# branchlines

Volume 23#1 2012

***Included in this issue:***



UBC Forestry
University of British Columbia

# **dean's**message

This issue of BranchLines provides evidence of an important trend that is becoming increasingly apparent in the Faculty, namely its international focus. For a long time, many of our research projects have been conducted outside BC and Canada, and the article on the awareness of REDD payments in Nepal (page 10) is an example of this. However, the article on forestry innovation practices in Canada (page 16) emphasizes just how important R&D is if Canada's forest sector is to remain competitive globally. Similarly, the article on carbon measurement in Indian Arm (page14), while apparently local, illustrates why it is necessary to have accurate measurements if Canada's assessments of forest carbon assessments are to be taken seriously in the international context.

One of the news items also points to our increasing international focus. For many universities in Canada, the USA, Great Britain, Australia and elsewhere, international students represent an important source of income, yet the services provided to those students are minimal. In the Faculty of Forestry, we have been nurturing a special relationship with several Chinese universities, whereby students spend their first 2 or 3 years in China and then come to UBC for the final 2 years of their degree. We have been taking steps to ensure that these students are fully integrated within the Faculty; they greatly enrich our student body, as do all our international students. Now, in yet another first for UBC, we have been able to secure several scholarships from a donor in mainland China, opening up the program to more Chinese students who can compete for places on the basis of academic merit (page 21). We were able to make this announcement on World Forestry Day (21st March), an important date that often goes unremarked.

The Faculty of Forestry now has one of the highest proportions of international students of any Faculty on campus (only the Sauder School of Business has more). The international students are not taking places away from domestic students, as has sometimes been alleged; we still have plenty of spaces for students with the appropriate qualifications and aptitudes. Instead, the international component to our education programs has resulted in those programs going from strength to strength in recent years, and we have been able to offer more choice and a better experience as a result.

The interaction between our international and domestic students is resulting in more and more international exposure for our domestic students. We are trying to create more study-abroad opportunities, as we consider international experience to be invaluable. This is being echoed by employers, who greatly value international experience in our students. Our students also welcome such experiences, as you will see from the write-up of a study abroad period in Wales on page 20 of this issue. Of note, this year will be the first time that we take a group of students on a summer study course to China, where they will experience various aspects of the Chinese forest sector and Chinese culture (page 5).

Our students are in high demand, and students with international experience are especially sought after. Students are seeing benefits of the added time that a term abroad sometimes adds to their degrees. Over the coming years, we intend to diversify the range of such opportunities, enabling our students to gain a truly global perspective of their subject.

**John L Innes**
Professor and Dean

# **forestry**news

## Graduate student symposium

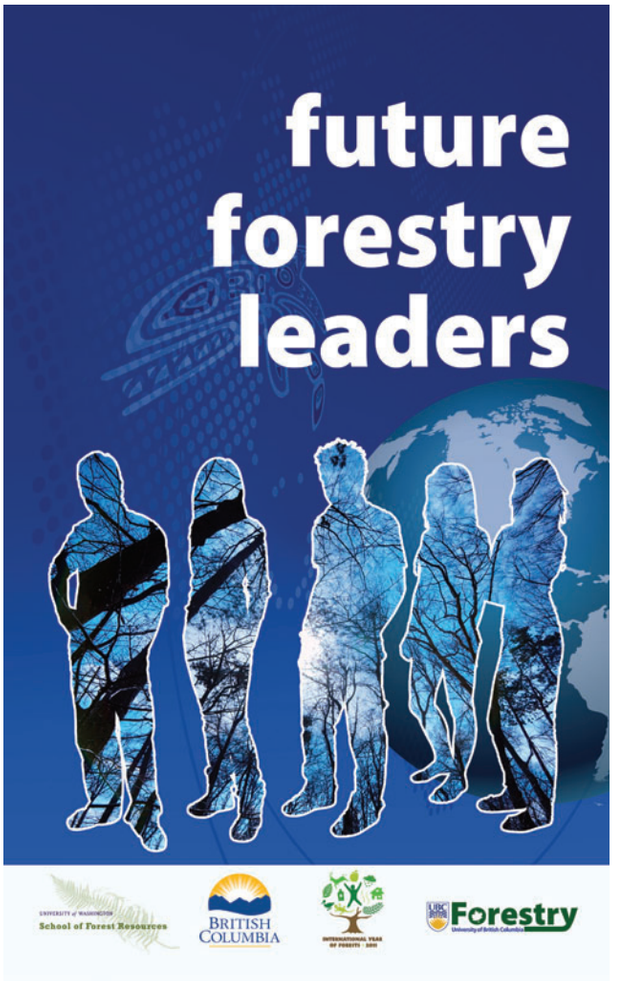
In February, UBC's Faculty of Forestry hosted a series of "Future Forest Leaders" events as a fitting culmination of BC`s activities celebrating the International Year of Forests. The events, including a networking session, conference, poster session and field trip, focussed on graduate students as the future leaders of forestry both locally and globally. All of the events were planned in collaboration with the School of Environmental and Forest Sciences at the University of Washington (UW) and featured graduate students from both UBC and UW.

The networking evening provided a unique opportunity for future leaders (graduate students) to mingle with a wide range of professionals in an informal setting. The evening was opened by the Deputy Minister of the BC Ministry of Forests, Lands and Natural Resource Operations. Specialists mingling with the students included representatives from industry, government, environmental organizations, civil society, silviculture, First Nations and research professions. The Forestry Graduate Student Association planned, organized and hosted this highly successful event – further demonstrating the organizational and operational strengths of our students as future leaders.

The full-day conference and poster session provided an opportunity for graduate students from UBC and UW to present their research in a formal setting. The 18 presentations, many with an emphasis on the growing importance of indigenous peoples and forests, will be published in a special issue of The Forestry Chronicle later this year. The 35 posters presented by graduate students from both institutions further demonstrated the breadth of research now recognized as part of forestry's future. Presentations and posters ranged from exploring complexities in life cycle comparisons between paper and digital communication to China's future bioenergy potential; from balancing conservation and forest development in Ghana to fermentation inhibition in producing fuel from cellulosic biomass. The common thread throughout the conference presentations and posters was the high quality of the research itself and the communication skills of the young researchers who were a truly international group of graduate students. After listening to the presentations, complete with questions and responses, and viewing the posters one can only look to the future with confidence and optimism given the quality of our future forest leaders.

The culmination of the conference events was the Schaffer Lecture by Tiina Vähänen (Team Leader of Climate Change Coordination and REDD, Food and Agriculture Organization, Rome), titled: Safeguarding Natural Resources: Forestry in International Debates.

Many of the conference attendees also took part in a field trip to Squamish hosted by the Squamish First Nation. The field day focussed on the history of the Squamish First Nation, their land use plans, forest stewardship and forestry business activities.




The Future Forestry Leaders events were sponsored by the BC Ministry of Forests, Lands and Natural Resource Operations, UBC and UW. The organizing committee consisted of David Cohen (UBC), Ivan Eastin (UW), Chris Gaston (FPInnovations) and Claudia Trudeau (BC MoFLNRO). We hope to repeat this highly successful event next year with more "future leaders".

# Faculty celebrates International Women's Day

In celebration of International Women's Day, the Faculty of Forestry hosted a lunch-time dialogue on "Gender and Forestry". The keynote speaker at the event was Dr Maureen Reed (School of Environment and Sustainability, University of Saskatchewan). Dr Cindy Prescott (UBC Forestry) spoke on gender and the Faculty, Ms Andrea Lyall (UBC Forestry) spoke on being a forestry professional from the perspective of a First Nations woman and Forestry doctoral candidate Ms Monika Singh spoke on forest management gender issues in forest-dependent communities. This is the first time that UBC Forestry has organized a special event in celebration of International Women's Day and 75 people from UBC campus and beyond participated.

# They had three minutes...

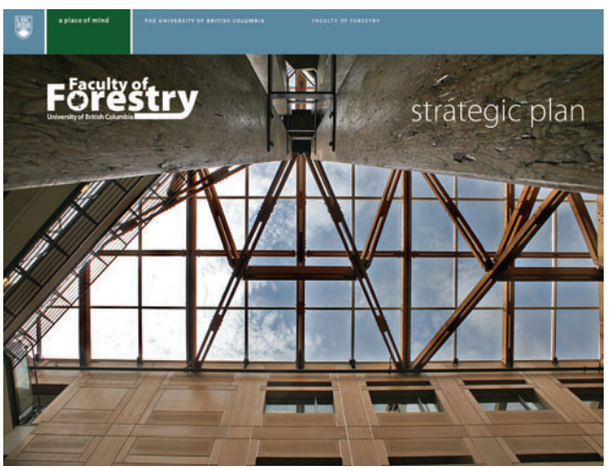
The Three Minute Thesis (3MT) challenges graduate students to present their research in 3 minutes or less to a non-specialist audience. The competition began in Australia as a fun event for graduate students. Last year, UBC graduate students participated for the first time with a campus wide event. This year, we are proud to say that Natalie Sopinka, a doctoral student in the Department of Forest Sciences, took top place in UBC's competition. In the final heats, 8 students from across campus delivered presentations, but it was Natalie's highly informative and engaging performance that won the day. Videos of the final presentations can be viewed at http://3mt.grad.ubc.ca/about/2012-finalists/. Natalie, a graduate student with Dr Scott Hinch, is researching the transgenerational effects of stress in sockeye salmon. Well done Natalie!

Photo: Jens Locher

# Lifetime Achievement Award

Dr Ian de la Roche, an adjunct professor in the Department of Forest Resources Management, has been awarded the Dr Don Rix Award for Lifetime Achievement by Life Sciences BC. The award recognizes Ian's work to usher Canada's traditional agriculture and forestry resources into the new bioeconomy and his tremendous contribution to Canada's innovation agenda. Ian has had a long and varied career, starting as a senior research scientist at Agriculture Canada's Ottawa Research Station before moving into a series of leadership positions at Agriculture Canada. In 1988, he was appointed as Assistant Deputy Minister at Western Economic Diversification Canada, and in 1992 he became President and CEO of Forintek Canada Corporation. In that position, he oversaw the creation of FPInnovations, a merger of 3 national forestry R&D institutes and the Canadian Wood Fibre Centre. He joined the Faculty of Forestry in 2009.

# Faculty Strategic Plan finalized




After almost a year of reviews and consultation, the Faculty of Forestry has completed the latest iteration of its Strategic Plan. Many individuals contributed to it, and it also takes into account the comments received when the 3 Departments went through external reviews in April – May 2011. The end product represents a distillation of the many comments that we received, and while it was not possible to incorporate every suggestion, we now have a clear direction for the future. The challenge now is to see the many different recommendations implemented. The Plan is available on the Faculty's website at www.forestry.ubc.ca/strategic-plan .

# Nicholas Coops receives Killam Research Fellowship

Dr Nicholas Coops has been awarded the Killam Faculty Research Fellowship for 2011 (senior category). Killam fellowships are awarded to assist promising faculty members who wish to devote full time to research in their field during a recognized study leave. Nicholas will be taking his Fellowship to the University of Zurich in Switzerland where he will be working on improving approaches for the scientific community to integrate remote estimates of light use efficiency into global carbon cycle models.

# Silviculture challenge

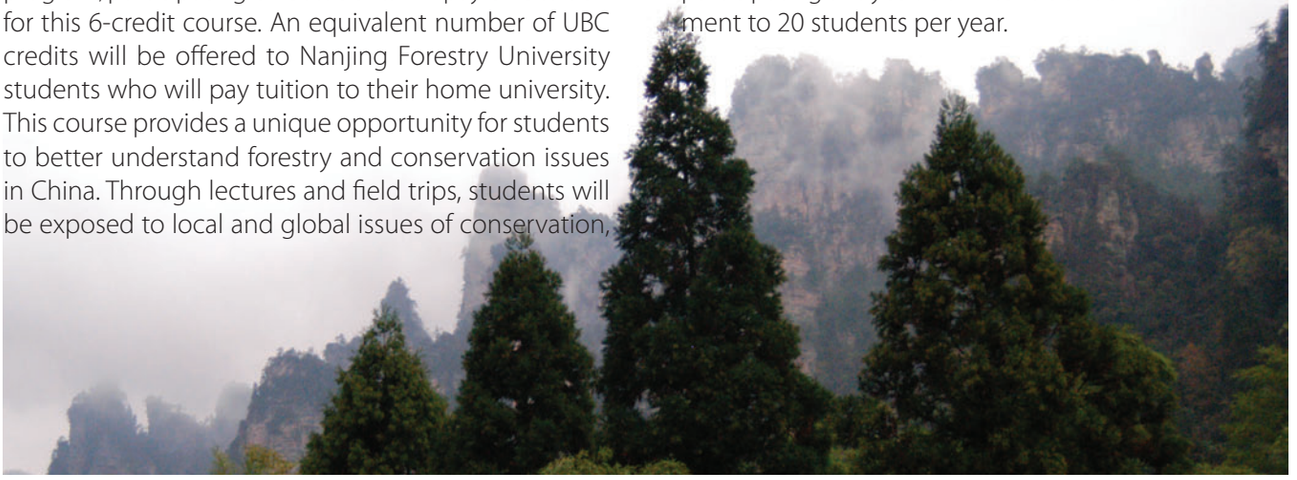
In early March, 6 students from the Faculty of Forestry traveled to Darrington, Washington for the 6th annual Silviculture Challenge. This year's event saw 4 teams, 2 each from UBC and the University of Washington, square off to see who could deliver the best stand-level silvicultural management plan to a panel of judges. The students had to trudge through deep snow to complete their field work, devise a plan and put together a presentation all within a 24-hour period and with only brief breaks for eating, a bit of "forced" inter-collegiate socialization and hopefully some sleep.

On the US side of the border, there was fantastic support from the local chapter of the Society of American Foresters, who provided a pizza dinner and made sure that the road to the field site was plowed. The event was hosted by the US Forest Service's Darrington Ranger District, who provided accommodation and meeting facilities, and the overall management context. This year's Challenge centred on adaptive management strategies for re-introducing timber management to the Baker-Snoqualmie National Forest.

Given the highly compressed time frame, the results are always impressive. One of the UW teams came away victorious this time, tying the overall score at 3 apiece. The students generally agree that this event is one of the highlights of their forestry education at UBC.

# Exploring forestry and conservation in China

This May will see the inaugural offering of our "UBC Forestry Summer Study Course in China". This course, offered via an exchange agreement with Nanjing Forestry University, is being coordinated by UBC's Faculty of Forestry and the Go Global Office. As in any exchange program, participating UBC students will pay UBC tuition for this 6-credit course. An equivalent number of UBC credits will be offered to Nanjing Forestry University students who will pay tuition to their home university. This course provides a unique opportunity for students to better understand forestry and conservation issues in China. Through lectures and field trips, students will be exposed to local and global issues of conservation, biodiversity, community forestry, and the wood industry in China. Students will also visit cultural heritage sites, nature reserves and local industries during their one-month stay. Twelve UBC students (11 from the Faculty of Forestry and 1 from the Faculty of Science) will be participating this year. Our intent is to build future enrolment to 20 students per year.



# Our children and the forests

YOU DON'T SEE children crying in the garden – and you certainly don't see them crying when they are knee-deep in salal, traipsing through the undergrowth of the temperate rainforest for their very first time. This notion is integral to a small elementary school in East Vancouver, where for the past year volunteers from UBC's Faculty of Forestry have helped young students tap into the sense of happiness, engagement, and wonder that comes from experiencing nature in a direct and immersive way.

Located in a pocket off Commercial Drive – one of East Vancouver's most vibrant areas – Grandview/¿uuqinak'uuh School (Grandview) is a public school that has transformed its curriculum to help students build stronger personal connections with the planet and with each other to become self-reliant global citizens and stewards of the Earth. Conceptualized as an "Earth School," Grandview offers its 160 students a myriad different opportunities to better understand and forge connections with the Earth in ways that meet individual learners' needs, interests, and cultural backgrounds and experiences. The school ground itself is home to an organic community garden, an ethno-botanical garden, a natural "playscape" and a Longhouse Outdoor Classroom, while the walls of the school building are covered with colourful nature-inspired murals painted by students and local artist.

Grandview is currently in its second year as an official Earth school—the only one of its kind in Greater Vancouver—and focuses on experiential learning in nature with an emphasis of one of 4 major themes each year: water, earth, sky, and forest. For 2011-2012, the school's focus is on the forest, and Grandview has partnered with the UBC Faculty of Forestry to help facilitate and expand children's learning through the development of interactive and hands-on activities. These activities – called "field studies" – provide students with knowledge and understanding of the natural world that goes above and beyond what is taught within a regular curriculum.

UBC-led activities at Grandview have ranged from the identification of tree species on the school grounds, to lessons on forest cycles, dendrochronology, orienteering, climate change, and the mountain pine beetle. Elementary students, undergraduate and graduate Forestry students, and alumni have all been brought together to explore different aspects of forests through this partnership, which is currently run by student volunteers from within the Faculty and with the support of the UBC Community Learning Initiative. This

partnership has benefitted not only younger students; UBC Forestry students and alumni have also gained valuable experience by sharing their knowledge of forestry with others.

The hope is that this partnership between Grandview and UBC will continue in future years with the involvement, knowledge, and expertise of other faculties within UBC to help supplement learning of every year's Earth theme. Although Grandview's "year of the forest" will only happen once every 4 years, Forestry students will still be involved in the partnership in years to come. Our children are the future stewards of the Earth and will carry forward the legacy which we pass on to them today. By helping our younger generations gain a deeper understanding of the Earth and its elements, we make a greater investment in the promise of sustainable communities and resources that are so crucial to the future of our planet:

For further information contact Forestry graduate student Mariko Molander at volunteer.grandview@gmail.com.

# Tracking sockeye salmon

THE OCEAN TRACKING Network (OTN) is a $168 million conservation project, headquartered at Dalhousie University. The project unites leading ocean scientists around the globe through tracking of marine animals and assessing how climate change influences animal movements. As part of this initiative, OTN Canada is an integrative research network funded by the Natural Sciences and Engineering Research Council of Canada. This network uses cutting edge technologies and infrastructure to understand changing marine ecosystems across Canada and to demonstrate how we can learn about continental shelf ecosystems and how we can contribute to global observation of coastal and ocean ecosystems.

OTN Canada's Pacific research program is co-led by Drs Scott Hinch (UBC, Forest Sciences Department) and Steve Cooke (Carleton University). The program focusses on studying linkages among behaviour, environment, and physiology of Pacific salmon to better understand their movement, migrations, and survival. The program is being undertaken by a broad network of investigators that spans several academic institutions, government groups (Pacific Salmon Commission, DFO Science Branch), non-government environmental groups (Pacific Salmon Foundation, Canadian Wildlife Federation, Vancouver Aquarium-POST), and private company partners (Kintama, LGL). Collaborations also span several disciplines, including behavioural ecology, physiology, genomics, epidemiology, oceanography, electronic engineering, and fisheries harvest management.

To date, research results have identified mechanisms for reducing mortality of fish that are released by anglers, identified locales of migration mortality, and improved our understanding of the important role of temperature and disease (river and now ocean). One of the first projects completed was an assessment of how tag size and mass affected the behaviour and swim performance of juvenile sockeye salmon. This work was carried out by Alison Collins, an MSc student under the supervision of Dr Scott Hinch.

One of the most important questions a biologist needs to ask prior to interpreting tagging data is whether or not the surgical procedures for the implantation of the tags, or the presence of the tag itself, were detrimental to the tagged animal.

Several studies have challenged the "rule of thumb" that tag burden (ratio of tag mass to fish body mass) should not exceed 2%. To address this issue, Alison studied tag burden and tag size thresholds for salmon smolts. Over 250 hatchery-reared Cultus Lake sockeye salmon were implanted during their pre-smolt phase with one of 3 sizes of dummy acoustic tag to assess how tag burden (1.3-13.6%) influenced swimming performance, relative growth, survival, and post-surgical wound healing in freshwater and during initial stages in seawater. Tagged fish were compared with surgical shams (surgery but no tag implantation) and non-surgery control groups.

Fish with tag burdens of 8% or more had shorter swimming durations than fish with burdens of less than 8%, and fish implanted with the smallest tags had longer swimming durations than fish with the largest tags. No effects on fish growth were observed. Incisions associated with smaller tags healed more quickly than those with the largest tags. Mortality was nil when tag burden was <6%, and survival remained high (≥93%). Survival for all tagging treatments was ≥88% in seawater.

Based on these results, we can recommend that tag burdens should not exceed 8% in juvenile, hatchery-reared sockeye salmon. Work is on-going to examine tag burden effects in wild juvenile sockeye salmon, which have different body shapes. These results provide a scientifically defensible threshold for tagging, and enable researchers to retrospectively examine the conclusions of previous telemetry studies that have studied the migration survival and behaviour of sockeye smolt.

For further information contact Dr Scott Hinch at scott.hinch@ubc.ca. Parts of this article were reprinted with permission from the Ocean Tracking Newsletter Volume 1 (Issue 11) December 2011, Dalhousie University, Halifax, Canada.

Alison Collins running swim performance experiments in juvenile sockeye salmon

# Reducing the oil sands footprint

Mine site near Fort McMurray, Alberta

Photo: Sue Grayston

CANADA HAS THE third largest oil reserves in the world (170 billion barrels), and 97% of Canada's reserves are located in 3 deposits in the Athabasca, Peace River and Cold Lake regions of northern Alberta and Saskatchewan. In 1980 the oil sands produced 100,000 barrels of oil a year, increasing to 1.9 million barrels in 2010 and with production estimated to increase to 4 million barrels annually by 2025. The economic benefits of the oil sands over the next 25 years are predicted to be $2.1 trillion across Canada, including the generation of $783 billion in government revenues and the creation of 830,000 new jobs. However, there is considerable international concern and intense debate about the environmental effects of oil production from the oil sands, including greenhouse gas emissions, air and water pollution, and the disturbance of large tracts of forests and wetlands.

Oil sands are a natural mixture of sand, water, clay and bitumen. As the bitumen is too heavy to be recovered by direct pumping, the oil sands are recovered by either surface mining (when the bitumen is within 200 m of the surface) or by a steam-assisted gravity drainage and drilling method. Twenty per cent of the bitumen in the oil sands is recoverable by surface mining, the majority located in the Athabasca deposit. As of 2009, 660 $km^2$ in this region had been surface-mined and the potential area for surface-mining is 4,800 $km^2$, which amounts to 1.3% of the total area of Alberta's boreal forest. At the beginning of surface-mining the forest is harvested and the forest floor and mineral soil are removed and stock-piled for subsequent reclamation. Surface mining creates pits several kilometres wide and up to 100 m deep. Alberta law requires that after bitumen extraction, oil companies must reclaim their operational land to equivalent land capability, in both appearance and function. Reclamation involves topographical reconstruction of uplands and wetlands. On uplands a range of reclamation prescriptions have been applied, usually involving capping with a mixture of peat and mineral soil to generate a soil-like material capable of supporting tree and shrub growth and microbial communities. Currently, there is no standard prescription for land reclamation and oil companies and Alberta Environment are keen to develop criteria and indicators of successful reclamation to determine if reclaimed sites are on a

trajectory to become a healthy, functioning ecosystem.

Professors Sue Grayston and Cindy Prescott and their graduate students in the Department of Forest Sciences, along with colleagues at the University of Alberta, and collaborators from Syncrude, Suncor, Shell Albian Sands, Imperial Oil, Total and Canadian Natural Resources are studying a range of indicators of ecosystem function in a series of both reclaimed and natural boreal forest sites in the oil sands region to determine whether current reclamation treatments are indeed re-creating a functional soil. Two of their previous graduate students, Sara Rowland (MSc 2008) and Pedro Dimitriu (PhD 2009), measured soil nutrient availability, litter decomposition, plant community composition, development of a surface organic layer and microbial diversity and function at reclaimed and natural sites. Rates of litter decomposition and the activities of key soil enzymes involved in carbon, nitrogen and phosphorus cycling were lower on reclaimed sites. Availability of nitrate, calcium, magnesium and sulphur were generally higher on reclaimed sites than in natural forests, whilst phosphorus, potassium and manganese were generally lower. Soils of natural forest sites contained higher microbial biomass and more fungi than reclaimed sites and the fungi in natural sites were dominated by ectomycorrhizae – mutualistic fungi that live on the roots of trees assisting their uptake of nutrients and water from the soil. In contrast, soils on reclaimed sites were dominated by bacteria and had few ectomycorrhizal fungi. Microbial communities and ecological processes in sites containing tailing sands were the most dissimilar from natural forests. Forest floor development was found to be a key component of reclamation success and was hastened by the presence of shrubs. Five out of 7 reclamation treatments resulted in forest floors that resembled those in natural boreal forests after 15-20 years; reclamation treatments over tailings sands receiving a single fertilizer application appeared to be on a different trajectory towards novel ecosystems, but it may be possible to divert these treatments to a desired trajectory by applying additional fertilizer early during reclamation. Current research is comparing the development of the mineral soil in a time series of reclaimed oil-sands sites with a time-series of natural boreal forest sites recovering from wildfire, a common disturbance in the boreal forests of Alberta. MSc student Jeff Anderson is determining the rate at which new organic matter is being incorporated into the capping material, which will hasten the development of a functioning soil. PhD student Jacynthe Masse is characterizing the microbial communities involved in nitrogen cycling in these soils and the fate of the nitrate, which is elevated in both young reconstructed soils and natural forest soils following fire.


Surveying one of Syncrude's reclamation sites

Photo: Sue Grayston

This research will ultimately lead to the development of targets and indicators to ensure the success of reclamation strategies. In the future, through collaboration with colleague Dr Clive Welham in the Department of Forest Resources Management, these findings will be incorporated into the FORECAST model to predict the most successful reclamation strategies for oil sands sites.

To find out more about this oil sands reclamation research visit: www.forestry.ubc.ca/research/beg.htm. Dr Sue Grayston can be reached at sue.grayston@ubc.ca.


Setting up a reclaimed site for research

Photo: Sue Grayston

# Expectatons of REDD+ in Nepal

Using fuelwood for cooking

FORESTS PLAY A major role as carbon sinks and as a means to store carbon, yet deforestation and degradation are rife around the world, especially in tropical countries. Indeed, deforestation contributes more than 18% of global $CO_2$ emissions and is thought to be the second largest contributor to global warming. Given this situation, Reducing Emissions from Deforestation and forest Degradation in developing countries (REDD+) was introduced under the United Nations Framework Convention on Climate Change as a new mechanism that aims to address climate change by creating a financial value for the carbon stored in forests.

Nepal is one of countries facing deforestation and forest degradation. Forests are a critical resource for the maintenance of the livelihoods of the Nepalese people. For instance, about 80% of the population depends on forests for their daily fuel-wood supply and 42% of the people depend on forests as a source of fodder for their livestock. The intense use of the forests causes deforestation and degradation which, in turn, reduces the diversity of species in the forests, and makes forest inhabitants more vulnerable to disasters. Moreover, overuse weakens the ability of the forest to capture and store carbon. As so many environmental problems are associated with deforestation and forest degradation, it is in Nepal's national interest to work on REDD+ immediately. Although local communities and indigenous peoples are the main actors for REDD+ practices, their needs and perspectives have received inadequate attention in the debates on REDD+.

Tomoko Yoshida, a MSc student in the Faculty of Forestry working under the supervison of Dr John Innes, has been interviewing local people to discover what they think or know about their forests and REDD+. She is also defining what potential benefits local people might expect from REDD+ projects. As part of her research, she has examined whether or not the present form of forest management could work effectively in meeting the targets of REDD+ in Nepal.

Tomoko conducted her field work at Sabaiya forest, in Parsa District, Nepal, where Collaborative Forest Management (CFM) is being implemented. CFM was introduced in the early 2000s as a new system positioned somewhere between community-based management and the conventional form of government-administrative management. It has been developed for large contiguous blocks of Terai hardwood forests, which are located in the lowland plains of southern Nepal. The Terai forests have unique and complex features such as a large population (average 27,154 households), a large area of forest (average 2,631 ha), and stakeholders who vary significantly in ethnic, religious and social backgrounds and practices. Forest users are divided into 2 user groups: nearby and distant forest users. The nearby users are

mainly migrants from hill areas who came to the Terai forest area in the 1950s. People who were originally from the Terai forest area but who have moved further from the forest area because of the influx of migrants from the hills are termed distant users. These individuals are included in CFM because their lives depend on forest products and their cooperation is essential.

Tomoko surveyed the Sabaiya CFM users to learn their perspectives and knowledge of the condition of forest health, $CO_2$ effects, interaction between human activities and deforestation, and also expectations of the potential benefits of REDD+. Additional interviews were conducted with key informants in government and NGOs, and a review of relevant documents was used to verify the feasibility of REDD+ implementation at CFM sites.

Tomoko's findings indicate that the people are unaware of how climate change occurs and the debates surrounding this issue, although they are sensitive to the changes of climate and the forest around them. Social awareness needs to be developed to raise people's concerns about the mechanisms and effects of climate change, the interactions between deforestation and human livelihoods, and REDD+ mechanisms. Nearby users felt more strongly than distant users that the forest is essential for their daily lives and they have more positive attitudes about participation in forest management practices. Distant users are significant actors in the slowing down of deforestation and forest degradation, but there is a need to raise their interests in forest management and to reduce the motivation gap between the 2 user groups. It appears that local people need to be given better, more appropriate and accurate information, that they should be made aware of their roles and responsibility, and that they should have the opportunity to express their needs and knowledge on REDD+.


Logged wood in Sabaiya forest

People have high expectations of the potential benefits of REDD+ in Nepal. However, REDD+ is treated as a purely technical matter in national and international debates, and there has been a failure to recognize the impacts on society and human welfare at the local level. The government urgently needs to take cultural services and human welfare into account if it is to receive local support.

Although Terai forests are qualified for REDD+, representing significant carbon pools with widespread deforestation and degradation, Tomoko's study revealed several challenges for REDD+ implementation under CFM. It is important to improve decision-making strategies, the distribution of carbon ownership rights, and benefit-sharing at the local level. At CFM sites in the Terai forests, the government still largely controls the decision-making process and forest resources. In contrast, community forestry in the foothills zone of Nepal allows local users to make collective decisions, and has succeeded in the recovery of lost and degraded forests. Consequently, CFM in the Terai forests needs to allow local users more rights to make forest management decisions. The present system of tenure will make it very difficult for user groups to earn carbon credits at CFM sites in the Terai forests. This is because some of the carbon pools, such as soil organic carbon and below-ground biomass, are fully owned by the state, with the user groups and government jointly owning dead wood, litter and above-ground biomass.

At a local level, the involvement of distant users is an important issue. To enable their participation, REDD+ projects at CFM sites should financially aid both mitigation and adaptation activities so that distant users can contribute to the projects and be rewarded for any work that they do.

It is important to raise civil society's awareness of deforestation and forest degradation in Nepal. It is also necessary to keep exploring the most appropriate methods to implement REDD+ projects, given the structure of the society being affected. The first, and most important, step is to develop a system of equitable decision-making and benefit-sharing that reflects local needs, and is incorporated into any REDD+ schemes applied to the Terai forests.

Tomoko Yoshida can be reached at tyoshida@interchange.ubc.ca.


# Grin and bear it !

PHENOLOGY IS THE study of the timing of recurring biological events, such as plant bud burst or animal migration. Plant phenology is defined by the onset of the growing season and its duration. Traditionally, assessments of changes in plant phenology have relied on field measurements, often conducted by volunteers and amateur naturalists. Interestingly, phenological events have been monitored and recorded for centuries in Europe and Asia; closer to home, many North American families have maintained records that span lifetimes or generations. While these observations are a valuable source of information, they are limited in spatial coverage, often make use of a range of methodologies, and may be conducted by a large number of personnel with variable training and skill levels, resulting in highly variable data consistency and quality. However, vegetation phenology, itself dictated by a variety of environmental variables, is a critical driver of both resource availability and quality for a wide range of fauna, and this information is critical for wildlife management. The grizzly bear (*Ursus arctos*) utilizes a diverse range of constantly shifting habitats and food resources. The diet of brown bears has been studied for over 2 decades in North America and Europe, and is known to comprise food that is seasonally abundant and rich in nutrients.

In general, following den emergence in the spring and prior to den entry in the fall, grizzly bear food selection patterns may be divided into 3 distinct seasons: hypophagia, early hyperphagia, and late hyperphagia. During hypophagia, grizzly bears feed on roots of *Hedysarum* spp and, occasionally, carrion. During early hyperphagia, their diet extends to ants, ungulate calves, and green herbaceous material such as cow-parsnip (*Heracleum lanatum*) and horsetail (*Equisetum* spp). During the final season, berries such as buffalo berry (*Shepherdia canadensis*), blueberry (*Vaccinium myrtilloides*) and huckleberry (*Vaccinium membranaceum*), as well as the roots of *Hedysarum* spp make up the majority of their diet. As a result of the grizzly bear's seasonally shifting diet, the development of models operating at spatial and phenological scales to match those at which they perceive and select resources is a critical step towards understanding their ecology.

In the Integrated Remote Sensing Studio (IRSS) within the Faculty of Forestry, Professor Nicholas Coops, and his research associates Chris Bater, Dr Wiebe Nijland, and colleagues from the Alberta Foothills Research Institute(FRI), the Universities of Alberta (UA) and Calgary (UC), and the Canadian Forest Service (CFS), have been using remote sensing technologies to assess the seasonality of plant communities utilized by bears for food. To do so, they have been using inexpensive visible spectrum digital single lens reflex (DSLR) cameras mounted in the field to monitor phenological events of critical bear foods remotely. Time-lapse photography allows sampling at very dense temporal time steps, often at daily or hourly intervals, for monitoring vegetation phenology. The camera systems were mounted on trees, allowing a very fine scale of observation, recently termed "near remote sensing," and offering the potential to contrast these field-based observations with satellite-derived measures. While the cameras cannot replace a biologist

in the field, they provide a critical link between a person making careful periodic observations of individual plants, and satellites with their capacity to provide synoptic coverage over large areas with relatively coarse spatial resolution.

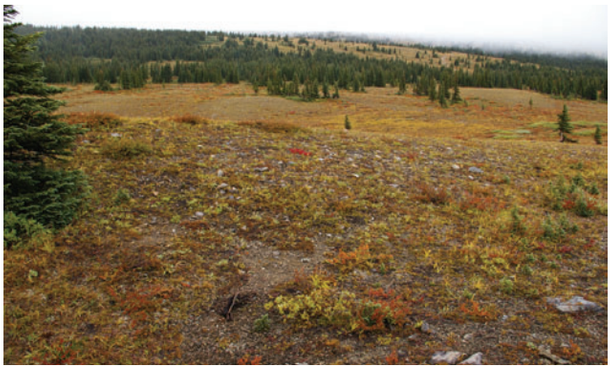
The cameras have been installed for several growing seasons along an elevation gradient in the Alberta foothills flanking the eastern slopes of the Rocky Mountains. The area has a diverse mix of mature and young forest, wetlands, and alpine areas. This area is also a key focus for grizzly bear research conducted by the FRI. The cameras are simple, commercially available, digital time-lapse systems which include a DSLR, intervalometer, and battery pack sealed in a fiberglass case with an exterior solar panel for long-term performance. Seven camera units were installed across the region. Images were acquired at noon every day through the vegetation growing season, and were focused on eleven homogenous under- and overstorey species-specific regions of interest. In excess of 6,700 images were acquired by the cameras at the sites during the observation period.

From these images, phenological trends were developed and mathematical curves fitted to compute the green-up and senescence of each species. The research team then compared the seasonal profiles from the camera data with profiles of vegetation condition derived from human observation of individual plant phenophase and spaceborne remote sensing instruments of the landscape. The satellite-based observations consisted of merged data from 2 satellites – one with a fine spatial resolution well suited to characterizing landscape-level forest structure and dynamics, and a second that has a much broader field of view but provides images on a daily basis. This approach provided maps of the start, length and end of the growing season for a number of key species over a large portion of the Alberta foothills, with highly significant relationships between the multiple scales of observations.

Coops and his team are convinced that monitoring networks such as these are critical tools to help extend and improve our understanding of the seasonal variations in vegetation phenology. Developing synergies between multiple scales of observation (the highly trained human, the inexpensive ground-based "near remote sensing" instrument, and the satellite platform) will ultimately lead to advances in detection of changing vegetation characteristics for wildlife and biodiversity management in the context of a changing climate.

This research was undertaken in collaboration with Dr Michael Wulder (CFS), Dr Gordon Stenhouse (FRI), Professor Scott Nielsen (UA) and Professor Greg McDermid (UC). Funding for this research was provided by the Grizzly Bear Program of the FRI.

Dr Nicholas Coops can be reached at nicholas.coops@ubc.ca.



# Measuring forest carbon in BC

Pano Skrivanos on route to a forest sample plot within the Indian River watershed

BRITISH COLUMBIA HAS an estimated 55 million hectares of forests containing some of the largest carbon pools in the world. In fact, recent estimates point to approximately 20 billion tonnes of forest carbon in BC forests. Up until the early 2000s, BC forests were a net carbon sink, removing an average of 30 tonnes of carbon per hectare from the atmosphere each year. Since 2003 however, BC forests have become net carbon sources, emitting an average 45 tonnes each year. This is due to a combination of factors such as the mountain pine beetle outbreak, wildfires and harvesting-related activities such as slash burning and salvage logging. Forests play key roles in their ability to mitigate atmospheric carbon levels, and as commodities for the carbon stored within them. The global forest carbon market is growing significantly, with a total value of $178 million (US) in 2010, and by 2020 carbon is expected to be one of the largest traded commodities in the world and have a market value of almost $2 trillion. This has led to the development of a diverse international forest carbon economy, characterized by the establishment of specialized voluntary and regulatory markets, legal and political frameworks, project standards and methodologies, and expert resources. Forest carbon projects generate carbon offsets either through the application of specialized forest management practices, or through the protection or restoration of endangered or degraded land. As such, the ability to accurately quantify the amount of carbon that would be sequestered by forest carbon project activities is critical to their success. Carbon estimation techniques for measuring these pools can be grouped into 2 general categories; ground-based and modeling.

Ground-based techniques are generally considered to be the most accurate and precise method of measuring forest carbon stocks. Techniques vary from removing and measuring all aboveground and belowground vegetation and debris, to techniques based on forest inventory. Forest inventory techniques make use of inventory data collected from permanent sample plots laid out in a statistically well-designed manner. The measurements collected from the inventory can be converted to aboveground and belowground carbon estimates using either biomass expansion factors or allometric biomass regression equations. However, while generally considered to be both accurate and precise, measuring carbon on the ground can be both time-consuming and cost prohibitive, particularly if the project area is large and the terrain difficult to access. Therefore ground-based techniques are best used to verify and confirm carbon estimates derived from modeling techniques, which are both less invasive and more practical. Currently, no single, definitive modeling technique for measuring forest carbon exists. Rather a variety of techniques are available, ranging from site-specific data collection to broad regional and national estimates. These modeling techniques have been developed by governments, industry and non-profit organizations for specific locations and scales. Modeling techniques utilize computer applications and allow for the input of surrogate data from which forest volume can be extracted and carbon stocks calculated. Examples

of surrogate data include satellite (Landsat, SPOT, etc) and air photo imagery, forest inventory data, and LiDAR (Light Detection and Ranging).

Pano Skrivanos, an MSc student working with Dr John Innes in the Faculty of Forestry, has been evaluating techniques for measuring forest carbon using 19 permanent forest sample plots established within the Indian River watershed, a 20,000 hectare watershed located approximately 30 kilometers northeast of Vancouver. From each of these plots, Pano estimated forest carbon using a ground-based inventory methodology involving the measurement of 6 forest carbon pools: live trees, standing dead trees, coarse woody debris, fine woody debris, stumps and soil. He compiled estimates from each pool into a total carbon per hectare estimate for each plot. From this he summarized and calculated forest carbon for the entire Indian River watershed and compared this with estimates derived from 3 forest carbon modeling techniques: Canadian Forest Service Carbon Budget Model (CFS-CBM3), Vegetative Resource Inventory (VRI) Biomass Equations, and Private Woodland Planner. Pano conducted statistical analyses to determine which modeling technique estimated forest carbon closest to estimates derived from the ground-based technique.

Results from this analysis indicate that forest carbon estimates from Private Woodland Planner are closest to estimates derived from the ground-based technique, while estimates from CFS-CBM3 were most different. These results were opposite to the original hypothesis, which predicted that estimates from CFS-CBM3 would be closest to estimates derived from the ground-based technique. Estimates from the VRI Biomass Equations model were also found to be farther from the control than originally hypothesized. Given these results, several factors, both anticipated and unanticipated, are likely responsible. These factors include resource constraints, which limited the number of plots that could be established and restricted where plots could be placed to areas that were readily accessible, constraints on available resources, which limited the number of modeling techniques that could be evaluated, and quality of data that was used as input into the models.


Counting and measuring tree rings using an increment borer


An old growth western red cedar located within one of the forest sample plots

Nonetheless, the results from this research contribute to the field of forest carbon quantification. Sampling methodology was framed by "real-world" constraints, and reflects conditions that typically exist under normal project scenarios. During the development of a forest carbon project, there are constraints to resources that must be considered. The results of this research demonstrate a continued need to further develop efficient and accurate methods for measuring forest carbon stocks under realistic conditions, and show how, despite some issues, models for doing so are necessary. Because of this, model development will carry on and techniques will continue to be refined and become more accurate. These refinements will provide project developers with the ability to better measure carbon within a forest, and as such will lead to greater economic opportunities, improved forest conservation, and increased mitigation of the effects of climate change.

Pano Skrivanos can be reached at pano@trainharder.com.

# Innovation in the forest sector

THE WORLD IS changing, driven by shifts in demography and consumption. There will be more people and a shift in consumption and economic power to rapidly developing countries such as China, India and Brazil. The growing middle class in developing countries will increase the demand for goods and services and the resources necessary to produce these. This will put pressure on commodity prices and supply, straining the environment and natural resources (renewable and non-renewable). All businesses will have to transform themselves to adjust to these new realities that will impact all aspects of society and business. Alongside these big picture changes, there is also a growing concern for sustainable development and public expectations of firms to adhere to environmental, social and governance standards. Firms must innovate to survive.

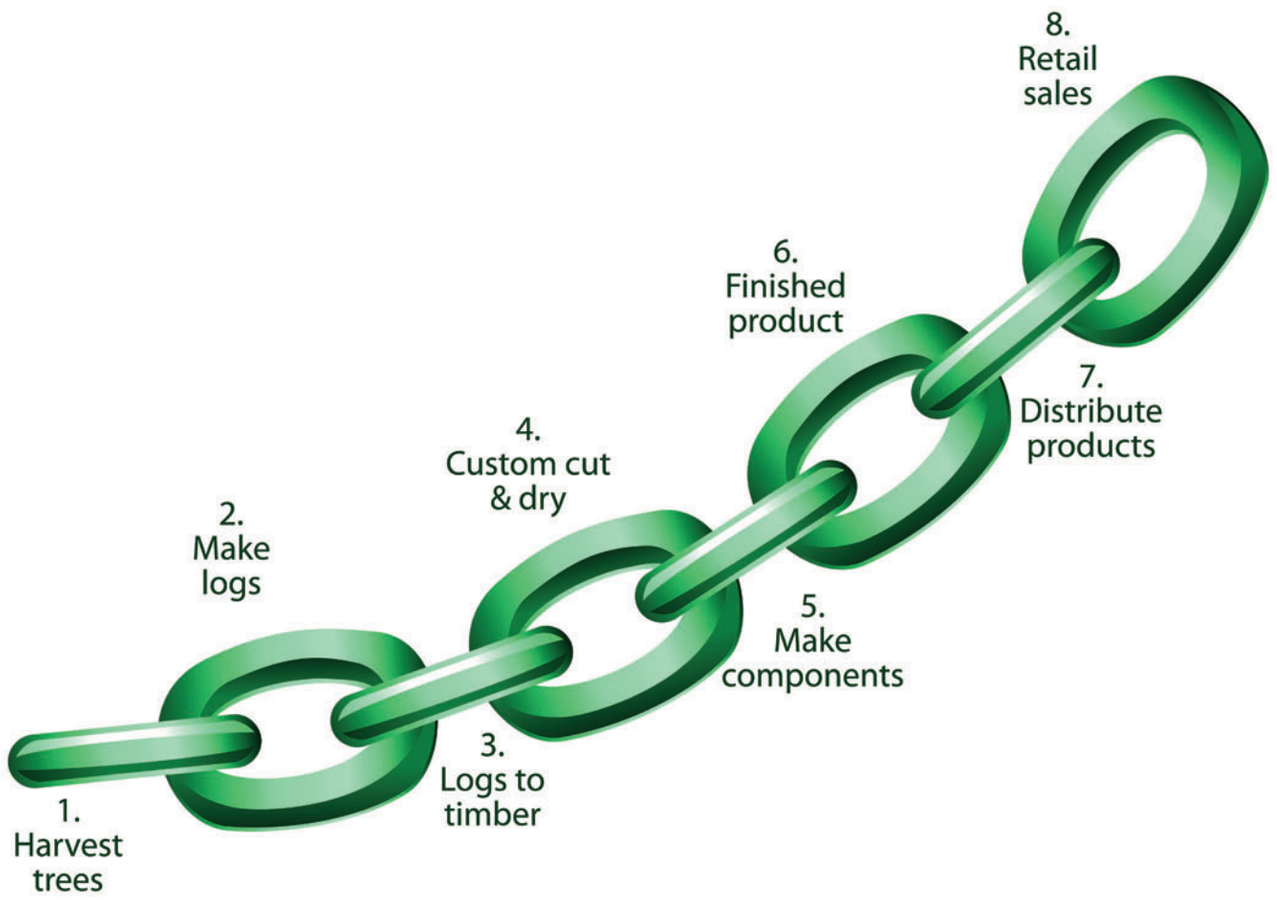
Nowhere is this adaptation to new realities more evident than in the global forest sector, including Canada and British Columbia, where recent government and industry efforts have set the foundation to transform the portfolio of products coming from our forest to include biomaterials, bioenergy, bioplastics, biochemical, new material combinations, and much more. This has been driven by the aspiration to substitute non-renewable sources of supply with renewable and sustainable sources. As the product portfolio of the Canadian forest sector transforms so must the business model upon which these firms are based.

Dr William Nikolakis is a post-doctoral fellow in the Faculty of Forestry working under the supervision of David Cohen and with the support of the Value Chain Optimization NSERC Strategic Network. William's research is exploring business innovation and the impacts on the value chain of the wood products sector. He aims to identify how the forest sector can learn from trends in business innovation and how these lessons may help guide the transformation of forest sector business models. One example we draw on is the transformation of General Electric and its 'ecomagination' initiative, which seeks to provide innovative solutions to environmental problems while driving economic growth. This transformation has enabled GE to be on the cusp of change in many of its product-markets (as diverse as efficient coal burning technologies, to reduced energy jet engines, to new wind farm technologies). Most of their R&D funds and business growth is now focused on their ecomagination projects. The bottom line is that the forest sector in Canada must innovate to succeed in the new global reality, and must look beyond traditional business models.

Innovation involves the development of new or improved products, processes, services or technologies to be accepted in the marketplace. The motivation of innovation is to provide a company with a competitive advantage in its business model and enhance firm performance over time.

At the core of business innovation is the development of new business models, new management approaches, and the provision of solutions to many of the world's problems as a means to enhance firm profitability, also known as shared value. Innovation can occur in any part of the value chain. The value chain establishes a 'process' view of the firm, first outlined by Michael Porter in his 1985 book "Competitive Advantage". It highlights the firm's processes when converting inputs into outputs. Firms transform inputs into outputs through

Innovation and design increase value of BC beetle-killed wood




Movement up the value chain

the consumption of resources – which are capital, labour, materials and technology. Firms then engage in primary and support activities. Primary activities include inbound logistics; operations; outbound logistics; marketing and sales; and services. Support activities include: procurement; human resources; technology and infrastructure. Innovation can be focused on processes in the value chain (in primary or support activities) or on products (the outputs).

There has been considerable focus on innovation in the forest products sector. Much of this attention has been directed to the forest resource, production processes or the products themselves. But we understand very little about other aspects of the value chain that require change to support innovation. By drawing on examples of innovation from global businesses, William's study will provide lessons for Canada's forest products sector as it seeks to transform itself from a producer of wood products to a producer of forest products (with focus on the bio-economy).

There are significant challenges to the forest sector in its innovation efforts. Some of these are structural and others are technical but there are also barriers due to capital constraints and lack of appropriate expertise as the sector moves into the bio-economy. The opportunities offered by the emerging bio-economy with recent investments by governments and industry in new transformative technologies are significant, timely, and coincide with the industry recognizing the need for change. Areas that have been flagged as requiring innovation include technology (continuous, value enhancing and transformative), human resource development (people and organizational culture), emerging sustainability criteria, governance (internal and external and leadership), the policy environment, financial instruments, investment in R&D, and value chain management.

In applying lessons for innovation in the forest sector, William and his co-researchers will draw on a broad network of experts and senior staff from the Faculty of Forestry, FPInnovations, the Canadian Forest Service and industry. They will conduct interviews with innovation leaders in the broader business community throughout 2012 and 2013 and the knowledge gained from this research will be disseminated to the Canadian forest industry and policy makers in 2013.

For further information, contact Dr William Nikolakis at william.nikolakis@ubc.ca or Dr David Cohen at dave.cohen@ubc.ca.

# Rusts never sleep

Currant leaf showing signs of white pine blister rust (*Cronartium ribicola*)

RUST FUNGI REPRESENT one of the most important groups of plant pathogens in the world. They cause destructive diseases in wheat, soybean, coffee, pines, and poplars. Rust fungi have a long history of destroying crops and interfering with human welfare. They were described in Aristotle's time and were known by Romans as a crop plague. In order to protect their wheat crop from destruction by the rust, they would sacrifice red animals such as foxes, dogs, or cows to the god Robigo. Some even speculate that consecutive rainy seasons caused severe rust epidemics, resulting in the fall of the Roman Empire! Centuries later, it was established that rusts are microscopic fungi that stealthily infect their host plants and steal their precious sugar and nutrients.

Some of the most damaging tree diseases are caused by rust fungi. White pine blister rust was introduced from Europe in the early 1900s and has since wreaked havoc in North American white pines. It has now spread to most of the continent and has reduced white pines to a minor species that is rarely used in reforestation despite its great qualities. Some plantations suffer nearly 100% mortality and most North American pines are very susceptible. In addition, the disease endangers the survival and regeneration of high elevation pines, which are keystone species in fragile alpine ecosystems.

There are still many unsolved mysteries about rust fungi and understanding their epidemiology and infection cycles could lead to better management strategies. For example, rusts can cause a variety of different symptoms and damage and exhibit various life cycles: some require 2 different hosts to complete their life cycle; others can complete their life cycle on the same host. Untangling these different behaviours and characteristics could pave the way to novel approaches in controlling these diseases. In recent years, genomics research has generated much excitement in forest protection and there is hope that innovative solutions and tools can be generated by these approaches to prevent or mitigate epidemics.

Dr Richard Hamelin joined the Department of Forest Sciences at UBC in 2005 to take over the forest pathology program following

Professor Bart van der Kamp's retirement. Richard has a unique position that allows him to maintain joint appointments at Natural Resources Canada's Laurentian Forestry Centre in Québec City and at UBC's Faculty of Forestry. This places him in a position to get involved in undergraduate and graduate teaching and to run research programs on both sides of the country. His research group has been funded by Genome Canada and Genome BC to decode the genomes of several tree pathogens, including the poplar leaf rust and the white pine blister rust.

Richard and Dr Nicolas Feau, a research associate in his team, have recently been involved in a worldwide consortium to sequence the first rust genomes. They scanned the genome of the the poplar and cereal rust pathogens and found a large number of small proteins that are secreted outside the fungal cells and could be important in causing disease. Some of those proteins were produced during infection at the interface between pathogen and host cells and could be involved in host recognition. They found that these secreted proteins evolved rapidly, most likely to improve the pathogen's ability to evade host recognition and the onset of resistance reactions. This could be an important clue in understanding how pathogens can overcome the host defense and could be translated into the development of better screening methods to identify resistance or to monitor the evolution of pathogen races.

This research paved the way to sequence the genome of white pine blister rust. To accomplish this, Richard Hamelin has teamed up with collaborators at the Genome Science Centre at the BC Cancer Agency and at Natural Resources Canada. Dr Braham Dhillon, a post-doctoral fellow in Hamelin's team, has scanned the rust genome to identify DNA variations, know as single nucleotide polymorphisms, or SNPs. Using these data, assays were designed to detect SNPs in rust genomes, making it possible to generate unique DNA profiles that can be used as fingerprints.

Simren Brar, an MSc student in Hamelin's group, designed and conducted SNP genotyping assays on over 1000 rust samples from across North America. She found that the western rust was genetically quite different from the eastern rust. This could reflect the different history of introduction of this exotic pathogen into North America. It is believed that there was a single introduction into western North America, but multiple introductions over many years in eastern North America. However, she found that the pathogen could migrate over long distances and thrive in a variety of environments and on different hosts. For example, her DNA analyses indicate that the rust from the coastal western white pines have very similar DNA profiles to the rust found on high elevation white bark and limber pines. This indicates extensive migration and the ability of these pathogens to spread and survive in drastically different environments.

White pine blister rust (*Cronartium ribicola*) fruiting bodies

The next challenges for Hamelin's rust research team will be the sequencing of hundreds of rust genomes from a worldwide collection. This will make it possible to reconstruct the global white pine blister rust pandemic from a phylogenomic perspective and help predict its evolutionary potential. These studies will provide unique resources and open new avenues for identification and monitoring of pathogen races and for disease management. The use of genomic approaches for diagnostic and monitoring is very promising.

For further information, contact Dr Richard Hamelin at richard.hamelin@ubc.ca.

# development & alumninews

## **Start An Evolution** Priority Project Overview

In the last issue of BranchLines we introduced the Faculty of Forestry's Start an Evolution fundraising and alumni engagement campaign, part of the larger UBC Start an Evolution campaign and in this issue we tell you about one of our priority project areas – Enhanced Student Learning. Student Learning is 1 of the 3 overarching pillars of both the UBC and the Faculty's strategic plans. One initiative under Student Learning is to provide increased support and opportunities for students to undertake Enhanced Educational Experiences (E3s), whether that be through international exchange, field trips or volunteer work. See below for further details. In this issue you'll also read about some of our alumni, friends and organizations who are getting involved and making a difference in forestry.

# To learn more, get out of town

Mark Shearer on his exchange in Wales

A tree plantation in Wales and a small community on Haida Gwaii may not have much in common at first glance, but both are examples of the wide-ranging experiences available to Forestry students who choose exchanges as an Enhanced Educational Experience (E3).

Exchanges give students the opportunity to pursue their interests in a completely different natural, cultural and economic environment. Invariably, they come back to UBC with new awareness, new perspectives and new knowledge that they could not have acquired in a lecture or lab.

**Mark Shearer** is in his final year of the Bachelor of Science in Forestry program, with an international specialization. Last year he completed a 10-month exchange in Bangor, Wales. "I had a few choices of partner universities in Europe, but Bangor University allowed me to transfer more credits back to UBC," he says.

In Wales, Mark found that much was familiar but much else was new. "Early on, we did a hike in a nearby mountain, and a professor asked me to identify a particular tree. I couldn't figure it out, and I was surprised to learn that it was a Douglas-fir. It had smooth bark and a different colour. That ended up being an analogy for the entire exchange: things looked different but were really the same underneath, or they looked the same but were actually quite different."

**Ally Sherlock** is in the Natural Resources Conservation program, and one of her 2 exchange experiences sent her to Haida Gwaii for a semester. "I was excited to become truly immersed in a small resource-dependent town where forestry has shaped and defined the community in so many ways," she says.

Ally's most moving experience on Haida Gwaii was a visit to Windy Bay, the site of the logging protests that occurred in the 1980s. "We saw the clearcuts, the cabins the protesters lived in for several months, and the road where the elders stood to protest and were arrested," she says.

"It was incredibly powerful and moving, and as a future natural resource practitioner, I understood the importance of decisions I will make and how they will affect the landscape for centuries."

While Mark and Ally each had different experiences, they both highly recommend exchanges. "You learn that there is no one way of doing things," Mark says, "And you grow as a person."

Ally has this advice for students interested in exchanges: "What you get out of the experience is completely up to you. You could go somewhere and go through the motions, or you can make an effort to be part of the community and really own your experience. If you are truly interested in a certain aspect of forestry, then speak up and ask. When you show interest and you are respectful of the knowledge that you receive you can gain so much from the people around you."

For all the value that an exchange delivers, it doesn't come cheaply. Students must pay their way, including tuition and living expenses, wherever they go on exchange.

The Faculty of Forestry wants to make Enhanced Educational Experiences such as exchanges more affordable to students. As part of our Start an Evolution Campaign we invite you to joint with us to achieve this objective. For more information, please contact **Emma Tully, Director of Development at emma.tully@ubc.ca or phone 604.822.8716.**

# New award supports transfer students from China

With a recent gift from multinational corporation United Benefit Group, its Chairman Hanfeng Zheng, Vice Chairman Xu Huang, and Executive Buyue Wang have endowed a scholarship to support students in the undergraduate "2+2" transfer program. In this program, a student completes 2 years of postsecondary education in China, followed by 2 years in Forestry at UBC.

United Benefit Group (UBG) is a comprehensive company specializing in electrical products manufacturing, real estate development, international trade, ocean shipping, and building materials development. UBG originated in Fujian Province, where forestry is a key industry. UBG established the scholarship to help students from Fujian obtain a quality education internationally in order to better manage forest resources at home.

Mr Zheng explains: "Sustainable forest management and environmental protection are the key priorities in China's social, ecological and economic development. We believe that providing this scholarship will encourage students from China studying forest practices and management at UBC Faculty of Forestry, the best faculty in the world in sustainable forest management. I hope, through the scholarship program, to foster stronger ties with UBC Forestry and Fujian Province and to support future generations of Chinese students studying forestry at UBC."

The 2+2 transfer program began its development in 2005, and the first students came to UBC from China in 2008. Since then, over 40 students from Nanjing Forestry University, Fujian Agricultural and Forestry University, and Beijing Forestry University have participated in the program. Currently, 32 more students are working toward transfer to UBC Forestry in Fall 2012.

UBC Forestry has a long history of cooperative relations with many Asian countries, including China, India, Japan, Korea, Vietnam, and Malaysia. In China, we partner with the State Forestry Administration, provincial governments, universities and research institutes. We also offer training programs for Chinese mid-career professionals and provide academic support for Chinese visiting scholars.

The Faculty of Forestry is grateful for the support of UBG and its senior leaders, and we look forward to ongoing strong relationships with our partners in China.

The United Benefit Group Fujian Forestry Scholarship will be awarded for the first time in Fall 2012.

# TLA supports forestry students for over 50 years

Every year at the BC Truck Loggers Association convention there's a silent and live auction. Nothing unusual about that; lots of organizations raise funds this way. What's different at the TLA convention is that bidders routinely pay at least twice what the auction item is worth, and gleefully outbid each other in friendly competition.

They do this because much of the funds raised go to support student awards at UBC, BCIT and Vancouver Island University. At UBC the TLA supports 5 undergraduates each year, and has done so for over 5 decades.

The UBC Faculty of Forestry was still in its infancy in 1955, when the TLA established 3 awards for students entering first year forestry. In 1987 the Association added 2 awards specifically for students in the Harvesting major.

TLA Executive Director Dave Lewis (BSF'94) says, "Our organization represents independent forest contractors, and they account for 70 % of coastal forestry in BC. We encourage a business approach to forestry, and we want students to understand the breadth and scope of the industry."

Claire Errico is in her first year of the Bachelor of Science (Forest Resources Management) program, and she received the Truck Loggers Association Scholarship as an entrance award. "I am very grateful to the TLA for their generous support," she says. "Receiving the scholarship was wonderful because I am able to focus more on my studies now that some of the financial burden of school is eased. I have also been able to take an additional course on aboriginal forestry that I wouldn't have been able to do without the scholarship. The Truck Loggers Association is very generous and it's really great how supportive they are of forestry education in BC," she says.

The Faculty of Forestry is grateful for TLA's long-standing support and encouragement of forestry students, and appreciates the generosity of its members.

# **alumni**news

Forestry alumni have engaged with the Faculty of Forestry in a variety of ways over the past few months. They reunited and heard from the Dean over breakfast at the ABCFP conference in Victoria, connected with current graduate students at the Future Forestry Leaders networking night, welcomed new graduates at the Silver Ring Ceremony in March, built their network by joining the Faculty of Forestry's Alumni LinkedIn group, and provided feedback on the Faculty's strategic plan. There are many ways to get involved and if you don't see something that perks your interest, let us know! If you are not receiving information on these types of activities, it could be because we do not have your email address. Contact Caely-Ann McNabb at 604.822.8787 or caely-ann.mcnabb@ubc.ca to update your contact information.

## Reunions and events

Spring is upon us and that means that it is reunion time! Organizing committees are hard at work planning 5 different reunions for 2012. Graduates from the classes of 1952, 1956, 1960, 1962 and 1972, be sure to update your contact details with us to ensure you receive your invitation; we don't want you to miss out.

### Mark your calendars for the following events:

- April 26, 2012 – Forestry Alumni BBQ and Tour at the Malcolm Knapp Research Forest at Loon Lake. Join us for an afternoon down memory lane as we tour the research forest and visit students while they are there for Spring Camp. All alumni and friends are welcome!
- May 7, 2012 – UBC Dialogues: Victoria, BC
- May 15-16, 2012 – Class of 1952 60th Reunion: Vancouver, BC
- May 25-27, 2012 – Class of 1972 40th Reunion: Parksville, BC
- May 26, 2012 – UBC Alumni Weekend: Vancouver, BC This is the perfect opportunity to come back to campus for a day full of tours, talks and family fun! Forestry Professor David Cohen will give a talk on Sustainability: Innovation Driver for the Twenty-first Century. Forestry alumnus Aaron Lawton, BSF'07, of One Ocean Expeditions, will help you discover Antarctica from a trip aboard the research and passenger vessel, the Akademik Ioffe.
- June 20-21, 2012 – Class of 1956 56th Reunion: Sidney, BC
- September 17-19, 2012 – Class of 1960 52nd Reunion: Loon Lake, BC
- September 19-20, 2012 – Class of 1962 50th Reunion: Loon Lake, BC and Vancouver, BC

For more information on any of these events, contact Caely-Ann McNabb at caely-ann.mcnabb@ubc.ca or 604.822.8787.


We are searching for alumni 'lost in the woods'. There are 605 alumni who we have lost touch with and 1800 who we are missing email addresses for. If you know of any 'lost' alumni please let them know that they can update their contact details with the Faculty. A list of our 'lost in the woods' alumni is posted on the Faculty website at www.forestry.ubc.a/alum.

# Alumni in action

One of the common questions raised by alumni is "What happened to my classmates after graduation?" Our students wonder "What can I do with my degree?" To answer both of these questions, this column features stories from our alumni, highlighting the various career paths our graduates have followed.


## Mark Feldinger, BSF'83

**Where did you grow up?**

Revelstoke, BC

**Why did you choose UBC Forestry?**

I wanted a career in an applied science, with an outdoor orientation. My father also grew up in Sopron, Hungary (although not a forester) and the UBC connection was something that I was aware of many years prior to attending university.

**What was your first job after graduation (related or not to your degree)?**

Forestry Crewman – Downie Street Sawmills

**What are you doing now and how did you end up there?**

I am currently Senior Vice President – Forestry, Environment and Energy with Canadian Forest Products Ltd (Canfor). I have spent the past 27 years with Canfor, starting out in Chetwynd and with time in Prince George and Fort St James over the years. Looking back, the roles have been varied; Forestry Technician, Forestry Supervisor, Divisional Forester, Assistant General Manager, Woodlands Manager, General Manager, Regional Manager, and Vice President-Manufacturing. The company has always provided me with opportunities for personal growth and new challenges. I have had the opportunity to work with very talented and committed people within the company and the general industry as a whole.

**What is your fondest memory of your time at UBC?**

I have many. Doc Worrall's dendrology lectures and exams always had an interesting twist to them. The suspension bridge we constructed at the Loon Lake Research Forest for our grad class project, cinnamon buns at the Barn, Loggers Sports competitions, JV Basketball, the Open-House Canada Forestry Field trip to Fredericton with 43 fellow students. There are too many to capture here.

**If you weren't working where you are now what profession would you most like to try?**

I would have pursued an engineering path if I had not decided on forestry when I left high school. I think this still applies today.

**What is the toughest business or professional decision you've had to make?**

During the 2007 to 2009 period, many decisions to take production shifts down or close mills had to be made due to the collapse of the lumber market in the US and the lack of demand for our products. I always found these the most difficult, due to the impacts they had on the people at the sites and their families.

**What do you aspire to ten years from now (personally and/or professionally)?**

Ten years is a long time. Personally, I expect to watch our 4 children, that Carolyn and I take great pride in, make their own way in the world while we move on to the empty nest stage. This should provide travel opportunities and more recreational opportunities with the friends we have made around BC and further afield. Professionally, I work today with a strong leadership team at Canfor, and we still have work to do and opportunities to pursue. The bio-energy and bio-economy areas will be interesting to observe as they pertain to forestry in BC in the coming decade.

**Do you have any advice for students considering enrolling in forestry?**

Forestry has always been an exciting and evolving profession in British Columbia. With global populations continuing to grow and the green attributes of building with wood increasingly becoming apparent, demand for BC's forest products will continue to increase and expand to many new markets. Now is the time to enroll in forestry and whether you decide to pursue a career within industry, government, the consulting sector or elsewhere, your opportunities will only be limited by your aspirations.

# Making a difference

Photo: Varun Saran

On November 29th, 2011, Dr Hosny El-Lakany, PhD'69, Adjunct Professor in the Department of Forest Resources Management and Director of International Forestry at UBC's Faculty of Forestry, was recognized by fellow UBC alumni for his work in aiding communities around the world with sustainable forest practices. He was the recipient of the Global Citizenship Award at the annual UBC Alumni Achievement Awards which took place in downtown Vancouver. Hosny gave an inspiring speech and reminded us that "*Tuum Est*" not only means "it is yours" but also "it is up to you". He took "it is up to you" to heart and embarked on an impressive global career after completing his PhD here at UBC Forestry. He is a humanitarian and environmentalist and has dedicated his career to global issues such as deforestation, land degradation, climate change, globalized trade and investment, forest governance, poverty reduction and natural resource conservation. We are proud that Hosny is a UBC Forestry alumnus and that he is here sharing his knowledge with future generations.

## Are you LinkedIn?

Join the UBC Faculty of Forestry's Alumni LinkedIn group. The group has been growing steadily and now has over one hundred members. Whether you are looking for a platform to discuss ideas, share employment opportunities or simply want to build your network, this group is for you! Search UBC Faculty of Forestry Alumni on LinkedIn.

## Electronic versus paper newsletter?

Branchlines is currently mailed to over 4,000 forestry alumni, interested groups and individuals. We also post an electronic version of each issue on our Faculty website (go to www.forestry.ubc.ca and click on "Publications").

If you would prefer to stop receiving paper copies we can notify you by email when electronic versions are available online. To change your subscription from paper to electronic notification please send your request to Jamie at jamie.myers@ubc.ca.

### Newsletter production

**branch**lines is produced in-house by the Faculty of Forestry at the University of British Columbia.
Editor: Susan B Watts, PhD, RPF, susan.watts@ubc.ca
Designer: Jamie Myers, jamie.myers@ubc.ca

ISSN 1181-9936

Questions concerning **branch**lines or requests for mailing list updates, deletions or additions should be directed to sue.watts@ubc.ca.

UBC Forestry
University of British Columbia
www.forestry.ubc.ca

**Return undeliverable Canadian addresses to:**
Faculty of Forestry
University of British Columbia
Forest Sciences Centre
2005 – 2424 Main Mall
Vancouver BC CANADA V6T 1Z4