# branchlines

Volume 25#4 Winter 2014

## Inside:



forestry
university of british columbia

# **dean's**message

While it is always invidious to single out individual articles, a couple of articles in this issue of BranchLines are worth drawing particular attention to. The first, on page 19, is a notice that a company run by 2 of our alumni, David Walkem and Leonard Joe, has won a prestigious award for Aboriginal Forestry. Stuwix Resources Joint Venture is an Aboriginal forestry company that brings together a number of First Nations in the Merritt area. It works very much as a partnership, operating a replaceable forest license, and maintaining harvest practices consistent with the values of the First Nations that form the partnership. It is a great example of what a UBC Forestry degree can lead to, and is a testament to the strength and skills of David and Leonard. I am delighted that their success has been recognized nationally.

The second item relates to a panel discussion held at UBC in November this year that brought together a number of speakers from First Nations, the provincial government, and industry to discuss the implications of the Tsilhqot'in decision. The decision recognized that the Nations have title to approximately 170,000 ha of what was previously considered "Crown land". The implications are extremely significant, and will usher in an era of change over much of the forest area of British Columbia. For some, this will be an affirmation of a long struggle to have Aboriginal title recognized. For others, it will bring an additional level of uncertainty over timber supply at a time when there are already pressures brought about by the mountain pine beetle losses. As indicated in the article, it is not yet clear how the provincial government will proceed. There is clearly an opportunity for the expertise within the Faculty of Forestry to be utilized in finding a way forward, but this will depend on all parties accepting that we could contribute.

One case study that may be of interest to many Aboriginal communities is the relationship that has been developed between Malcolm Knapp Research Forest and Gallant Enterprises. Gallant operates a small-scale sawmill within the Research Forest, taking 10-20% of the logs produced from the Forest. At the mill, it is able to increase the value of the logs by anything between 10% and 50%, with revenue being split between the Forest and Gallant. Such an arrangement could be very beneficial for small communities seeking a source of employment as well as a revenue stream. A considerable amount of research is going on in the Faculty over this type of issue, and we are well-positioned to provide advice on the pros and cons of such business arrangements.

The market for British Columbia's forest products is rapidly evolving, and new products continue to be developed. While there has been a strong focus on the expansion of lumber markets into new areas, less attention has been given to how British Columbia could expand into markets for new products (as opposed to expanding its markets for existing products). Some of the potential is apparent within the UBC campus, where a variety of innovative approaches to the use of wood have been adopted in the past, and continue to be developed. We have developed a self-guided tour at http://woodtour.sites.olt.ubc.ca that features some of the wood designs on show. This will change as new uses of wood are incorporated into campus buildings.

**John L Innes**
Professor and Dean

# **forestry**news

## New appointment

**Dr Shannon Hagerman** will be joining the Department of Forest Resources Management as an Assistant Professor in Social-Ecological Systems, effective January 1, 2015. Shannon is an interdisciplinary scholar who uses social science research methods to understand human behavioral, institutional and policy elements of social-ecological systems (SES) in a rapidly changing world. Her research program aims to advance a more comprehensive understanding of "human dimensions" and their roles in shaping the dynamics and outcomes of SES.

Shannon obtained her PhD from UBC in Resource Management and Environmental Studies. She went on to work at the Climate Impacts Group at the University of Washington first as a SSHRC postdoctoral fellow and then as a research scientist specializing in human dimensions of resource management. She has taught CONS 200 at UBC since 2013. Dr Shannon Hagerman can be reached at shannon.hagerman@ubc.ca.

## Schaffer Lecture 2015

On Tuesday March 3rd we will be hosting a public lecture by **Dr Cecil Konijnendijk** the head of Landscape Architecture, Planning and Management at the Swedish University of Agricultural Sciences. Dr Konijnendijk will be talking about urban forestry and its role in the current efforts to develop resilient, healthy and attractive cities. He will address the specific roles of trees and forests in urban settings, how these roles have been changing and what lessons can be learned for Canadian cities.

The Schaffer Lectureship was established in 1981 by the late Mrs Kato Schaffer for the purposes of disseminating scientific information among forestry students, professional foresters, scientists and the public. The evening will include poster displays of graduate student research projects and a reception following the lecture. Mark your calendars for the evening of March 3rd with the Schaffer Lecture beginning at 5:30 pm in room 1005 of the Forest Sciences Centre. For further information visit the events page of our Faculty website at www.forestry.ubc.ca/calendar-of-events.

## Recent awards

**Dr Peter Marshall** has received the Canadian Institute of Forestry Presidential Award, in recognition of outstanding service and commitment to the Institute and exemplifying a devotion to and passion for the profession of forestry. The award appreciates the dedication that individuals provide and encourages individuals to contribute to the leadership, promotion, and understanding of the profession and the practice of forestry.

**Drs Sue Grayston, Maja Krzic, Cindy Prescott** and their team have been awarded third prize in the 2014 Quarry Life Award competition. The Quarry Life Award is an international research and education competition sponsored by Heidelberg Cement Group and aims to raise awareness of biodiversity in mining sites worldwide through sponsorship of projects to boost mining ecology and biodiversity.

**Dr Cindy Prescott** has been awarded an Honorary Doctorate from the University of Helsinki in recognition of her contributions to forest science and work with Finnish scientists and the Academy of Finland. Dr Prescott received the award during the solemn conferment ceremony in Helsinki earlier this year.

A video profiling **Dr Rob Kozak** as a recipient of the 2014 Killam Teaching Prize can be viewed from our Faculty website at www.forestry.ubc.ca/2014/10/honouring-excellence-in-teaching/. This award recognizes Rob's strong commitment to teaching and reflects his abilities to interest and engage students both inside and outside of the classroom. Rob is a 2-time winner of the Killam Teaching Prize, as he was also a recipient of the honour in 2001.

# TRANSFOR-M Dual Masters Program – Lessons Learned

TRANSFOR-M Students at Koli National Park in Eastern Finland during the European field course 2014

The TRANSatlantic FORestry Master (TRANSFOR-M) is the first dual-degree master's program in forest and environmental management between Canada and Europe. The aim of the program has been to educate the next generation of globally minded forest and environmental managers and scientists on the cultural differences, diverse historical contexts, and differing economic drivers that exist in Canadian and European natural resources management. By drawing on the expertise and opportunities of 15 graduate programs across 7 institutions, we were able to develop a program with unparalleled experiences for participants.

The TRANSFOR-M consortium included 3 Canadian universities (University of British Columbia; University of New Brunswick and University of Alberta) and 4 European universities (Albert-Ludwig's-University, Freiburg, Germany; Bangor University, Wales; University of Eastern Finland and Swedish University of Agricultural Sciences).

The program (funded under the Transatlantic Degree Partnership Program by the European Commission of the European Union and Human Resources and Skills Development Canada) covered the students' airfare and living expenses as well as faculty exchanges between the universities. Since September 2011, 44 students have had an opportunity to participate in the program and earn a dual degree.

Students spent 1 year at their home institution and 1 year at a partner university abroad with all instruction in English. Canadian students were required to complete a language course while in Europe (German, Swedish, or Finnish). The program also included 2 field courses - one in Europe (visiting 4 countries) and one in Canada (visiting 3 provinces). These provided broad exposure to forest and environmental management approaches in different forest regions.

The benefits of the program have been many:

- Attracted highly qualified students who maintained their high grades during their TRANSFOR-M studies
- Provided students with an opportunity to build a highly customized master's program. The variety of specializations was impressive (climatic change adaptation, aboriginal forestry, urban forestry, wildlife management, bioeconomy) and the flexibility in this program meant that students often worked on interdisciplinary projects that incorporated learnings from 2 continents.
- The cross-cultural aspects of TRANSFOR-M benefited other students in the institutions as visiting or returning TRANSFOR-M students shared their experiences in and out of the classroom.
- Stronger ties between participating institutions have led to joint research projects.
- Better interregional perspective as, through the field courses and work experiences, Canadian students gained an understanding of the variety of forest and environmental management practices in 3 provinces, and European students discovered the differences in practices in 4 EU countries.

Building a multi-institutional collaboration such as this required the time and effort of numerous people due to the different policies and procedures in each institution. However, the benefits realized far outweighed these challenges. The program has created a cohort of young global leaders with a broad perspective and understanding of the complex issues in forest and environmental management. Despite a current lack of funding, 6 out of 7 institutions have decided to continue the program until 2018.

*For further information contact Jorma Neuvonen at – jorma.neuvonen@ubc.ca.*

# Homegardens and biodiversity in southern India

The Western Ghats mountain range in Kerala, southern India, represents one of the most biodiverse tropical ecosystems in the world, providing habitat for a large number of endemic flora and fauna. However, the high population density in the state of Kerala has led to increasing anthropogenic pressures (such as agricultural conversion and housing development) on tropical forest ecosystems. In this context, agroforestry systems may provide a potential solution to marry the necessity of sustainable food production with the need for biodiversity conservation in this region.

Homegardens are small-scale agroforestry plots often encountered in Kerala. A traditional form of agroforestry that is approximately 4,000 years old, homegardens often contain a diversity of cultivated plant species, ranging from food plants to medicinal and ornamental species. These gardens also contain varying extents of natural vegetation, depending on how actively they are managed. The gardens serve as refugia for many endemic species of amphibians, birds, insects and plants. As such, homegardens could play a significant role in local biodiversity conservation in Kerala.

This summer, a team of Canadian and Indian students investigated the biodiversity conservation potential of homegardens in Kerala, under the supervision of Dr Jeanine Rhemtulla from UBC's Faculty of Forestry. Led by Theraesa Coyle, a masters student from McGill University, the team also included Gervais Lee (funded by an International Undergraduate Student Research Award from UBC Forestry), Jocelyn Nelson from UBC, and 5 Indian students from Kerala Agricultural University. By building an inventory of cultivated and non-cultivated tree species, insects, birds, amphibians and soil invertebrates in Keralan homegardens, the team hopes to quantify species diversity and examine how this might be influenced by the varying spatial contexts of the homegardens, as indicated by remote sensing imagery.

Understanding how homegarden biodiversity is impacted by spatial context – including connectivity between different gardens, and proximity to nearby forest/agricultural/urban environments – is key to identifying the landscape-level factors that influence the biodiversity conservation potential of homegardens in Kerala. Amphibian diversity, for instance, may be positively correlated with proximity to water bodies or rice paddies, thus increasing the amphibian conservation value of gardens that are directly adjacent to such landscape features. The insights gained from this research project will help inform land use policy in Kerala, by: i) demonstrating how homegardens contribute to local biodiversity conservation, and; ii) indicating which homegarden types should be prioritized for conservation, based on their landscape context. This is especially crucial given that homegardens are vanishing due to ongoing conversion of these agroforestry plots into monoculture plantations and housing projects.

In a time when biodiversity conservation must progress hand-in-hand with an ability to meet the increasing needs of human development, homegarden research shows promise in guiding landscape-level conservation strategies and practices, thereby empowering developing countries such as India to advance towards a sustainable future.

*For further information please contact Gervais Lee at gervais_lee_@hotmail.com or Dr Jeanine Rhemtulla at jeanine.rhemtulla@ubc.ca.*

# A successful partnership for getting more value from the forest

Globalization, rapid changes in technology and shifting markets have all been factors in the Canadian forest products industry's declining competitiveness. One way to help companies remain competitive may be through the formation of partnerships. A partnership is a collaborative relationship characterized by the sharing of resources, including risks and rewards, and joint planning. Partnerships allow associates to gain access to new technologies or markets, provide new products or services, gain economies of scale, share risks and have access to knowledge and skills beyond their traditional boundaries.

Recognizing the increasing importance of partnerships to the forest products industry, Dr Tareneh Sowlati (Associate Professor in the Department of Wood Science at UBC) and Mehdi Piltan (graduate research assistant) have been working on a project to systematically evaluate partner successes. Their project involves surveying managers to identify partnership practices (types and drivers) and their success factors in the BC forest industry. They then apply a decision support tool for partnership evaluation. One of the partnerships that they have focused on is the highly successful partnership between UBC's Malcolm Knapp Research Forest and the sawmilling company Gallant Enterprises of Maple Ridge.

The Malcolm Knapp Research Forest (MKRF) in Maple Ridge was established by a Crown Grant to the University of British Columbia in 1949. Prior to 2004, the Forest had a small sawmill facility that could not satisfy the demand of local customers in a timely manner. The focus of MKRF is on forest management and operations including silviculture, planting, harvesting and log sales. MKRF does not have the staff or resources to process logs or the market to sell them. On the other hand, Gallant Enterprises, a privately owned Canadian company, has specialized in the manufacturing and marketing of wood products for the past 20 years. Gallant manufactures and markets custom timbers, trusses and decorative arches, hand peeled poles, decking and flooring, rustic and cabin siding, split rail fencing, custom specialty products, dimension lumber, shavings, sawdust and custom firewood. Although Gallant Enterprises had a network of loyal customers and the required manufacturing expertise prior to 2004, the company was facing challenges for a reliable supply of logs. Around this time, the Malcolm Knapp Forest staff began a process of evaluating potential sawmill partners in order to get more value from the harvested logs and in the hope of building an expanded sawmilling facility in the Forest. The partnership between the MKRF and Gallant Enterprises was established in 2004 with Gallant moving its facilities to the MKFR and the Forest providing Gallant with access to a reliable supply of timber, a land base for operations, a regional reputation, and an improved corporate image. Gallant, brought its many years of experience in the sawmilling industry, equipment, labor and established network of customers. Gallant's major customers include high-end construction and local building supply companies. Gallant also coordinates

the transportation of the mill's products through third-party logistics companies. Now after 10 years of partnership, both parties are satisfied with the results.

Currently, Gallant consumes 10-20% of the logs produced from the Forest and is able to increase the value of these logs by between 10 and 50%. Gallant has built a sawmill facility in the Forest and has also helped in the construction of other facilities such as the Loon Lake Research and Education Centre, a new bridge and shelters. Since the beginning of this partnership, Gallant's product value and capacity has increased. With the partnership providing a reliable wood supply for Gallant, the company was able to weather the 2008 downturn without going into default.

The underlying success factors of the partnership, as explained by the managers of MKRF and Gallant, can be summarized as joint planning, information sharing, risk/reward sharing mechanisms, joint investments, trust and commitment. These factors have been identified by several studies as the main success factors of an ongoing partnership. In the context of the MKRF/Gallant partnership, these factors can be explained as:

**Joint planning:** In addition to daily operational decisions such as those about price, inventory and transportation, they jointly make decisions on strategic issues such as new investments.

**Information sharing:** Both parties share operational and strategic information by face-to-face meetings, phone and electronic (through email) communications. The managers talk daily on the phone about operational issues such as transportation and inventory.

**Risk/reward sharing:** When MKRF and Gallant started their partnership in 2004, they had a flat fee contract. However, this did not give strong incentives to both parties to increase their sales. Currently, MKRF and Gallant split their revenue on a percentage basis. Through this mechanism, both sides not only have an incentive to increase their sales, but also an incentive to decrease their costs in order to get more benefit.

**Joint investments:** MKRF has provided the land for Gallant's sawmill facilities, a reliable supply of logs and regional goodwill as tangible assets. Gallant has provided equipment as tangible assets, and expertise and their network of customers as intangible assets. Their joint investments are not limited to supplying timber and manufacturing wood products. Rather, they have helped each other in different projects.

**Trust and commitment:** Joint investment, information sharing and joint planning all influence and are influenced by trust and commitment. When asked about trust andcommitment in their partnership, Paul Lawson, manager of MKRF, said, "Without trust the relationship would go nowhere". He continued, "We are committed to each other's success and we have each done a lot above and beyond the expectations and our original agreement".

The partnership between MKRF and Gallant is an excellent example of a successful partnership providing more value from the forest. Similar partnerships, for example between logging companies (including community tenure holders) and value-added manufacturers, could help tenure holders get increased value from their holdings and create additional local direct/indirect jobs. At the same time, partnerships can help mills maintain a reliable supply of fiber, provide access to local labour at lower costs and increase local good will. Overall, partnerships can help both parties obtain increased value from the forest through a process of sharing of tangible and intangible resources.

*For further information about this partnership evaluation project please contact Mehdi Piltan (mehdi.piltan@gmail.com) or Dr Taraneh Sowlati (taraneh.sowlati@ubc.ca) in the Industrial Engineering Research Group, Faculty of Forestry, at UBC. We would like to thank Paul Lawson and Doug Woods, the managers of MKRF and Gallant Enterprises respectively, and Drs Robert Kozak, David Cohen and Chris Gaston for their support of this research.*

# Burst and Bust

## Understanding sockeye salmon migration mortality

Adult sockeye salmon (*Oncorhynchus nerka*) undertake challenging migrations from oceanic feeding grounds to freshwater spawning sites. During this final life-history stage, fish face a myriad of natural and anthropogenic hardships that influence their ability to reach breeding grounds and successfully spawn. In recent years, some populations of Fraser River sockeye in British Columbia have exhibited exceptionally high migration mortality (upwards of 90%), failing to contribute genetic material to future generations. Scientists, government officials, and citizens alike have recognized the urgency to understand these mortality trends to ensure the long-term persistence of this iconic species. To address this research need, watersheds regulated by hydroelectric development can be used as model systems to investigate how fish respond to fine-scale changes in environmental conditions (eg, water temperature, river discharge). And yet, few research programs have worked closely with managers to experimentally manipulate a river and help optimize the migration conditions for wild salmon.

Dr Scott Hinch is Director of the Pacific Salmon Ecology and Conservation Laboratory in the Department of Forest and Conservation Sciences at UBC. Scott and his collaborative group of graduate students, post-doctoral fellows and industry partners are leading a 5-year monitoring program in Lillooet, British Columbia, to examine the impacts of BC Hydro's Seton Dam on the freshwater migrations of sockeye. Prior to reaching Seton Dam, fish have travelled 350 kilometers from the mouth of the Fraser River, negotiating heavy fishing pressure and areas of difficult passage along the way. Wild sockeye are then tagged with various types of electronic tags and tracked to their spawning grounds 55 kilometers away. Scott's team later reconstruct the 'migration history' of tagged fish to link the environmental conditions each fish experiences to their behaviour and ultimate fate. After years of extensive research in Lillooet, Scott Hinch's team has developed a strong understanding of the migration ability and physiological capacity of Gates Creek sockeye, a population that must negotiate high flows downstream of Seton Dam and swim through a fishway and 2 lakes to reach their spawning grounds. A past study in this watershed revealed that sockeye exhibit abnormally high migration mortality in the lakes upstream of the dam. Without a comprehensive understanding of the mechanisms driving this mortality, the Hinch team was presented with a worthwhile avenue of future research.

In August 2013, Nich Burnett set out to address this knowledge gap as part of his master's research with Scott Hinch and Carleton University professor Dr Steve Cooke. They hypothesized that dam operations provide a significant hydraulic challenge for migrating sockeye to overcome, requiring individuals to use energetically demanding behaviours to negotiate areas of high flow. Burnett tagged and released 63 Gates Creek sockeye with acoustic accelerometer transmitters, a new tracking technology that records how fast fish swim and how much oxygen

Nich Burnett tagging a sockeye salmon with St'át'imc First Nation technician, Wesley Payne

they consume.

Days after sockeye passed through the high flows downstream of Seton Dam, fish started to die only a short distance from their spawning grounds, a finding consistent with the past study. Burnett discovered that when fish encountered the turbulent, fast-moving water, they moved upstream using a behaviour known as 'burst swimming' that is similar to sprinting for humans. Previous research in Scott Hinch's laboratory found that burst swimming requires extra oxygen and energy, creates a build-up of stress metabolites such as lactic acid in the blood, and may lead to cardiac collapse or heart attacks. Fish that chose to burst swim for long periods through the high flows of Seton Dam were more likely to die en route to their spawning grounds than those that chose to swim a bit slower. Of conservation concern, burst swimming had a greater impact on female fish, supporting the team's previous research that shows female salmon are more sensitive to environmental hardships during migration. Further, Nich Burnett found that higher water temperatures led to more stress following the burst swimming events. Sockeye in this study were exposed to near-lethal water temperatures while performing exhaustive exercise, which likely resulted in cardiac collapse upstream of the dam. Nich's study is the first to show that excessive burst swimming can impair wild salmon and cause death later on in their migration, a phenomenon known as 'delayed mortality'. Notably, burst swimming behaviours in this study were attributed to the dam's attraction flows, a standard operational protocol intended to attract fish towards the entrance of the fishway while trying to minimize undue physiological stress. And yet, the attraction flows appeared to compromise the survival of sockeye, as only 40% of the tagged fish made it to their spawning grounds with the rest dying en route from cardiac arrest. Taken together, these findings demonstrate the sensitivity of wild salmon to changes in the environment and that any marked increase in migration difficulty could put the sustainability of some populations at risk.

Results from this study can be directly applied to the management of regulated rivers. Collaborating closely with BC Hydro managers, Nich and the Hinch team conducted a follow-up study in August 2014 to experimentally manipulate flows from Seton Dam. An alternate flow release strategy was tested, whereby excess water was released 10 meters away from the fishway entrance to help reduce the supercritical flows that fish must swim through near the fishway entrance. Hundreds of fish were tagged, released and tracked during 3 distinct discharge periods. Preliminary analyses indicate that dam passage and survival to breeding grounds were 10-20% higher for fish that experienced the alternate flow scenario. An improvement such as this equates to thousands more fish successfully reaching spawning sites during the peak of the sockeye migration. Interestingly, females that experienced this flow scenario had significantly higher survival compared to males.

Findings from this research demonstrate how partnerships between academic groups and resources agencies, and the use of novel tagging technologies and large-scale experiments, can help to protect and sustain wild salmon populations.


Standard operational protocol

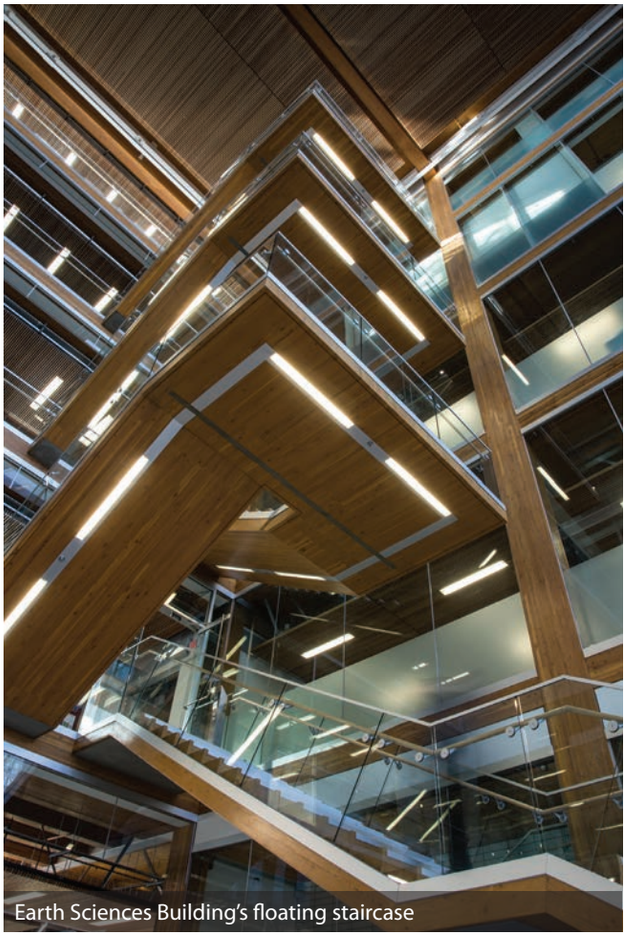

Alternate flow scenario


Seton Dam fishway

*For further information contact Nich Burnett (research biologist in the Pacific Salmon Ecology and Conservation Laboratory in the Department of Forest and Conservation Sciences at UBC) at nich.burnett@gmail.com. For additional reading, Nich published an article earlier this year in the journal Physiological and Biochemical Zoology (87:587-598) describing this research.*

# Exploring our campus: A showcase of innovative timber construction

Timber is one of the oldest and most prevalent building materials in the world, and it has been used for centuries to construct homes, warehouses, factories and also tall structures. Nowadays in Canada, as a result of conservative design specifications and codes developed throughout the 20th century, the use of timber as a structural material is mostly limited to low-rise residential buildings and light frame (ie 2x6) construction. But things are changing! Growing interest in sustainable design practices and the emergence of new engineered wood products and systems have enabled resurgence in the use of timber in non-residential buildings. UBC has been at the forefront of this revival, adopting ambitious sustainability criteria for building projects and development initiatives on its 400 hectare campus. All new institutional buildings on campus (as well as major renovations to existing ones) must achieve a minimum Gold certification under LEED® (Leadership in Energy and Environmental Design), a ratings system for the design, construction and operation of green buildings and homes. In addition, UBC has adopted the "Living Laboratory Challenge" for its Vancouver campus. This policy means that we at UBC view our campus as "a kind of giant sandbox in which there is the freedom to explore the technological, environmental, economic and societal aspects of sustainability" (From UBC Sustainability website: http://sustain.ubc.ca/our-commitment/campus-living-lab). This experimentation extends to the buildings that house our teaching, research and administrative activities, and is evident in the wide range of cutting-edge construction practices that have been employed in recent years. For UBC, building sustainably involves supporting both human and environmental health and well-being by designing lasting buildings with minimal carbon footprints that are adaptive to change and that can be deconstructed at the end of their useful life. One of the main external drivers for giving timber products more consideration in non-residential construction today is Bill 9-2009 (the "Wood First Act"), passed in 2009 by the Province of British Columbia, which aims to promote a culture of living and building with wood by requiring its use as a principal material in any provincially funded building.



Earth Sciences Building's floating staircase

UBC's wood building practices, however, go back much further, and 2 excellent early examples are the First Nations Longhouse and the CK Choi Building. The First Nations Longhouse, completed in 1992 and considered the "home-away-from-home" for First Nations students, faculty and staff at UBC, employed the traditional wood construction techniques of the Coast Salish people in combination with contemporary architectural forms. The structural framing, as well as most of the interior finishes and exterior cladding of the Longhouse, is locally-harvested western redcedar. The Choi Building, completed in 1996 and home to UBC's Institute of Asian Research, was the first building on campus for which the design teams came together very early in the process to collaborate – a practice which is now commonly referred to as the "integrative design approach". Innovative at the time, the building's structural framing is mostly made from salvaged wood from a 1940s armory building that was demolished in the 1990s.

Other examples that showcase the innovative use of wood in institutional buildings are the Forest Sciences Centre and the Bioenergy Research and Demonstration Facility. Inside the Forest Sciences Centre's iconic atrium (see cover), 13 metre tall "tree trunk" columns made of parallel strand lumber are clustered in groups of 4, each supporting 3-dimensional truss "branches" that carry the atrium's glass roof. The Bioenergy Research and Demonstration Facility was the first building in Western Canada to utilize cross laminated timber panels as its principal material for structural purposes in roof diaphragms and shear walls.

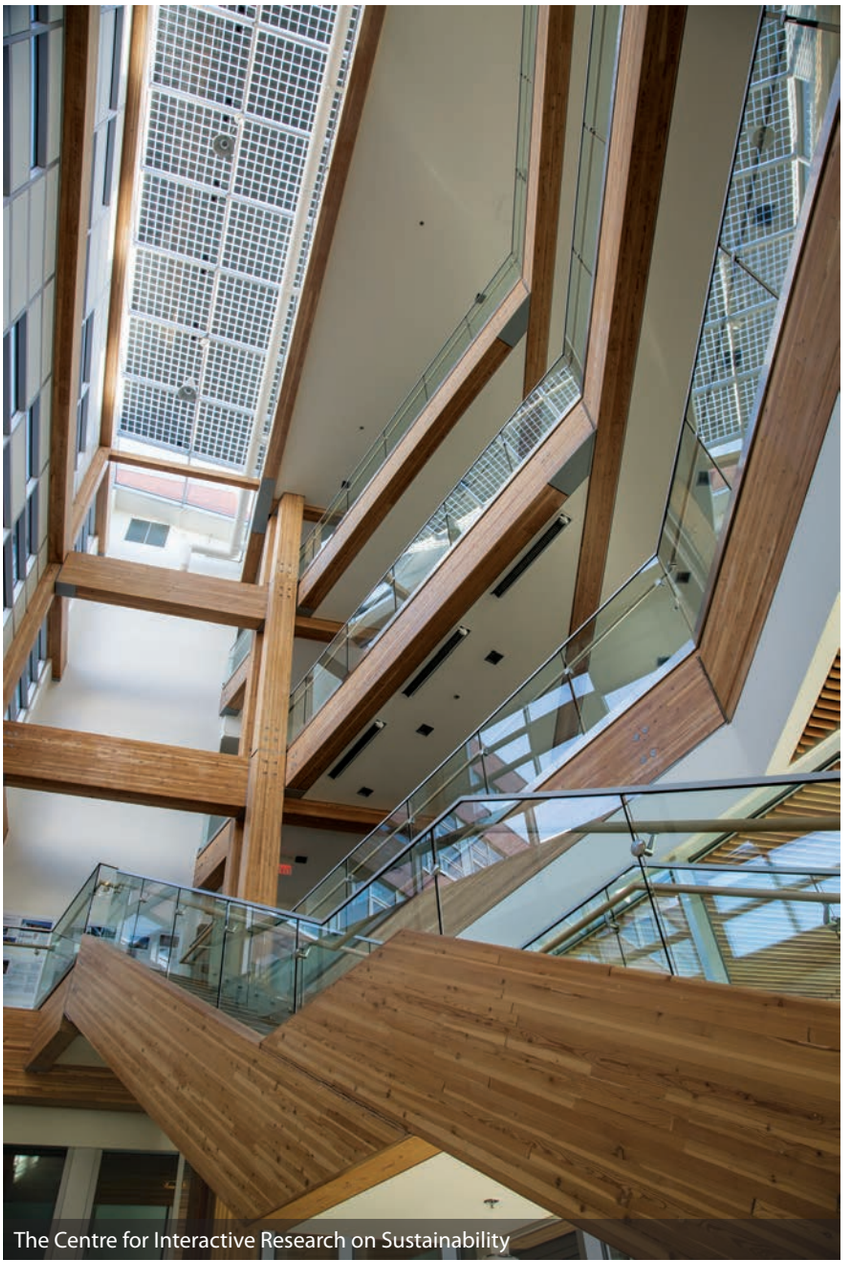
Our discussion of contemporary timber construction at UBC wouldn't be complete without mentioning the Centre for

Interactive Research on Sustainability (CIRS) and the Earth Sciences Building (ESB). The regenerative principles and overall design mandate of CIRS resulted in wood becoming an integral building material for the project. Wood is a renewable resource which creates comfortable interior environments and sequesters carbon, and its prominent use in this building contributed to its label; "North America's most sustainable building" at the time of its completion. Finally, the ESB utilized innovative glued-in metal plates as shear connectors to allow for better seismic performance of the composite flooring systems (timber panels acting together with concrete layers). In one of the building wings, the lateral resistance is solely provided by the use of heavy timber braces. This building is probably most famous for its free-standing timber staircase also made possible by the innovative glued-in shear plate system that connects the stairs and landings together and provides enough strength, stiffness and stability so that supporting columns are not required.

As part of a mobile learning project funded through UBC's Teaching and Learning Enhancement Fund, a web-based self-guided tour of UBC's most innovative timber buildings was created by MASc student Enrique Gonzalez under the direction of Iain MacDonald, managing director of UBC's Centre for Advanced Wood Processing and Assistant Professor Thomas Tannert, Associate Chair Wood Building Design and Construction. The self-guided tour (see web link at the end of this article) showcases the different uses of wood in the 6 UBC buildings just discussed, using narrated slideshows and accompanying images and background information. The website is designed specifically to be accessed via smart phones and tablets, and allows anyone on campus to walk around and learn about the special features and applications of timber products that make those buildings a reality. The tour is free of charge and can be completed comfortably in about an hour and a half. A survey completed by graduate students who had taken the tour as part of their timber design course revealed that although none of them had ever taken a self-guided tour using their phone or tablet, most (86%) felt very comfortable with it. Additionally, 87% felt that they were more likely to remember facts about the buildings because they could access the slideshows while they were within the buildings themselves and 86% enjoyed the freedom of the self-guided experience more than a conventional guided tour.

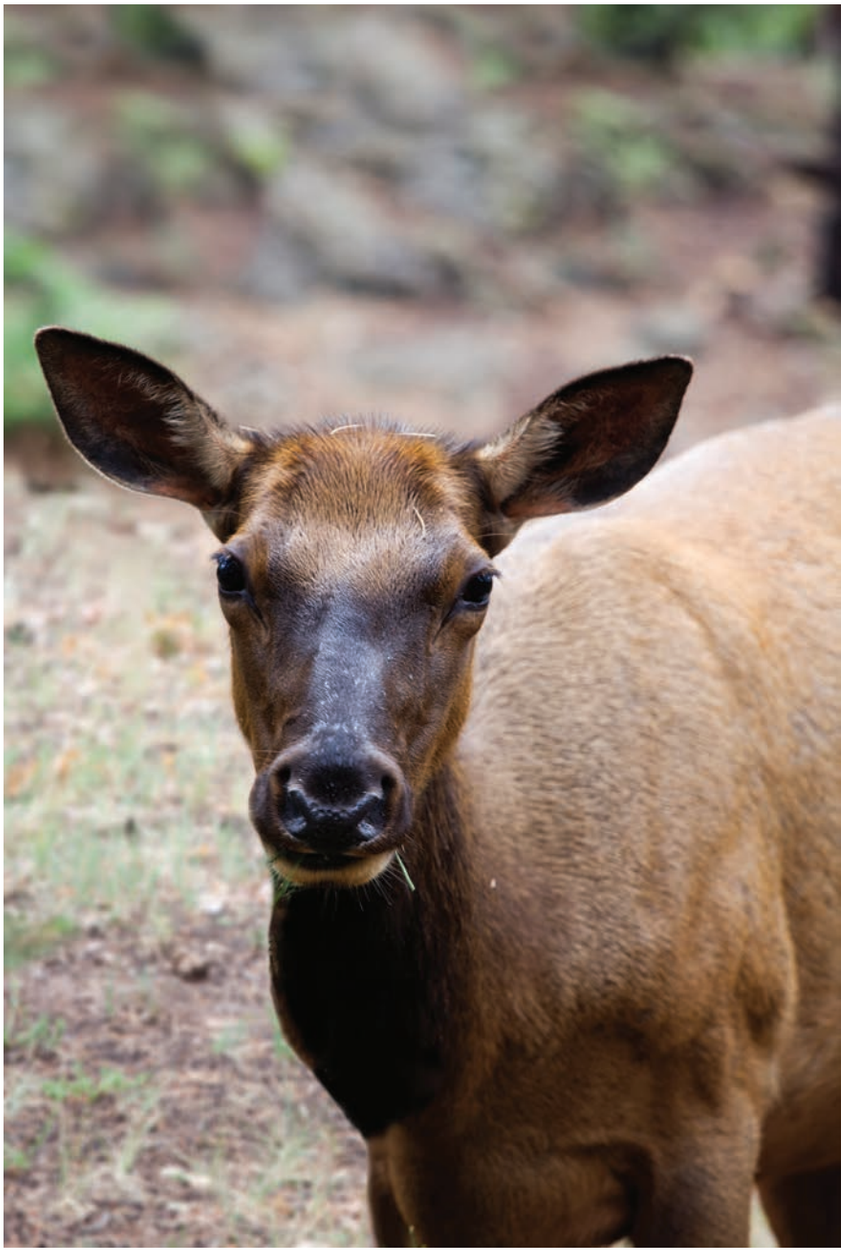
The timber construction story at UBC is not over yet. In September 2014, UBC issued a request for expressions of interest to provide architectural services for a tall wood residence on the Point Grey campus. The proposed student housing project will accommodate 400 students in an 18-storey building with approximately 14,600 square metres of space. Since the tallest modern wood building currently under construction worldwide is a 14-storey high-rise in Bergen, Norway, UBC's student residence – if it becomes a reality – would be the world's tallest wood building. That building would also be yet another showcase of innovative timber construction and surely attract many more visitors to come to UBC's campus and take our self-guided tour.

*For further information contact Enrique Gonzales at enrique.gonzalez.barillas@gmail.com, Iain MacDonald at iain.macdonald@ubc.ca or Dr Thomas Tannert at thomas.tannert@ubc.ca. The self-guided tour is accessible from http://woodtour.sites.olt.ubc.ca.*



The Centre for Interactive Research on Sustainability

# Mixing assets to reduce risk

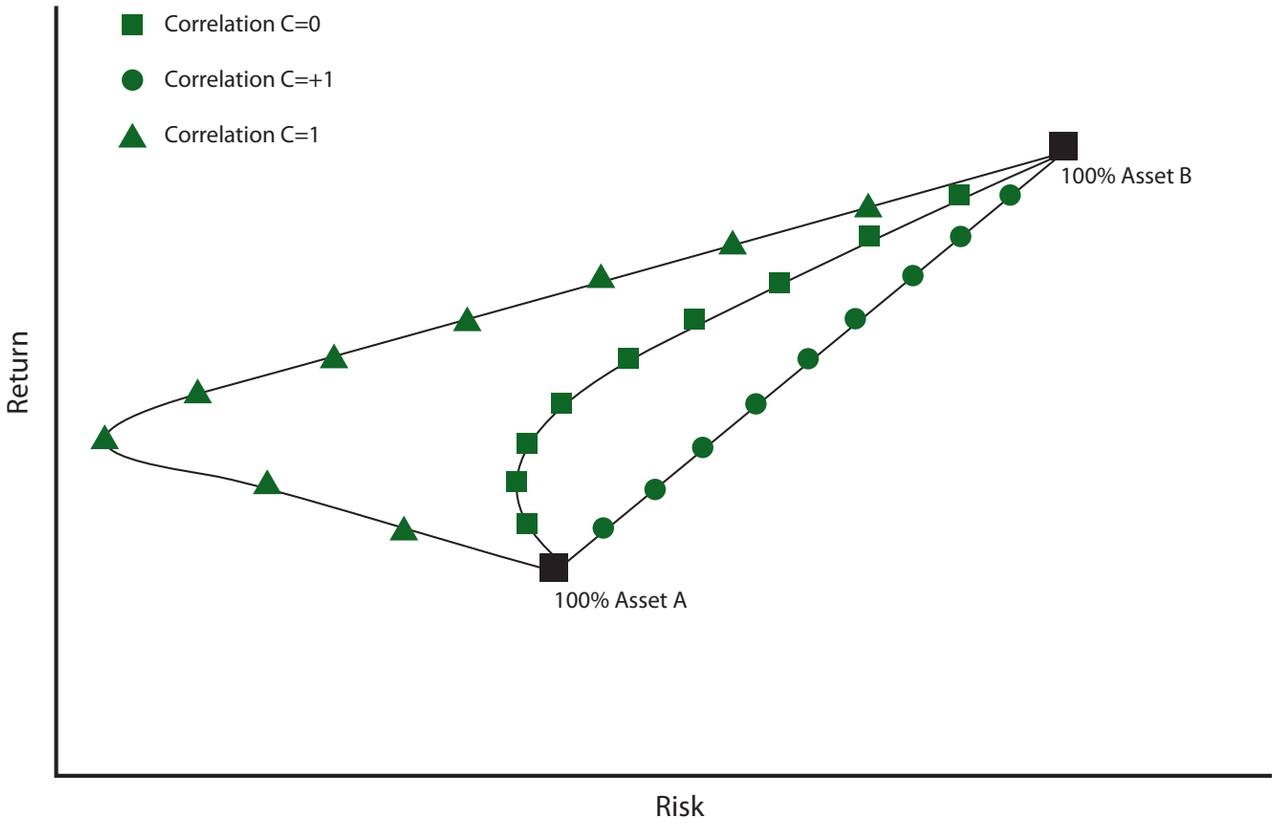


One of British Columbia's most valuable tree species, western redcedar, is facing a challenge: The young trees are very tasty and many ungulates love to feast on them. With decreasing numbers of natural predators, this problem becomes more evident. Numerous countermeasures such as the use of protective seedling cones or even fences have been explored to reduce the damage. These countermeasures are often quite costly and what's even worse: they don't always work reliably.

Browsing is only one of the threats facing young trees . There are many other risks caused by biotic and abiotic hazards or even fluctuating timber prices, which can lead to volatile economic outcomes. The increasing number of hazard occurrences has triggered a growing interest in ways to reduce such risks. If risks are considered at all they are mainly those of insect, pest or fire risks, while market risks, such as changing timber prices, are widely ignored. Adapting approaches for forest management that were originally used for the assessment of investment portfolios is a logical option for dealing with these risks.

Dr Verena Griess is a newly appointed faculty member in the Department of Forest Resources Management at UBC. Verena has been looking at the mixing of assets (for example 2 tree species) in order to make use of the "portfolio effect" to reduce financial risk. She used the portfolio theory to evaluate potential advantages that mixing of species may offer compared to single species stands, as well as the financial consequences the use of countermeasures against browsing may have.

For western redcedar (WRC), and the less browsed species Douglas-fir (DF), Verena used price data available from monthly log reports (January 2011 to July 2014) for the BC coast as well as yield tables from TIPSY to simulate 2,500 hypothetical rotations for all combinations of the 2 species as well as mono species stands. Additionally, she calculated 2 scenarios for WRC, one where protective cones are used as counter measurement against browsing, which increases initial costs but decreases risk of browsing, and one where no countermeasures are being used. Using a Monte-Carlo simulation approach allowed her to take into account fluctuating prices as well as risks. Verena then interpreted the average returns from the 2,500 simulation runs as return and the standard deviation as risk. This approach allowed her to show optimum portfolios, with the most favorable risk-return combination from the view of a risk avoiding investor.




At first glance, unexpected risk-return relations result from mixing the 2 species in varying proportions. We would expect that return increases proportionally with the more profitable species, as well as with the related risk. In such a case, a mixture would result in a straight line connecting the risk-return combinations of both pure stands (C close to +1). But this is not the case.

To explain the principle itself, let's take a look at an example far from forest management: Tree species can be seen as individual assets with their own individual risk-return relations. If we assume an investor choses to invest in 2 assets, both shares of different manufacturers of umbrellas, it is obvious that in a west coast winter both shares will yield high returns. In a beautiful summer on the other hand, both shares will most likely yield low returns.

We do not expect high risk compensation by selling various types of umbrellas, as the risks are obviously positively correlated. However, if we mix shares from a manufacturer of umbrellas with those from a producer of sun lotion, a compensation of the risks can be observed, as the shares of the manufacturer of umbrellas would yield high returns exactly when the manufacturer of sunscreen performs poorly. Mixing shares of a manufacturer of sunscreen and those of a manufacturer of umbrellas provides average returns at almost no risk, no matter what weather conditions apply. In such a case, risk is negatively correlated and can – in a theoretical extreme – lead to the elimination of risk (C = -1). So, whenever we are dealing with 2 markets – no matter if we are looking at the markets for sunscreen and umbrellas, or the markets for WRC and DF, effects do occur that we can take advantage of to reduce our general investment risk. Even though perfect correlations are less likely to occur in reality, diversification effects always occur when risks are not entirely positively correlated, or in other words, smaller than 1.

If the optimum portfolio is the scenario with the lowest risk-return ratio, a mixture of 70% WRC and 30% DF would be most beneficial when countermeasures are being used, or the opposite (30% WRC and 70% DF) for a stand where no countermeasures against browsing are applied. In both cases, adding just a small proportion of DF to our species portfolio lowers our financial risk.

But what is even more interesting is what we see when looking at the risk-return combination of a WRC stand that is established without additional costs for cones or other countermeasures against browsing, assuming that no browsing occurs and only market risk applies. Not only would such a stand type yield the highest returns, it would do so at a risk even lower than that related to growing pure DF stands.

While we are able to offset some of the current risks through existing countermeasures in combination with growing a portfolio of species, these results are a clear indicator of the benefits that would arise from using WRC seedlings less prone to browsing in the first place.

If western redcedar is to remain part of the province's coastal timber inventory, more research on the bioeconomics of British Columbia's most valuable tree species is needed. Verena's future research plans include identification of best management practices to achieve these fundamental goals.

*Dr Verena Griess is an Assistant Professor in the Department of Forest Resources Management. She can be reached at 604.827.0634 or verena.griess@ubc.ca.*

# The Tsilhqot'in decision: A panel discussion

Dark green – Aboriginal title lands
Light green – Balance of claim area with Aboriginal rights to practice (hunting, fishing, trading and gathering)

On November 18th, 2014, UBC Forestry, in collaboration with FP Innovations, hosted a discussion panel on the Tsilhqot'in Supreme Court of Canada (SCC) ruling of the 26th of June 2014, in which 8 Supreme Court of Canada judges ruled unanimously that the Nations have Aboriginal title over 40% of the claimed portion of their traditional territory or approximately 170,000 hectares of what was previously considered "Crown land" along the Tsilhqox (Chilko River), Xeni (Nemiah Valley) and Tachelach'ed (Brittany Triangle). In alphabetic order, the panelists were Jay Nelson, General Counsel to the Tsilhqot'in Nation; Tim Ryan, RPF, Chair, Forest Practices Board, BC; Tim Sheldan, RFT, Deputy Minister of Forests, Lands and Natural Resource Operations, BC; Doug White III, LLB, Director of the Centre for Pre-Confederation Treaties and Reconciliation, Vancouver Island University; and Chief Roger William, Chief of the Xeni Gwet'in First Nation and Vice Chairman of the Tsilhqot'in National Government. Dean John Innes of UBC Forestry moderated the event. Over 100 students, faculty, and members of the forest industry, First Nations, and professional associations attended the panel discussion. A video of the evening session can be viewed at http://bitly.com/tsilhqotin-panel.

This is the first time in history that any of the Canadian courts have declared Aboriginal title on a specific tract of land. Aboriginal title land is a type of land ownership and is held collectively by the Tsilhqot'in Nation. The Tsilhqot'in Nation have the right to control activities on the lands for both traditional and modern uses, if they choose. The Tsilhqot'in Nation are entitled to the economic benefit from the lands. Unlike private lands, the Aboriginal title land cannot be used in a way that would degrade the cultural value of the lands for future generations. The Province of British Columbia, and Canada, may still have some jurisdiction and responsibility around land stewardship including such matters as forest fire prevention and invasive plant species management; however the extent of jurisdiction has yet to be determined. In 2007, the British Columbia Supreme Court ruled that the Tsilhqot'in Nation have Aboriginal rights to hunt, fish, trap, trade skins and pelts, catch and use wild horses, not just in the Aboriginal title land, but the whole claim area, amounting to 440,000 hectares. These Aboriginal rights were upheld by the British Columbia Court of Appeal and were not at issue before the Supreme Court of Canada. The Tsilhqot'in Nation is comprised of 6 First Nations: Xeni Gwet'in, Tl'esqox (Toosey), Tsi Del Del (Redstone), Tletinqox-t'in

**"Ultimately, a key implication of the Tsilhqot'in decision is that in non-treaty areas of British Columbia there will be increasing recognition of Aboriginal rights and title over what are now considered Crown lands."**

(Anahim),?Esdilagh (Alexandria) and Yunesit'in (Stone), and is located east of the Cascade Mountain Range.

The overall theme of the evening was to reflect on how the SCC Tsilhqot'in decision would influence policy changes and legislation to protect the environment in the claim area and the evolving relationships between First Nations and the Province of British Columbia.

Chief Roger William, the plaintiff in the Tsilhqot'in case, and Tsilhqot'in General Counsel Jay Nelson discussed the significance of the unanimous ruling for Aboriginal title to the Tsilhqot'in Nation. Chief William began with a satellite image of Tachelach'ed (Brittany Triangle), a critical area that the Tsilhqot'in Nation have been striving to protect for over a quarter of a century. It remains relatively pristine, compared to the surrounding area that has been largely clear-cut due to salvage logging of standing trees killed by the mountain pine beetle infestation. Chief William and Jay Nelson focused their discussion on the earlier 2002 to 2007 British Columbia Supreme Court trial that ruled, *inter alia*, that the Province's current definition of forest sustainability was too narrow because its main focus was timber management. Judge Vickers further ruled that it is up to British Columbia to develop a new model of sustainability that has the capacity to sustain Aboriginal rights to hunt, trap, and trade to make a "moderate living from the land" in their planning decisions. However, the Province's planning regime does not apply on Aboriginal title lands as the Forest Act no longer applies to those lands (see figure). The Supreme Court of Canada suggested that "consent" from the First Nations for resource developments is important on Aboriginal title lands and indicated that a higher level of agreement is required than the "consultation" decided by the SCC in the Haida case in 2004. Jay pointed out that one strategy to gain certainty in resource developments, including forestry, is to secure the consent of the affected First Nations early in the development.

Doug White touched on many of the issues surrounding Aboriginal rights and title. Doug shared his views on the nature of Aboriginal title that, as set out by the court, is primarily rooted in a public land relationship (such as the Crown to Crown land) rather than a private land relationship (such as a private citizen to fee simple land). A major implication of this is that the Crown must seek the consent of First Nations if they hope to intrude on Aboriginal title land. Doug discussed the need for the Crown to honour its obligations under section 35 of the Constitution Act. He stated that the "Indian Land Question" in British Columbia has been the single most important public policy issue that has been at the core of Crown – First Nations relations for over a century. Ultimately, the goal of First Nations is to re-establish their relationship with their traditional territories. Government decision-making and Crown – First Nations relations are secondary to the prime objective of addressing the "Indian Land Question" in British Columbia. The Crown needs to change their approach to agreements and relationships with First Nations. He encouraged Faculty of Forestry students and faculty to engage in the critical discussion around the transformative Tsilhqot'in decision and consider policy implications to help guide First Nations and the Crown to move forward from the Tsilhqot'in decision.

Tim Ryan, Chair of the Forest Practices Board discussed the value of independent oversight of Crown tenures by the Forest Practices Board over the past 20 years. He discussed possible scenarios in which the Province might legislate or administer lands, in the interests of forest health and preventing forest fires, as well as in the interests of the flora, fauna and water that follow no administrative boundaries. Such administration would cover lands held under a variety of tenures, including Aboriginal title lands. Such administration could be through government regulations, memoranda of understandings and other cooperative agreements. Under the Nisga'a Treaty, the Forest Practices Board was given a mandate to audit the activities of forest companies operating on Nisga'a land during the transition period, and was then asked by the Nisga'a to audit government's completion of forestry obligations on treaty lands, and a similar function could be performed on other Aboriginal lands. He was particularly concerned that adding complexity to the pattern of ownership will further complicate the already intricate pattern of land use in British Columbia.

Tim Sheldan, Deputy Minister of Forests, Lands and Natural Resource Operations stated that the Province accepts this Court ruling and that Premier Christy Clark and her Cabinet had met with First Nations leaders in September. The Province was looking for input from First Nations on how to proceed in the future. Tim Sheldan suggested that the Province would like to proceed with higher-level umbrella agreements such as Reconciliation Agreements, rather than the permit-by-permit referral agreements.

Ultimately, a key implication of the Tsilhqot'in decision is that in non-treaty areas of British Columbia there will be increasing recognition of Aboriginal rights and title over what are now considered Crown lands. The relationship between First Nations, the Province and forest licensees will have to continue to change in a way that honours Aboriginal rights and title. UBC Forestry continues to work extensively in this area, and is keen to play its part in finding solutions to the current challenges.

*For further information contact Andrea Lyall, Aboriginal Initiatives Coordinator in the Faculty of Forestry, at andrea.lyall@ubc.ca.*

# Monitoring forest carbon from space

Natural and human-induced disturbances are among the main drivers that shape forest structure, changing the way carbon is stored in vegetation and soils, and releasing significant amounts of carbon into the atmosphere. Monitoring forest disturbances is therefore not only relevant for the sustainable management of forests, biodiversity conservation, and ecosystem services, but also for improving our understanding of the critical role disturbances play in the terrestrial carbon cycle. Forest ecosystems can help to mitigate climate change impacts by absorbing large amounts of carbon from the atmosphere through plant photosynthesis, storing it for long periods of time. However, the degradation of forests and conversion to non-forest lands is the second largest cause of carbon dioxide ($CO_2$) emissions into the atmosphere after the burning of fossil fuels. Since each disturbance type affects the forest structure and successional dynamics in a unique way, annual observations of areas affected by disturbance type are necessary to estimate carbon uptake, storage, and release following disturbance.

Detailed observations of the Earth´s surface are necessary to monitor the status and change of forest ecosystems and the terrestrial carbon dynamics. Remote sensing technologies are rapidly changing the way we monitor and study the Earth by providing regular and continuous land cover and land-cover change observations, including in areas that otherwise are difficult to access. However, selecting the appropriate source of satellite data to characterize forest disturbances depends on the spatial and temporal attributes of the data and the target of interest.

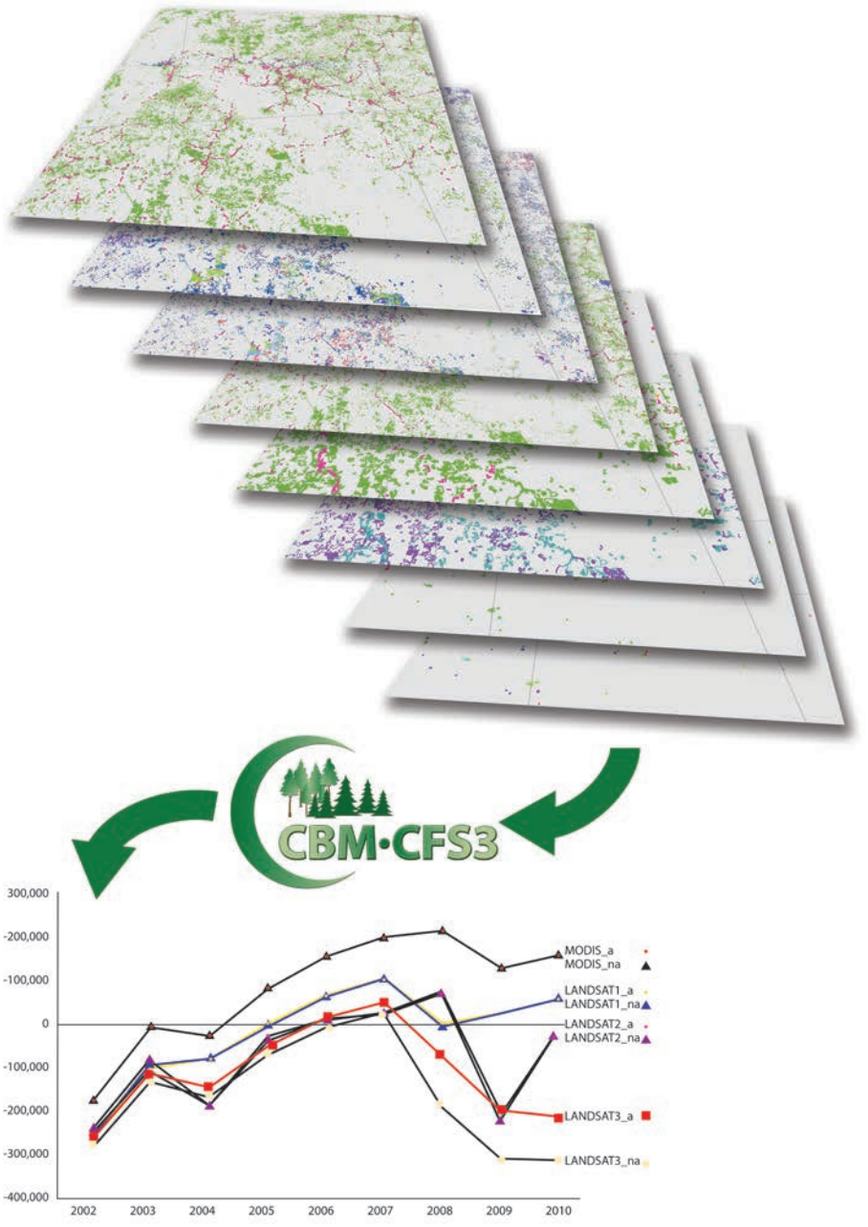
Vanessa Mascorro's recently completed MSc project from the Integrated Remote Sensing Studio at UBC's Faculty of Forestry focused on the characterization of natural and human-induced forest disturbances using remote sensing. The data were used for estimating carbon budgets of a southern tropical region of Mexico, the Yucatan Peninsula. With financial support from the Commission for Environmental Cooperation, and in collaboration with the Forest Services of Canada, Mexico and the United States, Vanessa investigated the development of science-based decision support tools to inform policy and management decisions for Reducing Emissions from Deforestation and Forest Degradation (REDD+) and climate change mitigation actions. She investigated how remotely-sensed observations of changes in land cover can be characterized by disturbance type to provide data for carbon budget models. Moreover, given the choices among remote sensing products she explored the impact of temporal and spatial resolution of satellite imagery on estimates of forest carbon emissions and removals.

To answer these questions, she developed a novel approach, the MS-D (Multi-Scale, Multi-Source Disturbance) assessment), to:

- Map type, extent and location of major natural and anthropogenic disturbances,
- Derive land-cover change observations, and
- Attribute land-cover changes to their most likely disturbance driver.

By using geospatial techniques and regression-tree analysis, the MS-D approach creates synergies between remote sensing products, forest inventory data and ancillary datasets, providing a cost-efficient solution to attribute changes to their underlying disturbance drivers.

With the ready availability of remotely sensed data, an increasing number of regional and global-scale studies and products have been developed specifically for forest monitoring and REDD+. Landsat and Moderate Resolution Imaging Spectroradiometer (MODIS) satellites are 2 of the most commonly used sources for land-cover change studies worldwide. To investigate how remote sensing products with different spatial and temporal resolutions affect estimates of forest carbon dynamics, Vanessa compiled 4 land-cover maps from Landsat and MODIS with different approaches to derive forest disturbance observations. From these maps she generated 2 layers, 1 with areas of change and no-change, and the second




attributing the change to its underlying disturbance driver with the MS-D approach.

Annual estimates of carbon emissions and removals were then simulated with the Carbon Budget Model of the Canadian Forest Sector CBM-CFS3. The CBM-CFS3 uses sophisticated algorithms to quantify forest carbon dynamics at the stand, regional, or national level. This model incorporates information on forest disturbances and can be used to quantify their effects on forest carbon pools and to simulate different mitigation scenarios. Following disturbance, the CBM-CFS3 simulates forest regrowth. Vanessa examined the impact of 3 attributes of remote sensing products on the estimates of forest carbon:

1. The spatial resolution (30 m vs 250 m),
2. The temporal resolution (1-year vs multi-year observations), and
3. The attribution of forest cover changes to disturbance types.

Her research indicates that in the complex tropical environments and land-use patterns of the Yucatan Peninsula, Landsat-derived products with 30 m spatial resolution should be selected over 250 m MODIS products to derive activity data for carbon modeling because the higher resolution product was able to detect more disturbances.

Further improvements were achieved through disturbance observations on an annual basis. The lack of disturbance observations in one of the Landsat remote-sensing products in 2009 resulted in higher estimates of carbon uptake in the landscape in that particular year. This result showed that missing even a single year in the land-cover observations can lead to substantial errors in ecosystems with rapid forest regrowth, such as the Yucatan Peninsula. Lastly, Vanessa's results showed that attributing land-cover changes to underlying disturbance drivers improves greenhouse gas emissions estimates because different disturbances, eg with and without fire, affect estimates of carbon release. The differences between estimates with and without attribution are even more pronounced when they are reported as $CO_2$ equivalent emissions (as required in REDD+ projects), because fires cause additional non-$CO_2$ GHG emissions (in the form of $CH_4$ and $N_2O$), with much higher global warming potentials than $CO_2$.

While Vanessa's study was undertaken in Mexico's Yucatan Peninsula, an area of special interest for its high biodiversity and great potential for REDD+, it can be replicated in other areas. Results from this study inform criteria for the design of a forest monitoring system, by demonstrating the value of 30 m resolution disturbance mapping in annual time steps and with attribution of land cover changes to the underlying disturbance drivers. Her results may also benefit other countries undertaking efforts to implement a forest monitoring system for REDD+ (eg Ecuador, Colombia, and Peru) who can replicate this study adapted to their national circumstances (data availability, forest types, etc).

*Vanessa S Mascorro completed her MSc degree under the supervision of Dr Nicholas Coops and has been awarded an Honours Thesis. Her research will result in 2 peer-reviewed publications (co-authored by Nicholas Coops, Werner Kurz, and Marcela Olguin). Funding was provided by the Secretariat of the Commission for Environmental Cooperation as part of the "Integrated Modeling and Assessment of North American Forest Carbon Dynamics and Climate Change Mitigation Options" project coordinated by Karen Richardson. For further information, Vanessa can be reached at vanessa.mascorro@alumni.ubc.ca.*

# development & alumninews

## Research fellowships create bright future for graduate students


Dr Irene Bettinger

As the first recipients of 2 fellowships established by the estate of Paul and Edwina Heller, graduate students Suzi Malan and Zac Zabawa are continuing vital research on environmental and conservation governance in Africa and India.

Suzi is pursuing a PhD, investigating the political, socio-economic and ecosystem management aspects of decision-making in the establishment and management of protected areas across national boundaries. Using 2 transfrontier conservation areas in southern Africa as case studies, Suzi is tackling complex issues such as poaching of endangered species and forced removal of communities in these areas.

"It is a critical time in the history of conservation in Africa, when long-lasting solutions should be found to these difficult problems," she says. "I believe my research can contribute towards identifying current failures in the decision-making processes, and provide recommendations to improve these."

Zac's research toward his MSc revolves around measuring the effects of different forest management regimes in India and Nepal on marginalized forest-dependent peoples. His aim is to better inform forest officers in India of the importance of involving local communities in protecting the forests they depend on.

"I believe that proper incentives and perceived ownership in the ecological systems around us can lead towards an enlightened self-interest form of resource management," he says.

The 2 fellowships in memory of Paul Heller were established by Paul and Edwina's daughter Dr Irene Bettinger, through the Heller estate. Originally from Warsaw, Poland, Paul Heller graduated as an engineer from Fitzwilliam College, University of Cambridge, England. He moved to Vancouver in the early 1940s, where he and his brother Sam Heller acquired and modernized Pacific Pine Co lumber mill in New Westminster. The business flourished in the postwar years employing some 350 people at its peak. In addition to his work in forestry, Mr Heller and his wife, Edwina Heller, were great supporters of music, con-

> **"...this is probably the most worthwhile and lasting legacy anyone can leave behind"**


Zac Zabawa


Suzi Malan

temporary Canadian art, and Vancouver's Jewish community.

Both Zac and Suzi are emphatic about the impact this award has had on their work. "Receiving this award (Paul Heller Memorial Fellowship in Forestry) allowed me to stay in British Columbia, where we are witnessing one of the greatest experiments in indigenous rights and community based land tenure worldwide," Zac says. "This is of great aid in analysing other nations' approach to forestry. Also, the Faculty of Forestry is without question one of the finer forestry programs in the world."

Suzi concurs. "This fellowship (Paul Heller Memorial Fellowship in International Forestry) has not only meant a great deal in terms of monetary assistance, but the prestige that is associated with such an award is boundless in value," she says. "The financial support also allows me to conclude my field work in a much shorter period of time, which reduces the stress on my family."

She also comments on the impact of gifts that support students. "Many students, especially international students from developing regions, would simply be unable to enroll in graduate studies, and thus contribute to increasing the breadth and depth of research, if not for the financial support from donors. In my mind, this is probably the most worthwhile and lasting legacy anyone can leave behind."

The Heller estate has also established an award in Opera and an award in Medicine. Dr Bettinger says that these gifts continue the family tradition of generosity. She is nevertheless quick to point out that the money is not hers: "This is my parents' story. Philanthropy was very important to them—it's considered a responsibility in the Jewish community to take care of others."

*To learn more about this award or to discuss creating a student award of your own, please contact Emma Tully, phone 604.822.8716 or email emma.tully@ubc.ca.*

# Alumni-led BC Aboriginal forest company wins national award

Stuwix Resources Joint Venture, led by alumni Lennard Joe and David Walkem, has won the 2014 Aboriginal Forest Products Business Leadership Award, offered by the Canadian Council for Aboriginal Business and the Forest Products Association of Canada. UBC Forestry was honoured to nominate Stuwix for this award.

Lennard Joe, RPF and BSc'97, Natural Resources Conservation, is the General Manager of Stuwix, and David Walkem, RPF, BSF'80, MBA'84, serves as President.

"This award is a validation of the work our Board members set out to do years ago, and a validation of the skills and commitment of our staff," David says. "It also helps our communities understand that we are recognized as successful." Lennard adds, "It solidifies us in the industry."

Stuwix Resources was established in 2004 and is owned and operated by 8 Indian bands in the Merritt area of BC: Coldwater Band, Cook's Ferry Band, Lower Nicola Band, Nooaitch Band, Shackan Band, Siska Band, Upper Nicola Band, and Upper Similkameen Band. All of the bands except Lower Nicola and Upper Similkameen are members of the Nicola Tribal Association. (The Lower Nicola Band is an affiliate of the NTA.)

Stuwix is the only First Nations company in the BC Interior to hold a replaceable forest license. Stuwix is responsible for the overall management of the license, including planning, developing, marketing, timber-harvesting, road-building and silviculture.

"We are a fibre management company that manages 450-500,000 cubic metres of timber annually," says Lennard. "We're also one of the primary founders of First Nations involvement in forestry."

The company now has 6 full-time employees, 5 of whom are First Nations. Overall, over 60% of Stuwix employment is Aboriginal, compared to a provincial average of 5%.

Both Lennard and David are proud of Stuwix's role in increasing the involvement of aboriginal people in forestry. "Before 1997, there were no First Nations people working in the forest industry as contractors," David says. "Now, the quality and professionalism of First Nations contractors is equal to any in the industry. Other companies take on these contractors as well because they know they can do the work professionally."

In recent years Stuwix has gone from strength to strength. In 2010 it was named the Joint Venture Business of the Year by the BC Achievement Foundation in the annual BC Aboriginal Business Awards.

In 2012, David was elected to the Board of the Sustainable Forestry Initiative, and the forests under Stuwix management were independently certified to the SFI 2010-2014 standard.

Lennard has worked directly with 86 Indian bands, and currently serves on the Faculty of Forestry's First Nations Council of Advisors and the First Nations Forestry Council.

Both David and Lennard stress the importance of collaboration in all of Stuwix's work. "Because Stuwix is owned by 8 bands, we need to address the interests of all stakeholders. We work together with industry, government, and First Nations," David says. "And you won't get buy-in from your grass roots people unless you incorporate your values and principles into your work," Lennard adds.

They both see a strong and positive future for Stuwix. "I'm hoping the recognition we receive through this award will help our organization continue to grow and improve and adapt to change. In the future it will encourage our youth to look for careers in the forest industry," David says.

"I think that our joint venture can be used as a template for other forestry organizations," Lennard says. "We are passionate and confident about our programs and we want to share them."

Lennard Joe (left) receiving the award


David Walkem

# Loon Lake renovation update

Built in 1974, the dining hall at the Loon Lake Research and Education Centre was originally intended to serve only field school students. Today, between 70,000 and 80,000 meals are served each year to young campers, community group members, educators and researchers.

Thanks to the generosity of donors, construction of a new dining hall is well underway, with planned completion in the summer of 2015.

The new dining hall (to be named the Bentley Family Hall, after lead donor the Bentley family) is being built where the old Staff House once stood. Once the new hall is up and running, the old hall will be thoroughly renovated and turned into accommodation and much-needed meeting space.

Key features of this project include:

- Size is 600 square metres (6400 square feet)
- Seating capacity will be 150 people, up from 80 currently. Kitchen size will double.
- Building is post and beam timber frame; 100 per cent wood. Largest beam is 8 x 24 inches and 37 feet long
- Structural timbers all milled and planed at the Malcolm Knapp Research Forest sawmill, using Douglas-fir harvested from the Forest.
- Heating is natural gas-fired hot water, with backup natural gas fireplace.

Much of the dimension lumber and finish materials were donated by forest companies including West Fraser Mills Ltd, Interfor Corporation, Western Forest Products Inc, Canfor, Cedarland Forest Products Ltd, and Andersen Pacific Forest Products Ltd. The Faculty extends its heartfelt thanks to all those who have supported this project – without whom, none of this would be possible.

The project developer is UBC Properties Trust. Architecture is by Bissky Architecture and Urban Design of Maple Ridge. Structural Engineering is by Bevan-Pritchard Man Associates of Vancouver. Project Management is by Tekton Project Management of Maple Ridge. To see the construction in progress visit: http://getinvolved.forestry.ubc.ca/loonlake

*The Bentley Family Hall will enable Loon Lake to thrive for the benefit of future generations of students, researchers, children, educators and community organizations. To learn more about how you can get involved in this project, please contact Emma Tully, phone 604.822.8716 or email emma.tully@ubc.ca.*

# The 42nd International Forestry Students' Symposium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To see a full list of all sponsors please visit **www.ifss2014.ca.**

The 42nd International Forestry Students' Symposium (IFSS 2014) took place from August 6 - 21, 2014 throughout the province of British Columbia; a forest journey spanning thousands of kilometers and showcasing the province's forested landscapes, varied ecosystems, and forest management practices and innovations. The theme of the symposium was "Our Roots, Our Future", which highlighted the intrinsic and undeniable relationship British Columbia has with its forests; the livelihoods that depend on these unique ecosystem, and the connections forests have with the province's past, present, and future.

This year's IFSS was hosted for the first time in 42 years in Western North America, and was collaboratively organized by students from The International Forestry Students' Association (IFSA) Local Committees at the University of British Columbia, Thompson Rivers University, and the University of Northern British Columbia. Over 120 international students and volunteers from 34 different countries attended the event and participated in 2 weeks of lectures, field trips and workshops.

IFSS kicked off in Vancouver, where delegates visited Stanley Park, the Museum of Anthropology, attended the UBC Networking Night and the IFSA International Evening, where students presented their research through oral and poster presentations. The symposium continued on Vancouver Island where students toured the Ministry of Forests, Lands and Natural Resource Operations' tree breeding facilities at Cowichan Lake, experienced the wonders of 800 year old cedars at Cathedral Grove and learned about the history of logging in BC at the McLean Mill National Historic Site. Upon returning to the mainland, delegates spent a day at the UBC Alex Fraser Research Forest in Williams Lake, witnessing the various silviculture practices in the province.

IFSS 2014 then traveled north to the UNBC campus in Prince George; highlights included a day at the John Prince Research Forest in Fort St James learning about wildlife management and First Nations traditional forest uses, a visit to the northernmost inland rainforest of the Ancient Forest, and a tour of the new Conifex Power Bioenergy Plant in Mackenzie. The symposium culminated in the southern interior of the province, with the last days spent at the TRU Wells Grey Research Centre learning about aquatic ecosystems, ethnobotany, and fire management practices in the dry grasslands of the interior. Throughout the 15 days, delegates experienced British Columbia's biodiversity and wildlife (particularly bears) when visiting 9 out of 14 biogeoclimatic zones. The entire route can be explored through the Seri interactive story map www.forestrygis.com/ifss/.

Finally to end the symposium, the IFSA's 25th General Assembly was held, during which 4 UBC students were appointed to IFSA official positions, including May Anne Then as IFSA President. Next year's symposium will take place in the Philippines from July 28 – August 10, 2015.

# Our changing urban forests: Sustainability, health and climate change , Victoria BC


On September 29th over 90 residents of the Victoria area and attendees of the Canadian Urban Forestry Conference gathered at the Fairmont Empress in Victoria for a discussion on urban forestry. Dean John Innes moderated a discussion with panelists Stephen Sheppard, Professor at UBC Forestry; Sara Barron, PhD candidate at UBC Forestry; Julie McDougall, Assistant Director of Parks, Victoria; and Christian Walli, British Columbia Community Advisor, Tree Canada & Manager, Brinkman & Associates Group of Companies.

Dean Innes introduced the new UBC Urban Forestry Bachelors program and a lively discussion took place on the importance of urban forestry. Two overlying themes of the evening were: the need to look at both public spaces, such as parks, and private spaces, such as neighbourhoods; and the best time to plant a tree in urban settings was 20 years ago, with the second best time being now. If you missed the event, listen to the discussion in the alumni UBC Digital Library at www.alumni.ubc.ca/podcasts/.

## Forestry alumni reception at Salt Lake City IUFRO/SAF/CIF Conference

The Faculty had a significant presence at the International Union of Forest Research Organizations (IUFRO) World Congress, Society of American Foresters Convention and Canadian Institute of Forestry's AGM in Salt Lake City in October. Professors Sally Aitken, Richard Hamelin and Robert Kozak won IUFRO Scientific Achievement Awards, several professors and a student were speakers during the conference and we hosted a booth at the Tradeshow.

Dean John Innes also hosted an Alumni and Friends evening reception at the Hilton Salt Lake City Center Hotel. Over 100 alumni, faculty, students and friends met or reunited. Alumni attended from all over the globe, including India, Mexico, Australia, the United Kingdom, Peru, Norway, Malaysia, Taiwan, China and Brazil. Thank you to all who joined us for this event.

## Mark your calendars for the following events

UBC Forestry's Alumni Office is already planning events for 2015 and we want to ensure they are in your calendar.

- Alumni Reception at the ABCFP Conference in Nanaimo – Thursday, February 19th, 2015
- Annual Loon Lake Alumni BBQ and Tour at the Malcolm Knapp Research Forest - Thursday, April 23rd, 2015

## Class of 1970 reunion

The class of 1970 had an impromptu reunion this summer in Naramata, BC. Members of the class and their families gathered from August 8th to 10th, 2014 to catch up.

## Class of 1974 and 1975 reunion in 2015

Calling all members of the class of 1974 and 1975, you classmates are in the midst of planning an Alaskan Cruise reunion for May 2015. Join them as they sail from Vancouver and cruise Alaska's Inside Passage. For more information and to RSVP before January 31st, 2015, contact Janna Kellett at janna.kellett@ubc.ca or 604.827.3082.

# UBC Forestry class of 1989 25th reunion

Submitted by Rhonda Coleman

The small but mighty UBC Forestry undergraduate class of 1989 met this Fall for a weekend get-a-way at the beautiful Harrison Hot Springs Resort and Spa to celebrate their 25 year reunion. Over a few beers at the local pub classmates reminisced about the good old days and shared stories of Fall camp, Undercut, logger's sports, Storm-the-Wall, OMAR 1X, Coconut, The Rolling Cones, Tea Cup, Dr. Worrall and his fuzzy buds, Dr. Kozak's puzzling permutations, Dr. Dooling's Recreation Opportunity Spectrum, endless hours cramming for exams, War Memorial Gym exam jitters, an overdue Grad paper or thesis, killer calculus, and the demise of the Engineering Cairn.

The next day classmates enjoyed a spectacular round of golf at the picturesque Sandpiper Golf Course and a great dinner at the Resort topped off with an amazing firework display on the lake courtesy of a wedding party next door.

As we poured over our class yearbooks at the reunion, it was undeniable that while we had all changed just a tiny wee bit since graduation, we are still the same fun-loving group who wandered the halls of MacMillian Building 25 years ago!

## Newsletter production

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Editor: Susan B Watts, PhD, RPF, susan.watts@ubc.ca
Designer: Jamie Myers, jamie.myers@ubc.ca

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

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