of them will be all right.



Tom Hutchison - Athabasca

Keeping an Eye on Aspen

Trembling aspen is the most widespread tree species in North America. The species' successful establishment of much of Canada is in part due to this species' ability to reproduce by seed and by sprouting from roots to form clones. Although it is a relatively short-lived tree, studies have shown that well-established clones could be among the oldest living organisms on earth.

Not only are aspen clones old, they can also be huge. The largest and oldest known aspen clone is nicknamed "Pando", and is located in the Wasatch Mountains of southern Utah. It spans 43 hectares (110 acres), and its 47,000 stems and root system is estimated to weigh 14 million pounds. Pando has been dated at 80,000 years. Alberta is also thought to be the home of some very old and large clones but an exhaustive search to locate a record breaker has yet to be undertaken.



In the recent past, aspen has caught the eye of scientists interested in the regional-scale decline and dieback that has been witnessed over parts of its range. In 2000, Ted Hogg of the Canadian Forest Service set out to determine, in part, the most important factors affecting aboveground mortality, dieback and growth of aspen in the west-central Canadian interior. The study is titled CIPHA (Climate Impacts on the Productivity and Health of Aspen). Over the past 10

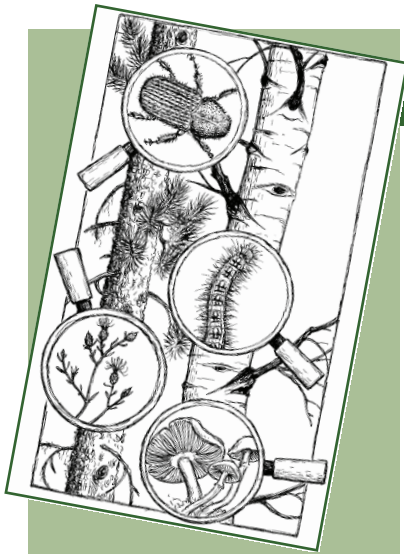
years of monitoring the 30 study sites (nine located in Alberta), much has been learned about the relationship between climate, pests and the fate of the aspen.

To date, Hogg's team has concluded that mortality and dieback are best correlated with drought severity. Considering that CIPHA and other studies have shown aspen forests to be moisture-limited, climate change predictions are very relevant in estimating the future range of this species.

Starting this summer, SRD's forest health section has collaborated with the Canadian Forest Service by undertaking the ongoing monitoring of most of the CIPHA sites in Alberta. This project aligns with the forest health section's recent focus to better understand the complex relationship between climate, tree health and pest dynamics. The second step of this collaboration, which is currently getting underway, is to monitor another widespread but more economically important species - white spruce. Spruce makes up a significant portion of Alberta's annual allowable cut. For this reason we are interested in determining how future climate scenarios may impact productivity and distribution of this species.

Personally, contributing to the CIPHA project has already been very rewarding. In the past, aspen has been over-shadowed by large-scale insect epidemics of conifer forests and ignored by many as if it was an annoying little brother. Not any more. I now find myself getting excited about the pycnidia of a *Cytospora* canker or finding the elusive *Peniophora polygonia* decay fungus. Chicks dig that stuff, don't they?

Mike Undershultz - Edmonton



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Happy Aspen

Happy Aspen, Happy Aspen,
Happy Aspen everywhere.

Happy Aspen, Happy Aspen,
Glad their limbs aren't bare.

Happy Aspen, Happy Aspen,
Not with leaves defoliated.

Happy Aspen, Happy Aspen,
Caterpillars decimated.

Happy Aspen, Happy aspen,
A verdant, leafy sea.

Happy Aspen, Happy Aspen,
All green and trembly.

Happy Aspen, Happy Aspen,
Happy right now, here, today.

Happy Aspen, Happy Aspen,
Changing climate, stay away.

Tom Hutchison—Athabasca