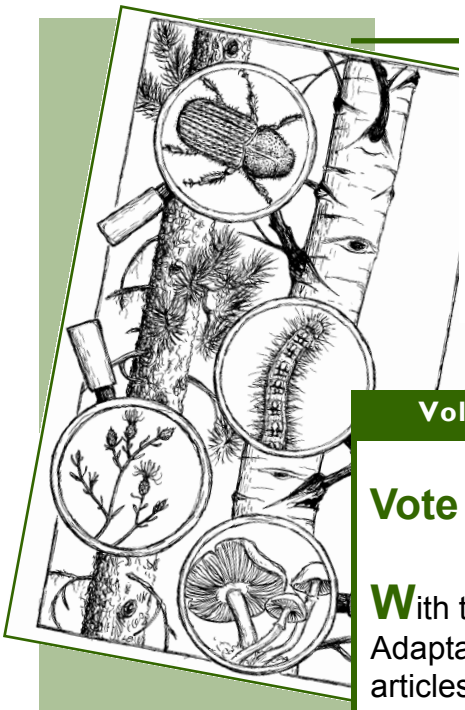


Bugs & Diseases

Vol. 25 No. 3 December 2014

Alberta's eye on forest health

Issue highlights:

Vote for Your Choice to Name This Newsletter

With the expansion of the Forest Health Section into the Forest Health and Adaptation Section and the expansion of Bugs and Disease to include articles regarding climate change, seed science, genetics, conservation and other topics, it is a good time to change the name of the newsletter. Readers were asked to submit suggestions for new names which would be voted on in subsequent issues.

Here are the names that were submitted:

What's THE BUZZ…about forest health?

Bugs, Disease and Seed

Better Trees vs Bugs and Disease

EcoUpdates

Tree Technology

Cast your vote by following the link to the Doodle poll. You can only vote for one option and the poll is confidential so only I can see who voted.

http://doodle.com/auvtcwzvaeeghig8

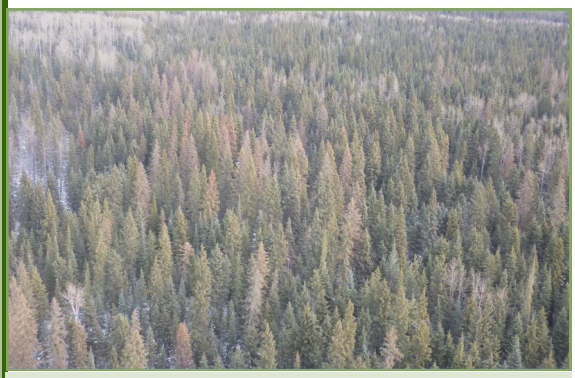
The new name will be revealed in the next Issue of…you decide.

Erica Samis— Edmonton

Alberta Government

Spruce Beetle near Rocky Mountain House

This year while doing our annual forest health surveys we mapped 650 ha of mature spruce with spruce beetle, *Dendroctonus ruffipennis* (Kirby), infestations from 5 to 40 percent. Most of these stands are at the bottom of large drainages mainly in the Nordegg, Wawa, and Baptiste rivers. From the condition of the trees it appears that the beetles have been in these stands attacking large diameter, healthy trees for approximately five years.



Mature spruce stand with spruce beetle.

Generally spruce beetles are not abundant enough to attack healthy trees but are found in most stands in small populations. These beetles typically have a two year life cycle. They overwinter as larvae their first year and their second winter as adults. They must overwinter as an adult before they can reproduce. Having to overwinter multiple years increases their exposure to adverse weather conditions and predation which can substantially reduce their numbers. These small populations are usually only able to attack and kill trees weakened by abiotic disturbances such as wind throw, fire, flooding or road and harvesting operations, or biotic agents such as spruce budworm or a root disease.

Many documented spruce beetle outbreaks in the past were known to have started and built up in large abiotic disturbances and then moved into adjacent mature, healthy stands. An infestation in the Yukon in the 1940's of 50 000 ha was thought to have been started by log decking during the building of a road. More recently another outbreak in the Yukon from early 1990s to 2007 of 380 000 ha is thought to have been initiated by drought and an increase in temperature. Not only were the trees stressed due to dry, warm conditions, the higher temperatures sped up beetle development in mid-1990s and 2004. During these years the beetles developed into adults in their first summer so that they were able to only have a one year life cycle which rapidly increased their population.

Spruce beetle adult.

In the Rocky Mountain House area there were two significant abiotic events in the past six years that could have contributed to the increase in spruce beetle populations. There was a substantial blowdown event in 2009 to the south of the infested stands and at around the same time there was extensive damage caused by hail to the north of the infested stands. I am unsure if either one or both of these abiotic events have contributed to our current spruce bark beetle population and will be looking into it this summer.

Spruce beetle pitch tubes with boring dust at base of tree.

Pam Melnick—Red Deer/North Saskatchewan

Gypsy Moth Detected in NE Alberta

According to an old aphorism, "The road to hell is paved with good intentions." This may be applicable to the case of the French amateur entomologist E. Leopold Trouvelot and his 'well intentioned' attempt to identify moths with potential to create a viable silk industry in the United States (US). After bringing some moth egg masses from France, Trouvelot was raising the larvae in the woods behind his house. Unfortunately, some of the moths he was rearing escaped into nearby forests and over time became established in the wild. This is how *Lymantria dispar*, commonly known as the Gypsy Moth, was introduced into North America.

Gypsy moth in sticky trap.

It is now known that sub-species of Gypsy Moth do exist - European and Asian. The European sub-species (the one introduced by Trouvelot) has persisted and spread in North America for more than 100 years. It is considered naturalized in parts of eastern US and Canada and is now often referred to as 'North American.' Since its accidental release, this moth has (according to the US Forest Service) become one of North America's most devastating forest pests. The larvae feed on a wide variety of deciduous tree species and the Asian sub-species will even attack some types of conifers. Both types of Gypsy Moth have been detected in Canada, although, the North American race has been much more prevalent and widespread. Asian Gypsy Moths are often detected on ships and cargo originating from the Far East (China, Japan, Russia, etc.), but are not yet known to be established in North America. The Asian sub-species, however, could potentially pose more of a threat (should it become established) as the females of the Asian sub-species are capable of active flight, whereas females of the NA sub-species cannot actively fly . The spread of North American Gypsy moths is facilitated by vehicles or materials, on which females have laid sticky egg masses, going from Infested areas to other places around the country.

Bi-pinnate antennae of Gypsy moth.

The Canadian Food Inspection Agency (CFIA), working with other partners, conducts a nation-wide monitoring for Gypsy Moth. Annually, pheromone traps are set out to detect the presence of male Gypsy Moths. For many years ESRD has been assisting the CFIA by setting out and collecting these traps in the Green Area of the Alberta. In the fall of 2014, one of the traps set out by ESRD staff in the Lower Athabasca Region (LAR) contained what appeared to be a Gypsy moth. Subsequent DNA analysis conducted by the CFIA confirmed that it was indeed a Gypsy Moth – of the North American variety. The site where the moth was captured was near Ft. McMurray.

Gypsy Moth is not yet established in Alberta, or anywhere in Western Canada for that matter. However, its presence has been detected in the province previously. In fact, in 9 of the last 15 years at least one moth has been positively identified somewhere in Alberta. So far, more intensive follow-up surveys (delimitation) after each of these instances indicated that the moth had not become established. The find near Ft. McMurray is unique in that it was in the

Province's Green Area and much farther north than any other positive Gypsy Moth detection. It was quite an unexpected find for northeastern Alberta. Hopefully, the delimitation surveys (which will be conducted over the next couple of years) will show this instance is an isolated event as well.

This situation does illustrate the need to continue being vigilant and mindful about the introduction of exotic forest pests to Alberta and that the various programs in place to monitor for them are indeed necessary. According to the US Forest Service, suppression costs alone for Gypsy moth in the Northeastern US in 2013 were almost three million dollars. Places like Ft. McMurray are hubs that bring in materials and vehicles from many areas that can harbour damaging agents, like the Gypsy Moth, which may pose serious (and costly) threats to our forested lands. Continued efforts to keep Western Canada free of *Lymantria dispar* need to be done, so that Trouvelot's legacy will not be 'here to stay' in NE Alberta.

Tom Hutchison—Edmonton

The Shifting Tides of FH&A Personnel

Over the past few months there have been a number of personnel changes in the Forest Health and Adaptation program. We are happy to welcome some new folks to the team!

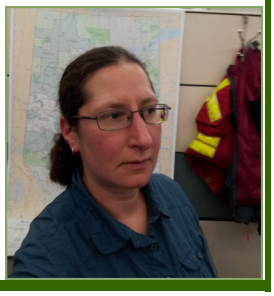
Arvind Cheniveerappan

Arvind was hired November 17th as the Horticulture Technician at the Alberta Tree Improvement & Seed Centre (ATISC) in Smoky Lake. Arvind's primary role will be the Team Lead as a grower for our Plant Propagation Program. Arvind comes to ATISC with 15 years of experience and knowledge in the horticulture industry. He has worked as a grower in India, Ethiopia, and the USA and has recently moved from Spaniards Bay, Newfoundland where he was working as a Production Manager at a local garden centre.

Sima Mpofu

Sima was hired as the Forest Genetics and Tree Improvement Business Specialist. Her primary role is related to advancing Alberta's tree improvement model. Prior to joining us Sima instructed at Olds College in the School of Animal Science and Horticulture, and with Agriculture and Agri-food Canada as a Canadian Research Fellow investigating Fusarium on flax.

Jodie Krakowski



Jodie is the new Forest Genetics Specialist. Her role is related to gene conservation as well as tree improvement and adaptation. Jodie comes to us from the BC Ministry of Forests, Lands and Natural Resource Operations where she worked as a tenure specialist. She has also worked as a consultant and at UBC on various genetic conservation projects. Outside of work, Jodie is an avid outdoor enthusiast, and being relatively new to AB she is eager to find out about your secret spots.

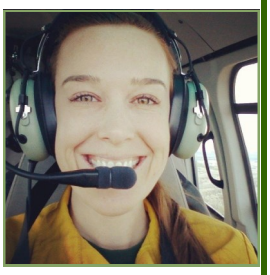
Tom Hutchison

Tom is the new Senior Forest Health Officer in charge of strategic planning and inter-agency collaborations. Although, with Tom's extensive knowledge of forest insect and disease management he will likely be helping out in a number of other ways. Tom comes to us from Athabasca where he was the Lower Athabasca Region Forest Health Officer for the past 14 years. Tom still resides on a small farm just outside of Athabasca, and will be splitting his office time between there and Edmonton. Rest assured, Tom's new role will not interfere with the composition of future forest health poetry masterpieces.

Allison Brown

Allison was hired as the Forest Health Technician in Whitecourt in early November, and is now currently knee deep in the world of mountain pine beetle contract management. She studied at the University of New Brunswick, and holds an Undergraduate Degree in Forestry and a Master's Degree in Environmental Engineering. Prior to joining ESRD, she has worked for J.D. Irving Ltd. as a Silviculture Supervisor, as well as for Agriculture Canada as an Agroclimate Data Analyst Assistant. Outside of work, Allison enjoys playing soccer, travelling, skating, and plans on taking advantage of Whitecourt's numerous outdoor rinks this winter.

Crystal Ionson



On January 5th Crystal started as the Forest Health Technician in Slave Lake. She started in Slave Lake as a seasonal worker in Forest Health in 2006. She graduated from Sir Sandford Fleming College with a Forestry Technician Diploma as well as Arboriculture. After her graduation she became a full time employee and spent her time working on the mountain pine beetle and invasive plant program. Crystal left the Forest Health Program in 2010 when she took the role of a Forest Officer in Slave Lake. Crystal enjoys kayaking, hiking, camping and crocheting. She has assisted the Slave Lake Youth Council in creating a program to educate youth on invasive plants and how to control them. She has also assisted in the organization of the Slave Lake Annual Clean Up, for the past 5 years.

Brad Jones

Brad, who has served as the Forest Health Officer in Calgary since 2008, is now taking on a Resource Manager role for the Bow District in the South Saskatchewan Region until March 2017. Brad will continue to oversee the regional forest health and adaptation program in his new role and contribute to Forest Health as part of the provincial management team. We wish him luck with the new challenges that lie ahead. Congratulations Brad!

Mike Undershultz—Edmonton

A Leader in Forest Genetics Retires

Leonard Barnhardt will be stepping down in a few months after a long and varied career of 33 years with ESRD, starting back in 1973 and ending with 25 years at the Alberta Tree Improvement and Seed Centre (ATISC) at Smoky Lake where he has been the manager for the last 14 years. I met with him recently to ask him about his years with ESRD and what his future holds.

Donna: *Tell me how your career with forestry first began?*

Leonard: In March of 1973 I spoke to Jay Sumner, a fire detection technician at Footner Lake, and in April that year I was heading to Hinton for fire lookout training. My first posting was at Foggy Mountain tower, a fly-in site, which was perfect for my "angry young man" phase of life. I worked as a tower man from 1973 to 1978 in various Footner locations which included finishing construction on and being the first tower person stationed at Petitot Tower. Winters were spent doing everything from working in the radio room at Footner, being a carpenter's helper, and working as brushing foreman on the Rainbow Lake fireguard. In 1977 I took the summer off as a tower man for contract work west of Caroline where I met my future wife, Shirley. I spent my last summer as a tower man in 1978 at Bassett Tower, reflecting that this job was probably not the best career choice if I wanted a family.

Angry, young Leonard.

Donna: *So things had to change?*

Leonard: Pretty much. In 1978 I started my undergrad in forestry at U of A, got married in 1980, and Shirley and I had our first child, Ashley, in 1983. I juggled school, work, being a house husband, a move to Valleyview, and taking correspondence courses through Athabasca University to finally get my degree in 1986. That same year I started working for Dr. Bela Sivak with the Alberta Forest Service, Research Branch out of Spruce Grove doing ecological site classification work with Daryl Gilday and Grant Klappstein. We tented and trailered our way from Waterton Lakes National Park to Rocky Mountain House, digging pits, measuring trees and identifying plants all along the way. The data we collected were used as a foundation for development of the Field Guide to Ecosites of Southwestern Alberta. When the Research Branch was dissolved I started log yard scaling for Millar Western in Whitecourt until I got a call from Dr. Narinder Dhir who was looking for someone with an ecology and site classification background to work on breeding region development. Narinder hired me in the spring of 1989 as a wage Tree Improvement forester in Edmonton until I switched places with Jan Schilf who was working out of Smoky Lake. In 1994 I got my Masters in forest genetics and became a tree breeder until I assumed the manager's position at ATISC in 2000.

Leonard, Ashley center, with Grant Klappstein and family.

Donna: *Was doing site classification where you developed your insanely intimate geological and ecological knowledge of every nook and cranny in Alberta?*

Leonard: (laughs) I worked on field and office assignments related to the development of the most recent revision of Natural Regions and Subregions, so that helped too. I have some great memories from this period of doing rotary wing recon flights with Harry Archibald to ground check Natural Subregion boundaries.

Donna: *What are some of your career accomplishments you'd like to highlight?*

Leonard: Well, these are by no means accomplishments by me alone but being part of the team that developed the Natural Regions and Subregions is one. The development and implementation of a seed zonation system and Forest Genetic Resource Management and Conservation Standards are two more. Related to conservation and sustained use of tree gene resources, there was joint work with Provincial Parks on development and implementation of the Gene Conservation Plan for Native Trees of Alberta, sitting on the Alberta Forest Genetic Resources Council and the National Conservation of Forest Genetics Resources steering committee and participation on the provincial recovery team for whitebark and limber pines. Also very gratifying was collaborative work on climate change modeling and genetic adaptation for native trees beginning in the early 90s with participation on the Climate Change Research Users Group, Team Taking Action on Climate Change and most recently, on the Tree Species Adaptation Risk Management Project, a cooperative project with forest companies funded through the Climate Change and Emissions Management Corporation.

Leonard among whitebark pine mortality.

Donna: *Anything else?*

Leonard: Although my management achievements are fewer, I think I have successfully introduced principles of genecology to ATISC functions that will significantly improve our potential to achieve sustainable use of forest genetic resources on public land and ultimately maintain forest health and improve productivity in the future.

Donna: *Genecology...in English please.*

Leonard: Genecology is the study of the relationship of genetic variation within a species and environmental variation. We need to understand generally how genetic resources are allocated within and between individuals of a species, among populations of the species and how genetic processes, the environment and mating systems have shaped this on the landscape in order to do effective tree breeding, adapted deployment in reforestation and reclamation work, conservation work and policy development. I believe the existing cooperative tree Improvement structure that includes companies and improving academic collaboration, ATISC is currently better placed to advance effective tree breeding and sustainable forest genetic resource management on public land than ever before. The current extension of this work to include trees and shrubs in reclamation work is evidence of this. I would go so far as to say that the program with the skills of its current staff and collaborators is placed to achieve greater national and even international recognition for advanced strategic thinking and policy implementation in the area of sustainable forest genetic resource management. This makes it much easier to leave.

Donna: *Hmmm, yes, much clearer now. Nerdy scientist or program manager?*

Leonard: A bit of both and neither. I have co-authored some published papers from which I have derived great personal satisfaction. I think the real opportunity I was given as ATISC manager was permission to be " adequate" in the administrative role and given license to focus more effort on applying my genetics background to broader forest genetic resource policy and management systems development. Although my son Aaron would probably disagree. He has issued many "Nerd Alerts" during family discussions.

Donna: *Speaking of kids, both of yours chose early careers in forestry. What does that mean to you?*

Leonard: It's very satisfying both as a father and a colleague. I think both were determined NOT to have careers in forestry and maybe that stemmed from spending family vacations in and around genetic plantations. Somehow, whether from supper table discussions or years with Junior Forest Rangers and Wardens, they developed an aptitude and appreciation of forestry despite their best efforts. I have to say, that while I devoted countless hours of my time to work, often at the expense of my family, having kids has exceeded all my expectations whether they're in forestry or not.

Donna: *What challenges do you leave us with?*

Leonard: I believe it's the broad management of forest genetic resources. There's a poor understanding, even among professionals, of the role of genetic processes and genetic variation in adaptation, evolution, and the production of human utility that puts sound tree breeding and effective genetic resource conservation work at risk. As a department we have taken on the task of genetic conservation of native tree species, particularly commercial species, but current human activities are potentially putting sustainable use and conservation of all forest plant genetic resources at risk.

Donna: *What does your retirement look like?*

Leonard: Of course it means more time with Shirley, the kids and grandkids, but also the time to reconnect with extended family members. Shirley and I would like to do some travelling around Canada and Alaska. She hankers for Scotland and I'd like to visit Syria and Iraq.

Indoctrinating yet another generation. Leonard and his grandson Anthony at ATISC.

Donna: *Whaaaat!*

Leonard: (laughs) Well I'm fascinated by early human civilization, but maybe Greece or Italy is better. Being the oldest of seven kids I've always worked so I'll start my retirement working on home renovations…and always more music. I look forward to playing the guitar with more people.

Donna: *That sounds lovely. I know I can speak for all the staff at ATISC when I say that we will miss your intelligent insights, passionate drive and, most of all, friendship. We wish you all the best and hope that your retirement will be as productive as your career was with ESRD.*

Thanks for your time today and don't be a stranger. *Donna Palamarek —ATISC*

Another Colleague's Memories

Len and I have spent several years together in managing the genetics program, and amongst the many memories of working together, two are foremost in my mind. Each, I believe, demonstrates Len's many sides.

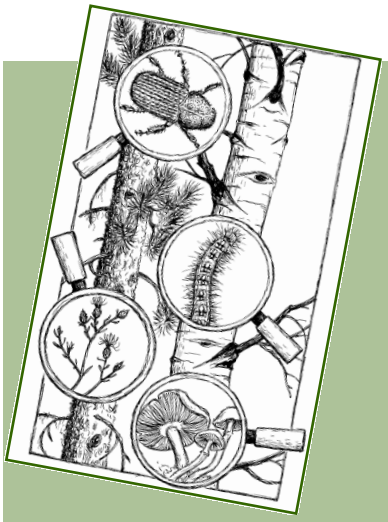
The first is an early memory of a trip Len, Grant Klappstein and I took from Edmonton, to southern Alberta (the exact destination evades me now). The trip, I assumed, would be a direct and as speedy as feasible trip down highway 2 with perhaps a detour into an occasional Tim Horton's. Having not extensive experience with either of my partners (Grant at the wheel, Len riding shotgun), my assumption was quickly proven wrong. At the soonest possible opportunity the trip was diverted west, on a secondary highway. The reason...to check if the subregion boundaries were in fact correctly placed. As Grant and Len had each spent innumerable hours of field work to support the development of ecoregions, both were keen to know if they'd "got it right". Along the trip too, there were numerous small towns to drive through, and as each was crossed, the dialogue quickly moved to the "amazing" state of numerous vintage vehicles parked in the back alleys and farm yards. I quickly discovered that these two gents could as easily discuss subregion data and boundaries as they could discuss the engines of a '62 Chevy.... As I grew to know Len more over the years, I found his knowledge of, and interest in, just about anything, was astounding.

L to R: Ken Greenway, Narinder Dhir , and Leonard Barnhart

My second fond memory of my working time with Len was his insatiable and absolutely relentless pursuit of getting the job done. As he and I had numerous times where we needed to confer on issues that ranged for infrastructure needs at ATISC to the development of new genetic policies, but as we were both busy, Len realized that I usually was 'free' during the lunch hour. Often he and I spent lunch and after work discussing issues...all were deeply personal to Len and he was absolutely committed to getting to a resolution. Len was as passionate about each issue and nothing was left undone. I think Shirley had many a weekend where Len was "working" either at the office or while at home...we all were the beneficiaries of those "extra miles" Len committed to his passion. I'm sure his family will now have way more of their husband, dad and granddad to spend time with.

Len, our best wishes in taking time off from work for "good". While we'll not likely get the work done the way you'd have done it, nor will any one of us be able to carry the work you'd have done, rest at ease, it will get done. Your new work is to enjoy the family, spare time....and the likely innumerable jobs around the house, and potentially a dead car or two that might need some restoration?

Ken J. Greenway —Senior Manager, Forestry Policy , Edmonton



10 Questions for Gypsy Moths in Northern Alberta (Well, 11 actually)

Can you even fathom where you are?

Was this place ever on your radar?

How the heck did you get this far?

Did you come on a camper, boat or car?

Did you make a wish upon a star?

Why'd you wander so afar?

Were your old digs somehow sub-par?

Did you just crave our sweet poplar?

Do you plan to stay in the LAR?

What's your game, *Lymantria dispar*?

P.S. Will you survive our cold wintar?

Tom Hutchison—Lower Athabasca Region

Forest Health and Adaptation

Forest Health Officers:
Brad Jones
Calgary
403.355.4854
Brad.Jones@gov.ab.ca

Andrea Sharpe
Hinton
780.865.6992
Andrea.Sharpe@gov.ab.ca

Jennifer MacCormick
Slave Lake
780.849.7409
Jennifer.MacCormick@gov.ab.ca

Devin Letourneau
Grande Prairie
780.538.5609
Devin.Letourneau@gov.ab.ca

Pam Melnick
Rocky Mountain House
403.845.8277
Pam.Melnick@gov.ab.ca

Caroline Whitehouse
Peace River
780.624.6569
Caroline.Whitehouse@gov.ab.ca

Colton Briggs
Whitecourt
780.778.7267
Colton.Briggs@gov.ab.ca

Tom Hutchison
Athabasca
780.675.8234
Tom.Hutchison@gov.ab.ca

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