Bugs & Diseases

Vol. 24 No. 3 December 2013

Alberta's eye on forest health

Issue highlights:

Forest Health and Alberta Tree Improvement and Seed Centre Merger

In early September 2013 it was announced that the Forest Health and the Alberta Tree Improvement and Seed Centre were to join and become the Forest Health and Adaptation Section. This union was one of common interest, goals and a complement of strengths; Daniel Lux will be heading up the new Section.

Our Vision

To lead Canada in science-based, proactive, adaptive and innovative management of forest health and productivity in a forest environment with a multitude of values and challenges posed by a changing climate.

A healthy and productive forest is achieved in two ways, through environmental management and by managing the genetics of planted trees. Previous to this merger, the Forest Health Section worked with managing the environmental factors affecting forest health and productivity and the Alberta Tree Improvement and Seed Centre focused on the genetics of trees planted through seed and vegetative propagules. By combining units we hope to bring expertise together for the benefit of managing forest health and productivity of Alberta's forests in both the short and long term.

Our current mandates include work on climate change and adaptation, genetic resource management, applied tree breeding, conservation and species at risk, mountain pine beetle management, forest health surveys and invasive species. Programs such as gene conservation, forest genetics research, seed zones, forest damaging agents research, extension services and communication and publications help support these mandates.

This issue of the Bugs and Disease Newsletter will highlight this merger and introduce the work done by the less infamous half of Forest Health and Adaptation… Genetic Tree Improvement.

Ashley Romano—Edmonton

Alberta
Freedom To Create.
Spirit To Achieve.

ATISC—Alberta Tree Improvement and Seed Centre

Many of you may not realise that Alberta has its own seed research laboratory at the Alberta Tree Improvement Centre (ATISC) near at Smoky Lake. But what do we do here, you ask? Seed science is a relatively young field and although we may know quite a lot about animal biology, we know comparatively little about plants and especially seeds. There are a few renowned institutions in the world that study seeds, so for some things we can 'stand on the shoulders of giants', while other issues are unique to Alberta or Canada. Well, now you've got me started, here are a few of the projects we've completed lately or are currently still working on:

Seed Storage Container Testing

In order to store and prolong the life of seeds you need to dry them and then hold them at cool temperatures, in our case that's -18°C. Drying is not a problem in Alberta but seeds will suck up any moisture from the air in their container or, if the container leaks, in the cooler. Therefore, the containers need to be as perfectly sealed as possible. Two years ago we tested all the various plastic and glass bottles we have used to store seed at ATISC. What we found out is that most of the containers leaked! We also tested three types of foil bags of the type often used by other seed banks for storage. Besides being light and cheap, the bags can also be cut to fit the amount of seed being stored, thus excluding as much oxygen as possible (just like in humans, oxygen is required for seed aging but we can't pump them full of anti-oxidant blueberries!).

Bags to be tested for sealing. Zip-loc bags failed miserably!

The bags all passed the test and we chose the one that had no gussets to trap small seeds and a triple lining of plastic to prevent foil punctures by sharp seeds. Last winter we repackaged all 7000+ seed lots into these new foil bags. Most of our economically important tree species in Alberta are very long lived in cold storage, so now we can be confident that these stored seeds are alive well into the future!

Lodgepole / Jack Pine Germination Trial

We noticed recently that stratification times for lodgepole and jack pine seeds differ between ATISC and some private nurseries. Stratification is the practice of wetting and storing seeds at low temperatures (4°C) to 'mimic' winter and trick the seed into germination. Anecdotal evidence was supporting some very opposing opinions on the length of stratification time required to get the best crop. So, we set up a test using six lodgepole, four jack pine and two hybrid seed collections from across Alberta. We tested germination using no stratification, 14 days and 21 days.

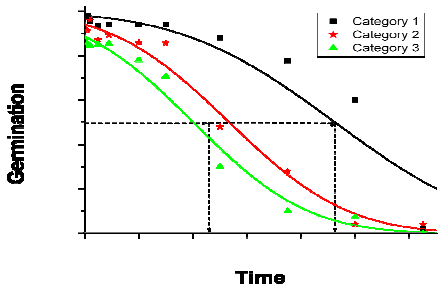
What we found is that once we ran statistics on the data to find any true differences, there was little or no germination preference between stratifying and not stratifying at all, and when there was a preference it was in favour of stratification. In all seed lots, the rate of germination increased with stratification, so employing this method would produce seedlings of nearly all the same age. From a grower's perspective, this would make greenhouse work much easier. Therefore, we now have the proof to make the decision that in future ATISC will stratify all our lodgepole, jack pine and hybrid seed for a full 21 days.

Lodgepole Cone Age & Seed Longevity

Lodgepole pine cones will often stay attached to the tree for a long time, sometimes more than 10 years. They are serotinous, which means they stay closed and won't release seed unless there is

sufficient heat (fires or kilning) to open them. They will also eventually open over time. The normal practice at ATISC is to avoid picking anything but 'new' looking cones for conservation collections, i.e. medium brown all over. If there is a light cone crop then we may consider harvesting cones that are partially weathered — a grey colour, or sometimes completely grey. We are lucky that lodgepole pine is a particularly long-lived species and we can normally expect 100+ years in long-term cold storage. But what about those greying cones that have been exposed to the elements for how many years?

Last year we did a small seed longevity trial on seed extracted from three categories of cones picked from Sibbald Lake. The categories were: (1) medium brown all over, (2) partial grey up to 80 per cent, and (3) more than 80 per cent grey. The seeds were extracted and artificial ageing tests were set up. These speed up the ageing process in seeds by putting them in controlled humid and warm conditions. Extractions are then taken on specific days and germination tests set up using those seeds so that you end up with a 'death curve' (it's actually called a 'survival curve' but I think my term is more accurate!).



Categories 2 and 3 (partial grey and all grey)

We found that both partial grey and all grey cones yielded seed that had only half the lifespan of cones that were all brown and 'new'. This now gives us a valid reason for not harvesting any grey cones or if we must harvest, separating these from the newer cones for long-term seed storage.

Black Spruce Extraction Methods

Black spruce cones are semi-serotenous, meaning that usually the cones don't open to release seed when dried. To extract seeds from closed black spruce cones, the cones are soaked in hot water and then kilned and tumbled to let the seed fall out. This is usually repeated up to three times to get all the seed. If you remember what I wrote above about prolonging the life of seeds, getting them wet and then heating them several times seems like a bad idea when you are trying to store seeds for a long time! In the past, ATISC and industry used to keep these extractions separate for storage. However, in the last 20 years or so, this practice was mostly stopped and the extractions are now combined into one seed lot for storage.

So we separated the four seed extractions from some bulk black spruce cones in 2012 and then did what is called an artificial ageing test on each extraction. We found that the lifespan of the seeds kept decreasing with each extraction, so that by the time we got to the fourth extraction (which had been soaked and baked three times) it had nearly half the lifespan of the first extraction (which had not been soaked/baked at all). Because in general, black spruce seed germination begins to decline at an average of 20-30 years, halving this to only 10 years could start to affect our program relatively soon. Therefore, there is an argument to go back to the practice of keeping our extractions separate whenever possible and trying to use the shortest lived seeds first. This project is only half completed and the testing will be repeated on other black spruce seed next year.

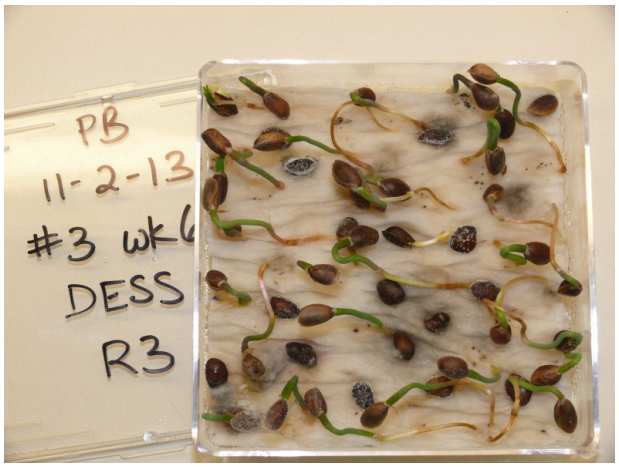
Beaked Hazel Storage Behaviour

As you may know, beaked hazel (*Corylus cornuta*) is abundant in North America and is one of the woody shrubs chosen for reclamation use in the oil sands and gas areas of northern Alberta.

However, there are conflicting results on whether the seeds (nuts) from this shrub can be dried and frozen for storage, as with our other *orthodox* seeds in Alberta, or whether the nuts die when dried for cold storage, as with *recalcitrant* seeds (e.g. silver maple). My personal opinion is that we are most likely harvesting too early in order to beat the squirrels, which leaves us with immature seeds that die

quickly after harvest. Again, there seems to be quite a lot of anecdotal evidence out there and this is something that needs to be proven one way or the other in order to move forward with collecting and storing seeds for reclamation. To that end, we collected some hazelnuts this past fall, sowed some wet and some dry and we'll see what happens in germination in the new year. The nuts are still in cold stratification for another month, so we have no data yet. Next year, the plan is to 'cage' some nuts from predators while still attached to the plants, take early and late harvests and then do the same storage tests to see which nuts live and which die and discover the cause(s). It's a pretty tasty job but someone has to do it!

Limber Pine Germination & Maturity Trials



As you may know, limber pine (*Pinus flexilis*) is endangered in Alberta, mainly due to white pine blister rust (*Cronartium ribicola*), mountain pine beetle (*Dendroctonus ponderosae*) and limited natural regeneration. As climate change is expected to intensify the species decline, Alberta is initiating a limber pine conservation program with current efforts including the collection and storage of seed from threatened and putatively resistance trees for screening and outplanting. Successful seed storage and seedling propagation requires high quality mature seed. In practice, pine seeds with embryos occupying >90 per cent of the corrosion cavity inside the seed have been considered mature but this is difficult to achieve in limber pine due to short growing seasons and the need to collect early to avoid seed predation and early snowfall at high elevations. Many populations require helicopters for caging and harvesting cones, making the seeds even more difficult to collect and also quite expensive – often $2 per seed!

In 2012, the germination methods for limber pine were changed after sufficient testing and we are now able to germinate close to 90 per cent of viable seed. Now we could actually look at collection quality! For this study, limber pine seed collections were made every two weeks from mid-August to mid-October from Windy Point and Prairie Bluff. Embryo lengths, seed dormancy, desiccation tolerance and longevity were tested initially and subsequently every two weeks while cones were 'matured' in a high humidity chamber at ATISC. Cone maturation in the chamber increased germination and desiccation tolerance of the early harvested seeds (Aug-Sep) but did not increase longevity enough to ensure long-term storage. However, maturing cones from late harvests (Oct) actually shortened the lifespan of the seeds! Only seeds harvested in late October were at maximum maturity and therefore were at maximum germination and longevity. We found that embryo lengths were unreliable for field assessment before collection, as some seed collections with >90 per cent embryos had not yet even gained desiccation tolerance or maximum longevity. Most alarmingly, even highly mature limber pine seeds were found overall to be short-lived, with estimated cold storage of only 10-25 years, making it even more important to figure out how to collect mature seed.

We're hoping that growing degree days might be used to better guess when seeds would be nearing maximum maturity, so we'll try testing our theories on some other populations. Successful restoration of limber pine in Alberta depends on overcoming these issues, as recovery is unlikely without blister rust resistance screening and reforestation.

Whitebark pine germination & maturity trials

Much like limber pine, whose germination methods were perfected last year to include the more deeply dormant seeds, there has not been any rigorous scientific testing for whitebark pine seeds in the past. Many of the current methods used by nurseries are inconsistent with poor results and waste large amounts of expensive seed. The resulting seedlings do not include the genetic information from the more dormant filled seeds of the population. This winter we've set up a simple germination trial using three whitebark populations. We're measuring embryo growth as well and we're hoping this trial will shed light on the dormancy mechanisms involved in whitebark pine and allow a future seed maturity trial to be set up in 2014 to mirror the limber pine trial conducted in 2012/13.

Seed Conservation Course

For the past 2 years, we've run a free annual 2-day spring Seed Conservation Course held at ATISC (2hrs north east of Edmonton). This year we'll be organising it sometime during the last two weeks of February or first two weeks of March. The course is aimed at government employees, nursery growers, seed collectors, academics and anyone in industry who handles seed or would benefit from an understanding of practical seed science. This covers all orthodox seed, not just tree seed. Topics include: seed-air moisture relations, seed assessment, collection methods, seed handling, seed longevity and storage, storage behaviour, germination and dormancy. There will be a hands-on seed cut testing lab and a paper based germination problem solving tutorial. The course is run with a maximum of 12 people but we can do two separate groups if there is enough interest. Please let me know by 17th January if you are interested.

Lindsay Robb—ATISC

Workplace Safety

Throughout my career (starting with Lands and Forests in 1978) attitudes towards safety have undergone a180 degree turn. I'm the first one to admit that in my earlier days safety was mentioned, but always met with a "yah yah yah, I know" type of response. But past that, you know, you went and got the job done.

It was sometime in 1980 or 1981 I was working as the Camp Supervisor at the Alford Lake Hunter Training Camp south of Rocky Mountain House, and we had just gotten a brand new Honda trike. Well, of course, being young I had to take it for a ride and check out how it performed. A mile later, I was flat on my back with this heavy trike lying right on top of me and gas dripping in my face. Luckily I wasn't hurt and the trike did not sustain damage. However, ever since that incident my respect for any type of OHV has gone up markedly.

Sometime in the early 90s, I was one of several guest instructors at a big annual province wide 4-H meet. My job was to instruct how to split firewood and make kindling and I decided to show the group how to make a "feather stick". I emphasized that a sharp knife is far safer than a dull knife and always cut away from yourself. I had just about got my "safe demonstration" completed when I momentarily wasn't paying attention and the knife slipped, embedding a nasty cut in my left fore finger.

Now we have various safety courses, safe operating procedures, tailgate safety meetings and more. Employers have learned that unsafe practices will sooner or later get someone hurt, but also costs the organization a lot of money. Please take safety seriously. If you see someone working unsafe, speak up and take the precautions to prevent an accident. We use everything from knives to OHV's to helicopters in our work, but it only takes a fleeting moment for something bad to happen. Please, work and play safely. It only makes sense, right?

Martin Robillard—Athabasca

Whitebark and Limber Pine Recovery

We are generally made aware of species at risk and endangered species when high profile animal species are in difficulty. Commonly the challenge to these species and their populations is loss of habitat. Recently in Alberta, we have had the first two tree species declared endangered with the primary and secondary causes of population decline being an introduced disease and a native insect rather than loss of habitat. This has necessitated a somewhat different approach to recovery in which both environmental and genetic recovery strategies related to pest and disease management rather than habitat protection become the primary considerations for recovery.

On October 24, 2008, the Minister of Alberta Sustainable Resource Development supported the listing of whitebark and limber pine as Endangered under Alberta's Wildlife Act and they were listed as endangered September 9, 2009. The primary cause of species decline for both these pines is the introduced fungus, white pine blister rust (*Cronartium ribicola*), with a secondary factor being the native mountain pine beetle (*Dendroctonus ponderosae*). Subsequently, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has designated the Canadian population of whitebark as Endangered and the species was listed under the Species at Risk Act on June 20, 2012.

In response to being listed as endangered in Alberta the Alberta Whitebark and Limber Pine Recovery Team was created in September 2009 by the Minister of Environment and Sustainable Resource Development (ESRD) with its primary responsibility being the development of recovery plans giving advice on strategies and actions necessary for species recovery. In the interim, the Recovery Team was instructed to facilitate or undertake any activities that could be ongoing to support recovery. Both the former Forest Health Section of ESRD Forest Management Branch (FMB) and the Alberta Tree Improvement and Seed Centre (ATISC), now merged as the Forest Health and Adaptation Section of FMB, have been active in funding and recovery work which started prior to the formation of the Recovery Team. This was largely coordinated by an ad hoc recovery team initiated and chaired by Hideji Ono prior to his retirement as manager of Forest Health Section. Some of the early work initiated by this inter-agency, ad hoc committee, included review of background literature pertinent to the threats to and recovery of limber and whitebark pine, inventory assessments to determine ranges and populations and initial seed collections to conserve genetic resources for screening and breeding and to provide eventual planting stock to initiate artificial regeneration and recovery.

ATISC with funding assistance from the former Forest Health Section with which it is now merged, and field support from regional Forest Health Officers and Forest Officers, has made significant population seed collections for both species. ATISC has also developed a draft genetic recovery strategy for whitebark and limber pine in support of the draft recovery plans now in review to guide future work by the new Forest Health and Adaptation Section in conservation, disease resistance screening, resistance breeding and stock propagation.

Significant improvements are being made in understanding seed maturation and dormancy to improve the success of seed collection and germination which was initially poor. Pilot propagation and stock production programs in ATISC greenhouses have been more successful than initially expected with good growth and survival of both species over two years. Initial pilot grafting exercises also indicate good opportunity for grafting to establish clone banks and orchards if necessary. The next challenge is to start to build capacity for outplanting of species recovery stock within the new ESRD organization and in cooperation with other agencies with the capacity, knowledge and jurisdictional responsibility to work with recovery outplanting of these two endangered pine species. Initially, ATISC has the capacity to produce approximately 10,000 seedlings per year but additional

partners will be required for stock production to support a full recovery planting program. Little is yet known regarding the site and ecological conditions necessary for successful planting or the suitable stock types for these. Initial collaboration has been started with Alberta Tourism Parks and Recreation, Waterton Lakes, Banff and Jasper National Parks, the USDA Forest Service and British Columbia Ministry of Forests, Lands and Natural Resource Operations on seed collections, disease screening and initial recovery stock outplanting. In order to be successful, this recovery work will need to be expanded, coordinated and continued and we look forward to the Recovery Plans to facilitate this.

Leonard Barnhardt—ATISC

ATISC MPB Field Crew

Traipsing through the woods in the dead of winter with sacks on their backs you'll find something unexpected. No it's not Santa and his helpers with sacks of presents! It's the Alberta Tree Improvement and Seed Centre (ATISC) Mountain Pine Beetle (MPB) field crew with sacks of cones.

The MPB threat to Alberta pines requires contingency planning including identifying areas of high MPB risk and low seed supply, and carrying out activities such as genetic conservation seed collections. Since populations of forest trees are commonly genetically adapted to their place of origin this creates genetic variation among populations within a species. These adaptive traits may be valuable for future evolutionary resilience of the species and use for development of improved tree varieties. Selection of populations for conservation is based on regional representation and knowledge of genetic variation related to climate, geography and ecosystems. Collections are prioritized based on the regional MPB threat. The crew tries to stay one step ahead of the little pest by collecting in the leading edge and inactive holding MPB management zones.

This 4 person crew trudges through the forest in snow, sleet, rain and cold (it's a good thing two members were previous postal workers!), felling pine trees and collecting their cones from across Alberta. The crew is often in remote and isolated areas hiking in snowshoes through the woods with chainsaws on their shoulders selecting the 30-50 trees to sacrifice as stand representatives from a population. Compared to cushy office jobs, this crew preforms physically demanding and primitive field work and should be entered into the next Amazing Race Canada as top contenders!

They even go "out on a limb" in the summer to cage whitebark and limber pine cones to protect them from predation so the cones have time to fully develop and the mature seeds can be collected in the fall. This can be precarious work on steep mountain side slopes where they harness their inner mountain goat qualities to protect these rare and endangered tree species.

If you see this haggard and frosty crew in your region please give them shelter and Tim Horton's, and tell them to report back in for their next mission!

Kat Spencer—ATISC

End of an Era

Dr. Sunil Ranasinghe, Senior Forest Entomologist, has dedicated a quarter of a century of service with Alberta's forest health program. With Sunil retiring at the end of 2013, it marks the end of an era. I consider Sunil one of the founding fathers of the state-of-the-art forest health program that stands today in Alberta. Having been hired by Sunil as a summer student and working closely with him for my entire career thus far, I consider it a privilege to honor his accomplishments in this article.

Sunil earned a B.Sc. degree specializing in zoology from Peradeniya University in Sri Lanka, a M.Sc. in entomology from Brigham Young in Utah, and a Ph.D. in forest entomology from the University of Florida. Following his graduation with the B.Sc., he worked for four years as a Research Assistant in Entomology and Nematology at the Tea Research Institute of Sri Lanka. Following his Ph.D. degree he worked as a university academic staff member for 8 years before immigrating to Canada.

I asked Sunil why he would have left such a beautiful, hot and humid tropical island, with beaches lined with groves of coconut palms?

Sunil: in 1988, due to political unrest and a civil war ravaging in the country I migrated as a single father of 2 sons. There was nothing more important than the safety of my family.

Mike: I understand that it was your brother-in-law that pointed out the job advertisement with the Alberta Government. When did you start in your position with forest health? What was your job description at that time?

Sunil: I joined the Alberta Forest Service in May of 1989 as a temporary summer worker in the Forest Insect and Disease Section. My starting salary was $6.00 per hour! My job description was to provide technical assistance to Hideji Ono, the Manager of program at the time. My duties included A/V preparation, literature searches, preparing monthly info-notes, and pest management planning. I got promoted to a Forestry Aid 3 classification in September 1989, promoted to a Forester 2 in 1990, and then to my current classification as a Biologist 3 in 1999. When I joined the Forest Service the spruce budworm was the main problem and it was spreading rapidly. The first aerial spraying based on the recipe from Eastern Canada was a flop; then a program based on ecology of the budworm and white spruce in the west was formulated and it worked. At the beginning of budworm control we had to do everything related to mapping and spray lines manually, and used a bird-dog aircraft for guiding spray aircraft. Then we introduced new satellite-based technology to guide spray aircraft and GIS for mapping. At its peak in 1995 we sprayed over 120,000 hectares. We began monitoring for mountain pine beetle in mid-1990s because Hideji was anticipating an outbreak sooner or later.

Mike: It sounds like your job changed quite a lot over the years. In your view how has the forest health program changed over the years?

Sunil: In the beginning there were interesting times. The Forest Health Section did not have dedicated funds but depended on the wildfire management program for funds. And believe it or not there were no computers until 1992. Over the years my job changed from a "jack of all trades" in forest entomology to a specialist on defoliators. In the beginning, forest health worked very closely with Canadian Forest Service research scientists and technicians. They carried out pest surveys, training, and research, and we carried out operational programs. In 1997, the Federal Forest Insect and

Disease Survey (FIDS) in the Prairie Provinces was disbanded. We took over aerial surveying and began publishing an annual report to fill the void. We also began training our own staff, but there was still cooperation in forest pest research between our two agencies.

Mike: What do you see as some of the biggest accomplishments of your career?

Sunil: I was instrumental in persuading Hideji to undertake compiling and publishing the Forest Health annual report. It made me proud to learn that clients identified the annual report as the most valuable source of forest health info in the last survey carried out. I am also proud of the Forest Pest Damage Diagnostic System. However, this has not realized its full potential because our plans to include urban pests did not materialize. I was also proud that in mid-1990s Alberta had the most technically advanced aerial spraying program in Canada. The Forest Health Legacy document is my "swan-song."

Mike: Since you have gained much experience over your career and have witnessed much change, what do you see as one of the biggest challenges the forest health program will face in the future?

Sunil: The biggest challenge is the changing climate bringing hitherto innocuous agents into major pests. Aspen two-leaf tier and red ring blight of pines are some examples of this happening. The other challenge is the introduction of exotic pests due to expanding global trade. In the future, we may have to have a separate section dealing with this problem.

Mike: Do you have any advice for the Forest Health team?

Sunil: My advice to the team is to keep up the great job they are doing to keep major pests at bay. However, we have to realize that it may not be possible to battle all the pests. So, pick and choose a "hills worth dying for to protect." We are the only jurisdiction that took a stand against the mountain pine beetle in spite of naysayers 'pooh-poohing' this attitude. I have faith in our relatively young and an energetic team that is continuously striving to improve forest pest management, and a manager determined to make our program the best in Canada.

Mike: Do you have any fond memories or stories that you will always remember about your career that you want to share?

Sunil: One of the fond memories I have is the 1998 Fall Fire Conference. The Forest Health team did such an exemplary job outshining the forest protection team, even the ADM (Cliff Henderson) was impressed and conveyed his admiration for our performance at this event. And one story I still remember is that Dr. Albert Sproule and I were dropped off to sample spruce budworm in a bear-infested part of the forest and the pilot apparently forgot to pick us up for about four hours. Both of us had tuna sandwiches and we unsuccessfully kept trying to communicate with the aircraft while pacing back and forth on a narrow sand bar of a river littered with fresh bear scat. Much to our relief we were picked up before the bears caught the scent of tuna.

Mike: What are your immediate and longer-term plans for your retirement?

Sunil: My immediate plan is to take it easy, go for a long holiday to a place a lot warmer than Edmonton and have a good time with my old buddies. I have not given much thought about the long-term plans, but playing bridge, baking, and gardening should keep me busy. If need be, I will consider some part-time volunteering or working in a field with no connection to forest health!

Mike: Is your wife looking forward to having you around the house a bit more than usual?

Sunil: All the indications are that my wife will be looking forward to have me meet the targets in her “to do lists” but she has not divulged any so far fearing I might change my mind about retirement!

Mike: What will you miss the most, if anything, about having a full-time, 9-5 type job?

Sunil: What I will not miss is coming to work on those days with minus thirty degree Celsius weather.

Mike: Well there is no doubt that we will miss your wisdom, entertaining jokes, and friendship. So don’t be a stranger and come back for a visit in the New Year. Thanks for taking the time for this interview, and I wish you a happy and health retirement.

Sunil: You are welcome Mikey.

Mike Undershultz—Edmonton

Eastern Larch Beetle Populations on the Rise in North America

While out doing forest health surveys this summer near Rocky Mountain House I saw a bark beetle that I have never seen before, the eastern larch beetle (ELB). This of course had me spitting with excitement as I directed the pilot to hurry up and land so I could race into the forest and chop into some trees. Since this is a bark beetle that I know very little about I started looking for information but found very little. In fact, there have only been two major studies in North America, one in Alaska by Werner in 1986 and one in Newfoundland by Langor and Raske in 1987.

Fading stand.

Why so few studies? Probably for a few reasons that are related to cost versus the worth of these studies considering that Tamarack has a very low commercial value in North America. In Alberta it accounts for only 0.2 per cent of the softwood volume harvested annually. Also there has probably not been a lot of concern about ELB as it is considered a secondary bark beetle, typically only able to kill the odd stressed tree and past outbreaks were linked to other damaging agents such as severe defoliation by larch sawfly. These outbreaks were typically short, lasting no more than five years and were localized.

Despite this past lack of concern regarding ELB there is now a new four year study underway at the University of Minnesota by PhD candidate Fraser McKee. Why this sudden interest in a secondary bark beetle that attacks trees of very little economic value? There is currently a large outbreak in Manitoba, Ontario and the north eastern states that has lasted for over a decade. It was first noted in 2001 and has been growing since. There is no record of any predisposing damaging agent which has been typical of past ELB outbreaks. It appears that ELB is behaving more like a primary bark beetle, able to attack and kill healthy trees.

Boring dust at base of tree.

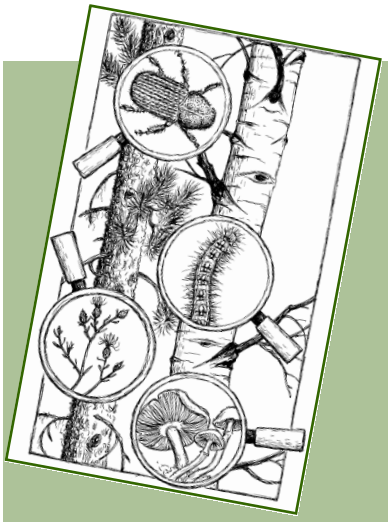
Larch beetles in galleries.

One aspect of Fraser McKee's studies will be to look at the effects of a changing climate on ELB's overwintering adults and perhaps see if this is partially responsible for the current outbreak. He will also be looking at tree and stand health to see if there has been a decline in vigor which may also be a contributing factor.

As for here in Rocky Mountain House, we identified eleven stands west of Drayton Valley with about 10 per cent infestations of ELB which gives us approximately 45 hectares of grey and fading Tamarack. From the condition of the grey trees it appears that ELB has been in the area around three maybe four years.

When I first saw the beetle I was intrigued as it was a new bark beetle for me but not really very concerned because the ELB population is relatively small and it is not normally an aggressive tree killing bark beetle like mountain pine beetle. After learning more about its recent behavior in eastern North America I am now a bit more concerned as I do see value in a functioning, healthy tamarack stand beyond the 0.2 per cent that is harvested and turned into fence posts.

Pam Melnick—Rocky Mountain House



The Year of the Common Anomaly

Who could foresee that which would be
In the strange year of two-aught-one-three
Odd stuff abounded astonishingly
A curious forest health potpourri

Enargia flight
Red Band Needle Blight
A wave year for foliar diseases
Yes two-zero-one-three
Had more weird things to see
Than a stray dog has nasty wee fleases

A peculiar time to be a tree
That was ol' two-thousand-one-three
Indeed, indeed one has to agree
It was the year of the common anomaly

Tom Hutchison—Athabasca

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