

# branchlines

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**Forestry**  
University of British Columbia

# dean's message



A university faculty is a complex mixture of faculty members, staff, students and a number of individuals who fall in between these categories. This issue of Branchlines features some of the research being done by members of two groups that fall into this latter category, our research associates and post-doctoral fellows. These individuals play a critical role in the research being undertaken in the Faculty, and many also help fill in some of the gaps in our teaching programme. Without the efforts of these individuals, we would not be able to maintain such a rich diversity of expertise within the Faculty.

It is our intention that Branchlines feature not only the research being done in the Faculty, but also some of the teaching and some of the achievements of our students. In this issue, we describe a remarkable new course being offered by Dr Stephen Sheppard on the visualization of climate change (page 22). This blends social and natural science into a truly interdisciplinary offering. We also have a report from Kirsten Falkenburger, an undergraduate in our Natural Resources Conservation program. She attended a major conference on biodiversity in Nagoya, Japan, and helped draft two important documents submitted to the conference. You can read about her experiences on page five.

Some of the research being undertaken in the Faculty could be considered controversial, and we report on two particular projects that some might be surprised at. Dr Craig Farnden describes on the important work

that he is doing on the reclamation of land disturbed by development in Alberta's oil sands region (page 10). He is examining what sort of a forest will grow back once the land is restored to some semblance of its former condition. In contrast, Dr Peter Arcese reports on what happens when a problem created by human activities is not addressed, showing how deer and Canada geese are damaging native birds and plant communities in British Columbia's coastal Douglas-fir zone (page 16). Universities play an important role in such research; their rules about academic freedom provide researchers the opportunity to examine such issues free from the pressures of special interest groups. It does however place responsibility on researchers to provide objective assessments of their data.

I continue to be amazed at the successes of our alumni. On page 26 and the following pages you will find accounts of what three of our alumni have been doing. It is not every Faculty that claim a "Chief Forester of the World" as an alumnus, and we are not only honoured that Dr Hosny El-Lakany should have achieved this distinction, but we have benefited greatly from his decision to return to the Faculty following his retirement from that position.

Finally, 2011 marks the International Year of Forests, and the Faculty will be undertaking a number of special events to celebrate this. Some of the upcoming events are detailed on the back page of this issue of Branchlines.



**John L Innes**  
Professor and Dean

# forestrynews

## New Forest Biomaterials and Biochemicals Research Network

The Faculty of Forestry is headquarters for a new \$5.3M NSERC Strategic Research Network that will focus on the development of novel biochemicals and biomaterials from the forest. The Network is being led by Dr John Kadla, Canada Research Chair in Advanced Biomaterials and a member of our Department of Wood Science. This Network is one of four new networks funded from the NSERC Forest Sector R&D Initiative in collaboration with FPInnovations. These new networks join 4 existing ones, also linked to FPInnovations, all aimed at transformative technologies for the forest industry. As one of Canada's largest industries, and the mainstay of many communities, the forest industry is at a crossroads and in need of a change. Production of new high-value products rather than traditional commodity products is a clear path to the future. The Forest Biomaterials and Biochemicals Research Network will focus on such new products,

specifically biochemicals and biomaterials from lignin. For further information contact Dr John Kadla at [john.kadla@ubc.ca](mailto:john.kadla@ubc.ca)

## Hosny El-Lakany elected to CIFOR Board

Dr Hosny El-Lakany, Adjunct Professor and Director of International Programs at the Faculty of Forestry, UBC and former Head of the FAO Forestry Department has been elected as the Chairman of the Board of Trustees of the Center for International Forestry Research (CIFOR) for the next three years. CIFOR, with headquarters in Bogor, Indonesia, is a nonprofit, global facility dedicated to advancing human wellbeing, environmental conservation and equity. It conducts research that enables more informed and equitable decision making about the use and management of forests. Its research and expert analyses help policy makers and practitioners shape effective policy, improve the management of tropical forests and address the needs and perspectives of people who depend on forests for their livelihoods. Its multidisciplinary

approach considers the underlying drivers of deforestation and degradation that often lie outside the forestry sector: forces such as agriculture, infrastructure development, trade and investment policies and law enforcement. This appointment will greatly strengthen collaboration between our faculty and CIFOR. Dr Hosny El-Lakany can be reached at [hosny.ellakany@ubc.ca](mailto:hosny.ellakany@ubc.ca)

## Minister of Forests addresses students

Pat Bell, British Columbia's Minister of Forests, Mines and Lands visited UBC in November, 2010 to address students in the Sustainable Forest Policy class (a class offered to fourth-year Forestry and Political Science students). Minister Bell provided an enthusiastic, wide-ranging, and exceptionally frank overview of recent developments in the BC forest sector and forest policy. Minister Bell is one of the high profile speakers appearing in Dr George Hoberg's class this year. Others have included COFI President John Allan, Meran Smith from Tides Canada, and Deputy Minister of Forests, Mines and Lands, Dana Hayden.



## Doctoral student wins prize

Steve Ribarits, a doctoral student under the academic supervision of Dr Phil Evans, was recently awarded the Robert W Stephen's Memorial Prize of \$US1000 at the Annual Meeting of Canadian Wood Preservation Association for his paper on 'Finite element modelling of the checking of wood exposed to accelerated weathering'.

## Forestry Advisory Council welcomes two new members

**Brenda Kuecks** became the President of Ecotrust Canada in February 2010, following five years of senior management responsibility with the organization in Clayoquot Sound. During her tenure in Clayoquot, amongst other work with the 5 Nuu-chah-nulth Nations that call that region home, she headed a team of forestry professionals to deliver contract management services to FSC certified Iisaak Forest Resources on TFL 54. Brenda's background includes six years as a community development professional on Vancouver Island focused on economic recovery for fishermen affected by commercial salmon reductions and ten years of international work with

volunteer organizations. She is also a certified mediator and a social worker, two skills sets that have come into play in numerous ways and places throughout her working career. Ecotrust Canada is an enterprising non-profit organization focused on creating innovative solutions to economic challenges by incorporating a triple bottom line approach. The organization includes a team of Registered Professional Foresters working on areas such as ecological goods and services, forest certification, and First Nations forestry tenures. As a member of the Forestry Advisory Council Brenda aims to bring this kind of conservation-economy thinking and practice into the dialogue about preparing students for a bright forest future for BC.

**Clark Binkley** is Managing Director of International Forest Investment Advisors ("IFIA"). Clark founded IFIA in 2005 to develop and implement innovative, socially responsible, high-return timberland investment strategies for institutional investors. Specific investment activities include the Global Emerging Markets Forestry Fund (managing forestry assets in Malaysia, Mozambique, Swaziland and southern Chile), the Greenwood Tree Farm Fund (a joint venture with Greenwood Resources including 17,000 ha of irrigated hybrid poplar plan-

tations and a large hardwood sawmill) and the Ecotrust Forest Fund (an open-ended forestland investment fund focused on ecosystem management in the US Pacific Northwest). Prior to founding IFIA, Clark was Managing Director and Chief Investment Officer with the Hancock Timber Resources Group, the world's largest timberland investment advisory organization that currently manages timberland worth about \$US 9 billion. From 1990 to 1998 Clark served as Dean of the Faculty of Forestry at UBC. In this role he was instrumental in establishing two new undergraduate degree programs—our BSc in Natural Resources Conservation and our BSc in Wood Products Processing—along with the First Nations Forestry program. Clark led the Faculty in raising \$47.5 million for our new Forest Sciences Centre and \$12 million for the Faculty's endowment funds. His direction and efforts also helped the Faculty to significantly increase both graduate and undergraduate enrolment. Clark is an honorary British Columbia RPF. Clark's many years of experience in academia and forestry investments will be of great value to the Council as the Faculty seeks advice on aspects of education, research and funding.



# An extraordinary experience in Japan

In mid October 2010 history was made in Nagoya, Japan. The Tenth Conference of the Parties was held for the Convention on Biological Diversity where they discussed the implementation of an Access and Benefit Sharing Protocol and the Post-2010 Strategic Plan, along with other thematic issues. Governments from around the world gathered in Japan to discuss these urgent issues and among them were their countries' youth. There were approximately 100 youth from 10 different countries attending the negotiations, more than half from Japan. The remainder of the attendees were from Uganda, Mexico, South Africa, Norway, Germany, Belgium, Indonesia, the United States of America and Canada. Natural Resources Conservation program undergraduate Kirsten Falkenburger, was a member of the youth delegation that attended on behalf of Canada.

Kirsten became involved with different environmental initiatives through a program in her secondary school that taught her about the need to become involved in protecting the Earth. Since then, Kirsten's work with different organizations has continued to spark her interest and challenge her to do more. She became involved with the Convention on Biological Diversity by working with 'Protect Our Water and Environmental Resources' and 'Biodiversity Matters'. She was chosen as the Youth Accord Administrator and worked on biodiversity outreach as well



as writing the International Youth Accord on Biodiversity. Her group's goal was to present the Youth Accord during the conference; however, the project grew much larger than that.

Kirsten had what she describes as "an extraordinary experience" working with international youth on two main fronts at the conference: (1) to produce a strong and comprehensive Post-2010 Strategic Plan to halt the loss of biodiversity by 2020; and (2) to support a youth focal point within the Convention on Biological Diversity's Office. The latter initiative was pushed heavily throughout the conference in the hope of enabling youth's voice to be heard and recognized as an important contribution. Together the group wrote a youth statement that was

presented in the plenary session, and a youth declaration and final statement, which were presented in the closing. They also produced an official document requesting a youth focal point, which was formally supported by the Indian Delegation and the Executive Secretary Ahmed Djoghlaif.

Kirsten Falkenburger is a first-year student in the Natural Resources Conservation program, one of four undergraduate degree programs offered by the Faculty of Forestry at the University of British Columbia. Her attendance at this Convention was supported by the Faculty of Forestry and the Biodiversity Research Centre at the University of British Columbia, as well as by 'Biodiversity Matters'. We are truly proud of Kirsten's success in this venture.

# Conserving coastal giant salamanders



British Columbia is home to 22 amphibian species, nine of which are salamanders. Some of these species are also found in the United States and are at the northern edge of their range in British Columbia. In Canada, the stream-associated coastal giant salamander (*Dicamptodon tenebrosus*) only occurs in approximately 100 km<sup>2</sup> of the Chilliwack Valley in BC, though its range extends to California. Without healthy, thriving populations in these marginal areas, shifting climatic patterns or habitat disturbances that influence movement across the landscape may compromise species' survival. Much work has documented the negative impacts of forest harvest-

ing on amphibian habitats, such as increased water temperatures and sedimentation, reduced canopy cover and increased solar radiation. These impacts are shown to reduce dispersal and gene flow, which may increase a species' local extirpation risk.

Continuing forestry activities in the Chilliwack Valley pose a threat to large-bodied, long-lived, sedentary species such as the coastal giant salamander (which grows up to 35 cm in length). This salamander is on the 'Red List' in BC, and considered 'Threatened' in Canada. Understanding the effects of habitat alteration versus natural landscape features on habitat use, population connectivity and gene

flow in coastal giant salamanders is necessary for implementing an appropriate 'Species at Risk' management strategy in Canada. Post-doctoral fellow, Dr Rachael Dudaniec (Department of Forest Sciences, UBC) is investigating the ecology and population genetics of coastal giant salamanders with Dr John S Richardson (UBC) and collaborators at Washington State University. Using a combination of molecular markers and ecological data, a picture of how the coastal giant salamander uses its habitat and moves throughout the landscape is emerging, as well as population abundance within streams.

The study has examined habitat associations for coastal giant sala-

mander in BC across 34 streams at the landscape scale and the stream reach scale in relation to site relative abundance and occupation. Relative abundance of aquatic salamanders increased with forest age and elevation, with higher abundance in streams with greater water depth, a higher percentage of riparian large wood and larger stream substrates. On average, streams where the species was detected had nearly twice the stream gradient, were located 170 m higher in elevation, and were deeper with more cobbles, compared with streams in which the species was undetected. This work demonstrates the value of integrating habitat information at different spatial scales into amphibian conservation plans, such that multi-scale environmental factors driving population distributions are accounted for.

Complementing these findings is the project's investigation of how landscape features influence dispersal and gene flow within the range periphery (in BC), as well as within two core locations in Washington State. Landscape genetic patterns may vary across the range of a species, particularly for core versus peripheral locations, where theory predicts reduced genetic variation and greater population isolation at range margins. Historical or post-glacial population dynamics may also influence present-day landscape genetic patterns. For the coastal giant salamander, the study has so far found that historical and present-day estimates of population size (as number of breeding individuals) were much larger for core, Washington State populations compared to those within BC, while genetic diversity was also



reduced at the range margin. When examining landscape resistance to dispersal it was found that simple isolation by geographic distance and the length of the growing season best explained core population genetic structure, whereas models containing elevation, slope and solar radiation best explained peripheral population genetic structure, independent of geographic distance. Differences in the intensity of forestry activity with elevation, and its effect of increasing solar exposure to stream habitats are likely to interact with these relationships. Greater salamander abundance but reduced genetic variation at higher elevations suggests that populations at higher elevations are isolated and may experience significant declines if habitat connectivity is not restored.

The findings demonstrate variation in landscape genetic patterns with location, as well as the importance of considering historical population processes when interpreting natural or human impacts on genetic structure. For the coastal giant salamander, it appears that landscape

topographical structure and climatic characteristics strongly influence patterns of gene flow and population connectivity across its range. As the strength of these landscape genetic relationships vary throughout the core and peripheral range of the coastal giant salamander, so may the interacting effects of forestry and other human activities. This research is funded by the BC Ministry of Forests, Mines and Lands, the Canadian Wildlife Federation, and the Washington Department of Natural Resources Forest Management Program.

*Rachael completed her PhD at Flinders University in South Australia on the molecular ecology and impact of an invasive parasite of Darwin's finches on the Galapagos Islands. With a passion for applied conservation research, she chose UBC Forestry as an ideal place to continue her work on understanding human impacts on vulnerable ecosystems using molecular ecological tools. Dr Rachael Dudaniec can be reached at rachael.dudaniec@gmail.com*

**Continuing forestry activities in the Chilliwack Valley pose a threat to large-bodied, long-lived, sedentary species..."**



# Observing biodiversity from space



The Intergovernmental Panel on Climate Change (IPCC), a highly respected international scientific body, has indicated that the current global loss in biodiversity is closely linked to human activities. The activities have caused direct effects such as habitat fragmentation and indirect effects such as the influence of anthropogenic climate change on ecosystems. Understanding the drivers of biodiversity and establishing methods for biodiversity monitoring and conservation have gained increasing importance over the past decade, and particularly in 2010, which was the International Year of Biodiversity.

Given the likelihood of species losses, satellite remote sensing is a valuable source of information, especially for investigations over large spatial areas. Satellite sensors can provide information on land surface parameters that are related to species richness and abundance, such as land cover or vegetation productivity.

One such satellite-derived indicator of species diversity is the Dynamic Habitat Index (DHI),

which combines the overall annual site greenness, the base level of vegetation cover, and the seasonal changes of greenness observed at a given location. To date, the DHI over Canada has been analyzed post-2000, based on data acquired by a satellite-borne sensor called the Moderate Resolution Imaging Spectroradiometer (MODIS). However, climate change impact studies would greatly benefit from longer time series of data. Another satellite sensor that uniquely

which has been in orbit for more than thirty years. As a result, nearly 40 years of data for use in climate impact studies will be available by the end of the projected life time in 2020.

A comprehensive AVHRR archive is also available for the Canadian land mass. The archive covers the period from 1981 to present. Dr Fabio Fontana, post-doctoral fellow (Department of Forest Resources Management, UBC) and members of UBC's Integrated Remote Sensing Studio (IRSS) in collaboration with the Canadian Forest Service and Environment Canada, are currently involved in research to develop a comprehensive AVHRR dataset that may be used for biodiversity-related studies over Canada. Processing includes calibration, geolocation, scene identification, correction of atmospheric and directional reflection effects, and post-seasonal adjustments.

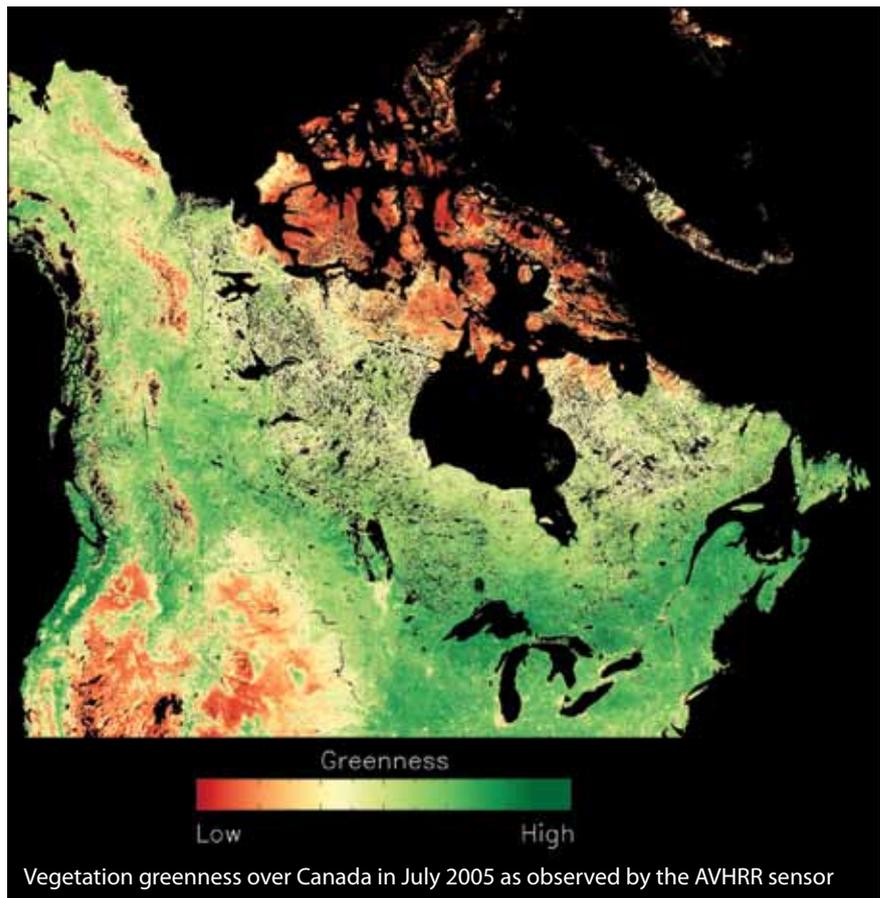
This dataset will enable us to analyze the DHI across Canada over the past three decades. By comparing annual DHIs with the average over the entire period,

**“Given the likelihood of species losses, satellite remote sensing is a valuable source of information...”**

enables long-term analysis of such parameters at medium spatial (1 km) and high temporal resolution (1 day) is the Advanced Very High Resolution Radiometer (AVHRR),

areas undergoing disturbances or recovery can be delineated, which may serve as an excellent indicator of change in species composition and diversity within a given area. In addition, observed changes reflect how habitat has changed across Canada potentially due to climate change. Specifically, the warming of northern areas should result in increased landscape productivity in northern zones, and this can be assessed from the AVHRR data. The long-term DHI together with other satellite-derived environmental descriptors (land cover, topography) can further be related to the abundance of various species across Canada, such as breeding birds. This will increase our understanding of how various species have adapted and will continue to adapt to changing environmental conditions – information that is important to managers charged with maintaining species home ranges, food supply, and habitat.

*As part of his doctoral studies in climate sciences at the University of Bern, Switzerland, Fabio spent three months at the Canada Centre for Remote Sensing in Ottawa. During*



*this exchange he became interested in the work of Dr Nicholas Coops and his team at UBC's Integrated Remote Sensing Studio. Now, as a recipient of a fellowship from the Swiss National*

*Science Foundation, Fabio has joined the IRSS group as a post-doctoral fellow for a one year term. Dr Fabio Fontana can be reached at [ffontana@interchange.ubc.ca](mailto:ffontana@interchange.ubc.ca)*



Wilson's warbler in the boreal forest

# Extreme disturbance, reclamation and forest resilience

In 1980 Mount St Helens erupted, completely destroying hundreds of square kilometres of forest with a pyroclastic eruption and mudslides. The area was covered by deep ash vastly different in structure and chemical makeup than the forest soil it buried. Many notable scientists predicted that it would take a century or more before a functioning forest ecosystem returned. They turned out to be completely wrong; a vibrant, functioning, rapidly recovering forest exists there today. Many questions about catastrophic disturbances remain, including how far can you push the system and

mixture of Pleistocene lacustrine sediments and peat or recovered forest floor materials, over the top of overburden storage areas or tailings structures. Trees and other vegetation are planted on the new surface. Syncrude and the other companies have established many small-plot trials to help decide such factors as depth of overburden replacement and the proper mixture rate between mineral soil and organic material. The question they face is how to meet their basic obligation (both legal and ethical) to return a functioning forest to the site.



how do you know if enough functions have recovered to provide needed resiliency.

Last year, Rob Vassov from Syncrude Canada Ltd contacted post-doctoral fellow Dr Craig Farnden and Dr Bruce Larson (Department of Forest Resources Management, UBC) with just such a question. He wanted to know if there was a role for silvicultural operations such as fertilization and thinning in young stands established on reclaimed land after oil sands mining. Reclamation and restoration projects around the world such as coal mining and gravel pits have many common issues, but each type of restoration is different because of site factors and the nature of the overburden and tailings. For oil sands reclamation, the current practice is to spread approximately 1 m of reclamation materials, often a

Craig and Bruce quickly realized that silvicultural experimentation might play an even larger role. The classic approach to determine if forest functions have been restored would be to compare plots in the reclaimed stands with plots in the surrounding area. An alternate approach is to add a small disturbance to the new stand, measure how it reacts and compare this to our knowledge of how similar “natural” stands react. Previously studied catastrophic disturbances have shown that there is a great deal of redundancy in forest processes; perhaps every “cog” does not have to be exactly replaced in the initial stages of reclamation.

The site being studied is a 19-year-old jack pine stand established in reclamation material consisting of a mixture of clay and peat placed on top of tailings

**The question they face is how to meet their basic obligation (both legal and ethical) to return a functioning forest to the site."**

sand – an ideal candidate for the proposed approach given that much is known about pine stand dynamics. Fertilization and thinning were chosen as two disturbances that have been extensively studied. There is always a question of which nutrients to add and what quantity range is appropriate on any given site to study a

stand level response. To get these starting conditions, a graphical vector analysis of tree foliar response to fertilization in a large number of small screening plots was applied. The test applications were made last fall and results will be available next summer. A second stage of the trial utilizes a smaller number of much larger long-term monitoring plots. These plots will be fertilized with a range of treatments next year, and subsequently a subsample will be thinned. In addition to the tree

Additionally, soil respiration and carbon flux studies undertaken by Alberta Innovates – Technology Futures in the same stand have been adapted to take advantage of opportunities for knowledge gain provided by synergies with the new trial. We hope that other studies such as biodiversity sampling will be added on to the long term monitoring plots using subplots set aside for that purpose.

For many decades foresters have “kicked the system to see what happens”. This has often been just an anecdotal approach to knowledge gain in forestry. Through our work we hope to add rigorous inductive reasoning to science-based adaptive management. Only with this addition can the full scientific method be brought to bear on the major environmental problems we face.

Are the reclaimed forest stands the same as those growing nearby? Not exactly, but that is the lesson of Mount St Helens. The structure of the forest (including below ground) can be permanently changed, but still develop and function in similar ways. There is much to



Reclaimed saline-clay overburden planted with white spruce and trembling aspen in 1998

responses, the trial is expected to provide insights into how biodiversity can be increased in single species plantations. Using silviculture in this way was a major topic at the 2009 World Forest Congress and the subject of a presentation there by Bruce and Craig.

On their own and through interaction with other research being carried out on the same site, it is hoped that these intensively measured plots will yield other information. Already, Craig noticed through his measures that there seems to be localized height variation similar to what one would expect with microsite variation. To investigate this further, Syncrude is planning to digitally map individual tree heights, capping material depths from a grid of core samples, and tree foliar nutrition. The data will be analyzed for possible correlations.

be learned about re-starting ecological functions and the Syncrude experience is providing us with a unique opportunity to learn how forest stands recover from extreme anthropogenic disturbances. Our newly gained knowledge should help us understand reclamation resilience, and help the industry hone their practices towards fully functioning ecosystems.

*Craig returned to UBC for graduate studies (and is now a post-doctoral fellow) after working as a consulting and research forester in Prince George for 19 years. His primary research interests are in forest productivity and growth responses to silvicultural treatments. He also has extensive experience in developing decision support tools for silviculture planning. Dr Craig Farnden can be reached at [craigf@interchange.ubc.ca](mailto:craigf@interchange.ubc.ca)*

# Online profiles

Once an area of land is changed by humans or nature, the undisturbed soil profile of that ecosystem is gone forever. However, thanks to a team of students and researchers from the University of British Columbia, led by Dr Maja Krzic (Faculty of Land and Food Systems / Faculty of Forestry), soil monoliths collected from locations around British Columbia, Alberta,



and Yukon are now available as a web-based, interactive teaching tool. Soil monoliths are display models (about one meter tall) that provide a visual presentation of the horizons, colour, and structure in a



soil profile. This thin sequence of soil layers is created by removing a vertical slice of a profile, mounting it on a wooden frame, and stabilizing it with glue compounds.

Soil monoliths are a valuable teaching resource for soil identification and classification – a necessary skill for many soil science, forestry, agriculture, and environmental science students to master for use in their future careers. Monoliths also provide historical records of numerous sites no longer in existence. However, it is not easy to provide or maintain a public display of this type of material. Our newly developed teaching tool promotes easy access to information on a variety of soils and provides a historical record of morphological features of soils prior to the impacts of human activity, all from the convenience of a web-based environment.

About five decades ago, members of the Soil Science Department at UBC carried out an extensive undertaking to create one of the



best collections of soil monoliths in Canada. Mr Laurie Farstad, BC's first pedologist and head of the Federal Soil Survey and Dr David Laird, UBC's first soil science professor, initiated the collection with the aim of making soil information available to university students and professionals. Monoliths were collected from many regions in BC, along with a few "true" prairie Chernozems (grassland soils) from Alberta and Cryosols (frozen soils) from the Yukon. It took approximately half a century to complete the existing collection of 191 monoliths, which is the second largest collection of its kind in Canada. Many of the monoliths in UBC's collection represent soil sites that have been lost due to urban development, making the collection impossible to replace.

The collection is stored in UBC's



MacMillan building, where it has not been fully utilized due to its inadequate display and storage status. The interactive, web-based teaching tool that our group has developed enhances the value and usability of the monolith collection by making it accessible to anyone with internet access (<http://soilweb.landfood.ubc.ca/monoliths/>). The teaching tool features high-resolution digital photographs, detailed descriptions of each monolith, information on how to approach soil identification, basic information on the Canadian soil classification system, and an interactive soil map of BC. In this way, each soil featured in UBC's collection can be placed within the geographical context of location, climate, and biotic type, which allows students to integrate and build upon various concepts and skills they have learned in first year science and introductory soil science courses. Although the tool's main objective is enhancing student learning, we hope that its open access may help increase public awareness about soil.

A team of undergraduate and



graduate students worked with Dr Krzic and others to catalogue, restore, and transfer this extensive collection to a web-site. The soil monolith web-based tool is the newest addition to the award winning Virtual Soil Science Learning Resources project that includes several other open-access educational resources such as SoilWeb, Soil Orders of Canada, Land-Use Impacts Teaching Tool, Virtual Soil Processes, Virtual Soil Parent Materials and Landscapes, and Virtual Soil Lab Modules. All of these are accessible from the Virtual Soil Science Resources website at <http://soilweb.landfood.ubc.ca/promo/>

*This article was prepared by MSc student Emma Holmes and research associate Rachel Strivelli MSc, both members of Dr Krzic's research team. Dr Maja Krzic can be reached at [maja.krzic@ubc.ca](mailto:maja.krzic@ubc.ca)*



# Fostering climate change adaptation



Valhalla Provincial Park

As in other parts of British Columbia, natural resource managers and residents of the communities of Nelson, Creston, Cranbrook and surrounding areas are concerned about climate change and the potential influences that it may have on their surroundings.

Working with a team of indigenous and non-indigenous investigators, Faculty of Forestry researchers Drs John Innes, Howard Harshaw, and Harry Nelson are examining several localized climate change scenarios, as well as local attitudes, beliefs, and perceptions about climate change

to gauge the potential effects of climate change on different land management arrangements in the South Selkirks. The South Selkirk region of British Columbia includes the Nature Conservancy of Canada's Darkwoods Property, West Arm Provincial Park, Midge Creek Wildlife Management Area, Creston Valley Wildlife Management Area and the West Arm Demonstration Forest.

The project team includes indigenous knowledge keepers (from the Lower Kootenay Indian Band, Métis Nation of BC, St Mary's Indian Band and the Ktunaxa Nation), western scientists (from academia and the Ministries of Natural Resource Operations and Environment), managerial experience (from local licensees and local First Nations reserve managers), and representatives from the Nature Conservancy of Canada and BC Hydro. The project employs both western and indigenous sciences to examine climate change and its impacts on the relationship between people, forests, water, land, air, plants and animals.

Fostering climate change adaptation requires that we do not place undue burdens on vulnerable elements of the system; if adaptation is to occur at a landscape scale, a holistic approach must be adopted. Such an approach considers the interconnections between ecological, economic, and human dimensions of the land and resources. Three dimensions frame this research:

**Ecological Resiliency Dimension.** Dr Walt Klenner, a wildlife habitat ecologist with the Ministry of Natural Resource Operations,

is leading the development and testing of different climate change scenario models. This component addresses two main questions: (1) What are likely climate scenarios for this region, and how will these affect vegetation succession, and (2) what climate change adaptation practices would be required to encourage resiliency while maintaining or enhancing conservation values of ecosystems within the study area? The climate change models will provide information about possible future ecological conditions that will help to inform evidence-based forest management and policy at the scale of the landscape.

#### **Human Resiliency Dimension.**

Dr Natasha Caverley, of Turtle Island Consulting, has led the qualitative component of this study. She is investigating human resiliency through interviews with Aboriginal people to examine human capabilities and adaptive systems that promote healthy development and functioning at the individual, group and broader community level. The human resiliency dimension seeks to answer two questions: (1) What climate change adaptation

practices would be required to maintain or enhance socio-cultural values within the study area; and (2) which of these practices would be acceptable to local residents (and if divergent, how can these be reconciled)? A second piece of this component is the delivery of a survey by Dr Harshaw. This survey will assess people's ecological views to inform the interpretation of their attitudes towards climate change. It will also examine the diversity of social networks and access to social capital to evaluate how information about climate change is dispersed in the study area, and identify which sources of information people trust most. Finally, it will investigate residents' connections to natural areas through outdoor recreation participation. The survey will be delivered to local residents, local Aboriginal people, and local land-use managers to better understand the similarities and differences of these three groups in terms of their perceptions of climate change resiliency and vulnerability.

**Economic Resiliency Dimension.** Led by Drs Innes and Nelson, this component is examining the question of which economi-

cally-feasible forest management practices would be required to encourage resiliency while adapting to climate change. A focus of this component is an analysis of local timber processing firms, and their ability to adapt to fluctuating market conditions, tree species, and product mixes.

We hope that the results of this three dimensional research project will provide recommendations for forest management and planning that foster resiliency under expected climate change scenarios as well as meeting the socio-cultural values identified by local Aboriginal and non-Aboriginal community members. Our recommendations will inform strategic partners (First Nations, Métis, Government, industry and academia) on multidisciplinary and cross-cultural methods, practices and strategies that integrate environmental/ecological, economic and socio-cultural dimensions of the land base and their role in addressing climate change issues within BC.

*For further information, contact research associate Dr Howard Harshaw at [howie.harshaw@ubc.ca](mailto:howie.harshaw@ubc.ca)*



Creston, BC

# Human choices impact native birds and plants



We often estimate the degree of human influence on native species and ecosystems by comparing human-dominated habitats to those with few or no humans present, such as parks. However, recent research shows that human habitat modification can lead indirectly to rapid declines in native species abundance and ecosystem condition even inside parks via the effects of abundant human commensal\* species, such as deer. Deer are recognized as a problematic human commensal throughout much of central and eastern North

America, where they have benefited from an abundance of food and an absence of natural predators, but maintained their preference for palatable native species when encountered. The consequences of this interaction were made evident by Bill Alverson (UWisconsin), who re-surveyed 115 Midwest vegetation plots established in the 1940s to find that an average of 18% of species were missing from all plots a half century later, but that a whopping 55% of species were missing from plots located inside parks. Alverson explained his

finding as a result of deer populations growing to high density in agricultural and suburban habitats absent of native predators, but finding daytime protection from harassment and hunting inside parks, where palatable natives were decimated as a consequence. Could similar processes be at work in the Georgia Basin?

Five recent papers from the Faculty of Forestry's Centre for Applied Conservation Research show compellingly that human commensals are indeed having deleterious impacts on native plant and bird populations

*\*Commensalism is an association between two organisms in which one benefits while the other derives no benefit or harm*

in the coastal Douglas-fir zone of British Columbia. In the first case, high deer densities already limit the growth and reproduction of many palatable spring ephemerals in oak meadow and woodland habitats. For example, Emily Gonzales (PhD, Forest Sciences) showed that deer on Salt Spring Island prevent the growth of iconic meadow plants known to have been abundant historically, including common and great camas, fawn and chocolate lilies, sea blush, blue-eyed mary and brodeas. In a three-year experiment employing 56 'open' and 'exclosed' plots planted with seablush and common camas, Gonzales showed that seablush, camas and several cryptic existing lilies in plots protected from browsing increased rapidly, whereas those in open plots declined to extinction or to sizes at which flowering was rare. By comparison, reducing exotic

**“...Canada geese were rare in the Georgia Basin prior to the 1960s...”**

competitors had little effect on growth or reproduction in natives. Interestingly, blooming by historically established lilies (camas, brodeas), undetected when the experiment was initiated because of their tiny, grass-like form, increased by 12-fold in exclosed as compared to open plots. Gonzales further showed that deer maintained their preference for native plants as food, even though the species germinated from their feces were almost exclusively exotics, indicating that deer facilitate exotic invasions by dispersing exotic competitors and removing natives via herbivory. Most recently, the influence of deer on plant and bird communities has been described in detail by Tara Martin (NSERC post-doc, Forest Sciences), who showed that deer density explained a large fraction of the observed variation in plant and songbird abundance across 18 San Juan and Gulf Islands. In particular, songbirds that rely

on understory plants for feeding and nesting were more than twice as abundant on islands with deer densities  $< 1/\text{km}^2$  when compared to islands with more typical modern densities of approximately 10 deer/ $\text{km}^2$ . But deer are only one of several human commensal species of concern in the Georgia Basin and coastal Douglas-fir zone.

A second and perhaps more surprising human commensal with impacts on native plant populations is the Canada goose, thought of by most local naturalists as being native to the region. Recent research now reveals that Canada geese were relatively rare in the Georgia Basin prior to the 1960s, where they were present primarily as migrants, until they were established as a breeding species by the concerted efforts of the Canadian Wildlife Service and Province, who hoped to enhance hunting and wildlife viewing opportunities. An unintended consequence of those introductions, however, given the almost unlimited supply of grazing opportunities in agricultural fields, school yards and city parks, is that geese have now expanded their numbers sufficiently to begin breeding on some of the most remote and, until recently, 'intact' oak and maritime meadow habitats remaining in the region. Like deer, 80% of species germinated from goose feces are exotic grasses. Moreover, because geese also import nitrogen to otherwise infertile island soils, they create a positive feed-back loop that hastens the spread of mat-forming exotic grasses at the expense of native species. Rebecca Best (MSc, Forest Sciences) demonstrated these effects experimentally using 45 exclosures on nine islands with outstanding meadow plant communities and experimental communities in greenhouses. Just this year, Miriam Isacc-Renton (BSc, Forest Sciences) and Joe Bennett (PhD candidate, Forest Sciences), have shown that although goose presence was a good predictor of the abundance of exotic annual grasses across 60

islands with outstanding oak and maritime meadow communities, the invasion process still appears to be in an early stage on many islands. Moreover, Rebecca has found that native plant communities can also recover at the expense of exotic grasses when geese are prevented from accessing meadow patches, suggesting that the processes of native species loss is also reversible if begun before natives are extirpated from the system.

Two clear lessons arise from our research to date. First, protected areas are unlikely to maintain biological diversity in the coastal Douglas-fir zone in the absence of management to reduce the spread and abundance of human commensals, such as resident Canada geese and black-tailed deer. Second, because commensal species are already impacting even relatively remote protected areas and islands in the Georgia Basin, our ability to describe 'natural' plant communities is rapidly being lost, potentially confounding our ability to identify restoration targets or describe long-term change with precision. Because the Georgia Basin's coastal Douglas-fir zone is also identified as the most imperiled biogeoclimatic zone in British Columbia (<http://www.biodiversitybc.org/>), it is becoming urgent to conserve native plant communities before additional, once abundant species, become federally listed as threatened and endangered. Mitigation against the adverse impacts of over-abundant, commensal species has the potential to be contentious. However, science now indicates that choosing to avoid the nasty necessity of managing abundant human commensals is likely to be a vote for the extinction of other valued, native species.

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# Promoting sustainable management of Cameroon's Model Forests



Cameroon's forest land base – estimated at 19,631,000 hectares – is part of the dense tropical rainforest of the Congo Basin situated in Central Africa. In recent times, there has been growing worldwide concern about increasing rates of deforestation in this region. In response, the government of Cameroon designated 1.5 million hectares in two sites (Campo Ma'an in the South Region and Dja et Mpomo in the East Region) as Model Forests in 2005. The concept of a Model Forest is based around a voluntary, multi-stakeholder approach to sustainable forest management wherein all forest stakeholders – traditional chiefs, indigenous communities, industry, governments, research institutes, and civil society – come together to share experiences and ideas. Currently, there are fifty-four Model Forests in existence, and Canada has taken a leadership role in providing support for the man-

agement of most of these forests as part of its commitment to support socio-economic development for forest-dependent communities and ecological sustainability for valued forests around the world.

In September 2010, Drs Ian de la Roche (an adjunct professor in the Department of Forest Resources Management), and Dieudonne Alemagi (a post-doctoral fellow in the Department of Wood Science), with the support of AFRICAD (Africa Forests Initiative on Conservation and Development) at UBC, undertook an exploratory mission in Cameroon and met with Model Forest stakeholders and the African Model Forest Network Secretariat. Herve Deschêne of FPIInnovations and two representatives from the Model Forest of Lac St Jean in Quebec rounded out the team. The principal aim of these meetings was to develop collaborative projects that focused on improving the standards of living for local

populations in Cameroon through increased economic activity from forest and non-timber forest products (NTFPs) and through improved forest management practices. Our priority was to identify various ways in which Canadian expertise could be used to promote new entrepreneurial models for sustainably transforming timber, wood residues, and NTFPs into value-added products such as building components, furniture, ecotourism and medicinal forest products. Other sustainable management practices (like the level of ecological conservation) within the two Model Forests were also explored.

We made several interesting observations during our visits. For example, we noted that different actors in the two Model Forests have worked hard to create partnerships to advance the Model Forest concept. For example, in the Dja et Mpomo site, we discovered that partnerships exist between

representatives of the indigenous communities, women's associations, local NGOs, an agro-forestry cooperative, logging companies, and a mining company. Similarly, in the Campo Ma'an, partnerships exist between different actors including logging companies, industrial agro-plantations, traditional chiefs, women's associations, indigenous communities, NGOs, the media, and village mayors. While this listing appears to be inclusive, the unfortunate reality is that women and Aboriginal peoples are underrepresented in much of the decision-making processes concerning the Model Forest. In addition, we have the issue of abject poverty within the surrounding Aboriginal communities. That said, we also observed several interesting opportunities for addressing some of these issues and for creating wealth by transforming timber, forest residues, and NTFPs into value-added products. This included two community micro-pilot projects for produc-

tion of wooden pens and snails as a protein-enriched food source. The fact that these Model Forests occur in generally well maintained nature reserves means that promising ecotourism opportunities also abound. Unfortunately, development of these and other types of enterprises in the region has been slow, due mainly to a lack of

**“ ... the unfortunate reality is that women and Aboriginal peoples are underrepresented in much of the decision-making processes...”**

relevant technical expertise and poorly developed business plans. We are well positioned in the

Faculty of Forestry at UBC to provide support and advance the Model Forest concept in Cameroon, and in other developing countries. We have recently proposed some project ideas to Natural Resources Canada (NRCAN), including supporting local entrepreneurs to develop appropriate business plans and marketing strategies, and with capacity-building for the creation of small woodworking and construction enterprises that would focus on the fabrication of furniture and housing for local and regional markets. The AFRICAD initiative at UBC recently submitted a proposal to NRCAN to address the issue of equity and fair representation amongst women and Aboriginal groups.

*This exploratory mission was funded by NRCAN. For further information, contact Dr Ian de la Roche at [ian.delaroch@ubc.ca](mailto:ian.delaroch@ubc.ca) or Dr Dieudonne Alemagi at [dalemagi@yahoo.co.uk](mailto:dalemagi@yahoo.co.uk). Dr Rob Kozak, founding member of AFRICAD, can be reached at [rob.kozak@ubc.ca](mailto:rob.kozak@ubc.ca)*



# Driving innovation in the advanced wood products industry

To compete in today's global marketplace Canadian companies need to excel in business and manufacturing innovation. In the wood products sector, studies by researchers such as Oregon State University's Eric Hansen have found that there is considerable room for improvement in all aspects of innovativeness, but particularly in terms of innovation and development of new products. One of the mandates of the Centre for Advanced Wood Processing (CAWP) in the Department of Wood Science is to assist Canadian advanced wood products companies to develop new products or improve existing products.

Our value-added wood firms, like many manufacturers throughout the developed world, must act urgently to combat price competition, particularly from offshore manufacturers with low labour and regulatory compliance costs. We assist these firms in differentiat-

ing product offerings based upon unique innovation in aesthetic or performance attributes which allows them to shift the focus away from price. One innovation example is building products – previously thought of as solely commodity items, these have undergone a transformation in recent years and are now engineered to offer specific technical performance or “environmental attributes”. Examples include computer designed and manufactured timber frame structures and engineered wood products.

Our CAWP lab has the computer-aided-design and manufacturing software and CNC manufacturing machines that offer a wealth of new opportunities for creating innovative products and shortening the product development cycle. We are building on our experience in designing and building the Olympic podiums and medal trays in collaboration with many

supporters. CAWP is fortunate to receive generous in-kind support from a number of technology companies, which has helped to ensure that its computer lab and manufacturing spaces are endowed with world-class equipment. The technical work is typically carried out by CAWP staff and faculty members in the Department of Wood Science, though on occasion other UBC experts and external associates are called in to assist.

Canada's value-added wood manufacturers need a means to access affordably-priced product design and prototyping support services. The Business Innovation Partnership (BIP), an initiative funded by Forestry Innovation Investment and delivered by BC Wood Specialities Group, CAWP, and FPIInnovation provides these means. CAWP's main role in this partnership is to operate a product development service that works directly with BC companies on the design, engineering, prototyping, and testing of new value-added products. Since July 2009 CAWP has carried out 16 projects with manufacturers of furniture, cabinets, windows and doors, panelised housing, and engineered wood products. The services provided to these companies have been varied, from testing wood finishes and examining the machining properties of thermally-modified lumber to designing a mechanical press for a new laminated timber beam product. Projects have ranged from a few hundred dollars in value to



Andrew Pershin applying a non-toxic finish on furniture built for the 2010 Olympics



CAWP High-Head Lab

more than \$20,000, and 50% of project costs are covered by provincial funding. Industry response to the program has been highly favourable. The needs of the company are linked with the expertise of Faculty researchers, fulfilling one of CAWP's mandates to link advanced wood processors with the research (ie problem solving) community at UBC.

One company used this program for four projects that developed a complex panelised home product utilising a digital design and fabrication process. Project

planning, plant layout, and onsite training and education are leading to a new greenfield factory in BC that will employ 30-40 people producing high quality wood housing. The owner stated "the ability to secure funding and technical support for this year's product development activities through the BIP company-specific project program has been pivotal in convincing our investors to move forward with these plans". Another project explored the production of an engineered structural beam made from waste material making

members for solid timber frame construction; turning waste into a high value product. This patented project is ongoing. A third example was work to fine tune a new standard furniture line utilizing five-axis CNC technology. Another furniture manufacturer stated that "as a start-up business owner in the furniture industry BIP and CAWP represents an incredibly useful source of knowledge and support". These are all BC-based product innovations to help expand the value and employment opportunities in advanced wood processing using the facilities and knowledge from CAWP at UBC.

The BIP program is still new, and the benefits to the advanced wood manufacturing businesses in BC will continue to grow as it becomes better known among the existing and new wood entrepreneurs in BC.

*For further information, contact CAWP's Managing Director, Iain Macdonald at [iain.macdonald@ubc.ca](mailto:iain.macdonald@ubc.ca) or CAWP Management Committee Chair, Dr Dave Cohen at [david.cohen@ubc.ca](mailto:david.cohen@ubc.ca)*



Wall-mounted light created by WPP graduate Andrew Pershin using 3D modeling software and CNC technology

# A new course in visualizing climate change

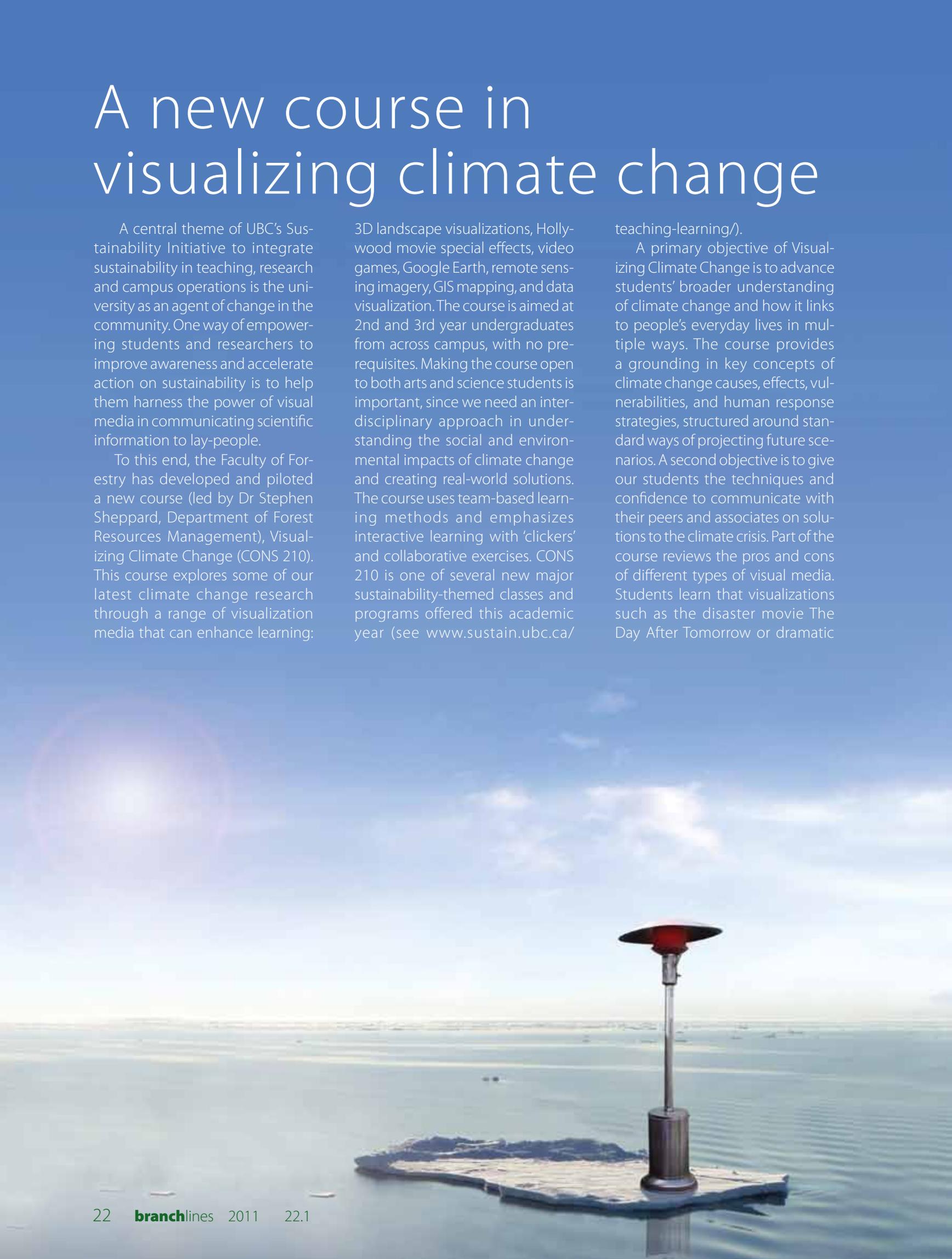
A central theme of UBC's Sustainability Initiative to integrate sustainability in teaching, research and campus operations is the university as an agent of change in the community. One way of empowering students and researchers to improve awareness and accelerate action on sustainability is to help them harness the power of visual media in communicating scientific information to lay-people.

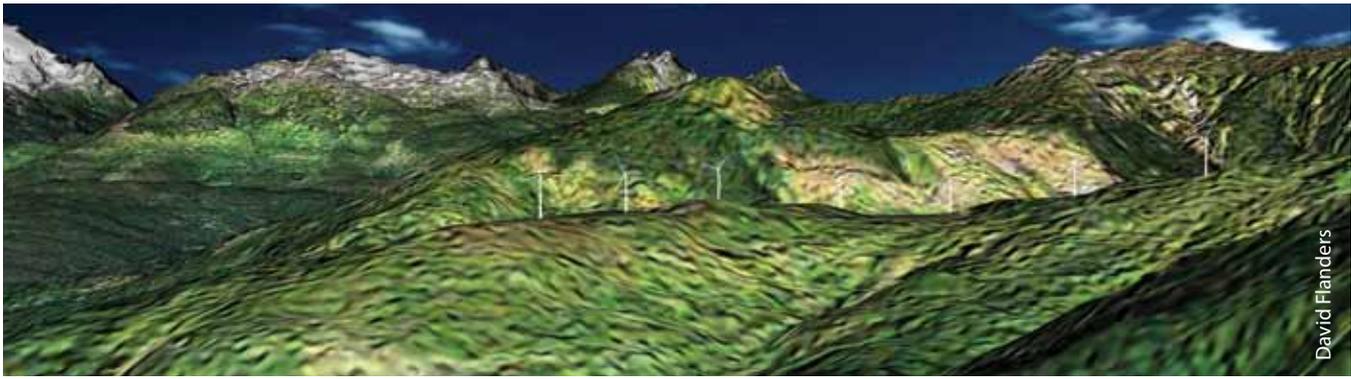
To this end, the Faculty of Forestry has developed and piloted a new course (led by Dr Stephen Sheppard, Department of Forest Resources Management), Visualizing Climate Change (CONS 210). This course explores some of our latest climate change research through a range of visualization media that can enhance learning:

3D landscape visualizations, Hollywood movie special effects, video games, Google Earth, remote sensing imagery, GIS mapping, and data visualization. The course is aimed at 2nd and 3rd year undergraduates from across campus, with no prerequisites. Making the course open to both arts and science students is important, since we need an interdisciplinary approach in understanding the social and environmental impacts of climate change and creating real-world solutions. The course uses team-based learning methods and emphasizes interactive learning with 'clickers' and collaborative exercises. CONS 210 is one of several new major sustainability-themed classes and programs offered this academic year (see [www.sustain.ubc.ca/](http://www.sustain.ubc.ca/)

teaching-learning/).

A primary objective of Visualizing Climate Change is to advance students' broader understanding of climate change and how it links to people's everyday lives in multiple ways. The course provides a grounding in key concepts of climate change causes, effects, vulnerabilities, and human response strategies, structured around standard ways of projecting future scenarios. A second objective is to give our students the techniques and confidence to communicate with their peers and associates on solutions to the climate crisis. Part of the course reviews the pros and cons of different types of visual media. Students learn that visualizations such as the disaster movie *The Day After Tomorrow* or dramatic





Visualisation of wind turbines near Mount Garibaldi, BC

YouTube social marketing pieces can motivate people, but too many doom and gloom dramatizations can have a paralyzing effect, and the science is not always accurately communicated. Conversely, showing people ways to help mitigate and adapt to climate change in their own communities – through things like urban forestry, solar power and bioenergy, retrofitting homes, electric vehicles and local food production – can really get people thinking about solutions and the choices they can take.

The course is supported by several scientists conducting cutting-edge research in climate change adaptation and mitigation, addressing: forest ecosystems and assisted migration of tree species; glaciers and snowpack; carbon sequestration, wildfire risk management, renewable energy and biomass, urban heat islands, energy policy

and community perceptions. Co-instructors in the pilot version of this course included faculty members from Forestry, Earth and Ocean Sciences and Geography.

For their term project, students worked in groups to develop a plan for communicating science on a climate change topic relevant to a non-expert Canadian audience. The goal was to build awareness of possible climate change implications for the audience's geographic or interest area, and stimulate thinking on the topic. The students had to identify the basic science content that the plan would cover and describe the types of visual media to be used, consistent with principles for effective, compelling, and defensible public engagement. Groups chose to develop communication plans for a High School class on the climate impacts on forest ecosystems, for provincial educators of grade 5-7 pupils on renewable energy, and for local elected officials on adapting to sea level rise, among others. Prototype communication approaches developed by the students included:

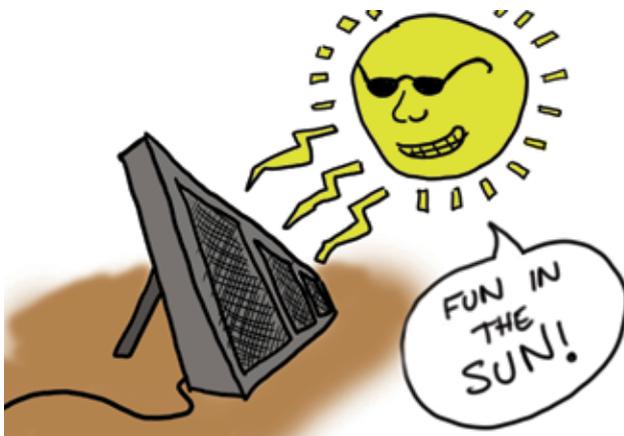
- a cartoon storyboard of the carbon cycle and green energy sources, linking to future visualizations of tidal energy generators and a North Vancouver windfarm;
- a Smart Board workshop for Grade 8 students in Williams Lake on their relationship to shrinking glaciers and snowpack; and
- a design for a video game called "Last Stand" that explores pine beetle epidemic/restoration scenarios from the standpoint of a company CEO, a politician, and an environmentalist.

The pilot year of the course taught us a lot about the benefits and challenges of learning about climate change and applying visual media to engage others in that same learning process. We acknowledge the invaluable support for this course from the Pacific Institute for Climate Solutions, Pacific Climate Impacts Consortium, Metro Vancouver, UBC Media Services, the USI's Spotlight funding program, and stellar teaching assistants Ana Elia Ramon and Scott Krayenhoff. For more information on this new course, visit: [www.sustain.ubc.ca/teaching-learning/featured-content/visualizing-climate-change](http://www.sustain.ubc.ca/teaching-learning/featured-content/visualizing-climate-change).

*Dr Stephen Sheppard has recently completed a book on "Visualizing Climate Change" as a text for next year's class. He can be reached at [stephen.sheppard@ubc.ca](mailto:stephen.sheppard@ubc.ca)*



Kevin Ryu (graphic) with Group 8 (concept): MA Iqbal, C Murphy, R Ryvola, J Turecki, SZ Zong



D Borslein (graphic) with Group 6 (concept): J Cohn, A Kramer, M Lemire, J Murphy, O Suleman

# UBC's Research Forests – the business of change



There's an old saying among bankers that a successful business must have "the three Cs" – cashflow, collateral, and character. When the decision was made over twenty years ago to convert the Faculty of Forestry's Research Forests – Alex Fraser Forest in Williams Lake and Malcolm Knapp Forest in Maple Ridge to self-funded businesses, it was a foregone conclusion that their wealth of timber assets would allow them to operate indefinitely. But time has shown that the bankers are right. More than simply assets and money are needed to keep a business healthy.

In 2001, the Aleza Lake Forest in Prince George was conceived as a joint venture between UNBC and UBC. The self-funded model was chosen for the Aleza Forest and it was incorporated as a non-profit Society. The managers of all three forests work together on the Aleza Forest Board.

Since becoming self-reliant, the Research Forests business plans have been a moving target. After setting up successful ventures that relied on log sales as their sole income, the Forests have steadily added other sources of revenue.

Ken Day, Manager of the Alex Fraser Forest recalls how the interior log markets collapsed several years ago. "With huge amounts of beetle and fire kill timber salvage taking place, and with falling markets for end products, it was clear that we had to do something other than sell logs". Ken and his staff's energy and commitment to the community of Williams Lake provided the solution. They opened a consulting practice specializing in areas where the Alex Fraser Forest had developed unique

skills and knowledge – interface fire protection, bioenergy, and community forestry. Over the past three years, they have successfully developed and implemented plans that have made Williams Lake a safer community and a centre of excellence, while "paying the bills" and providing valuable service to UBC faculty and students. "It was a challenge to keep the lights on over the past few years – but things today look much brighter for us because of our income diversity", Day says.

Susan Mulkey, Manager of Extension and Communication for the BC Community Forestry Association, is working with Ken and his staff on a number of Community Forest projects developing tools for forest managers. She says that the UBC Forest provides an indispensable service to her Association. "The staff at Alex Fraser bring to the table a unique and important perspective – access to research, experience, knowledge and a 20-year track record of managing a community-based forest " she says.



Crew members from A&G Silviculture reduce interface fuels in the community of Williams Lake. January 20, 2011

At the Malcolm Knapp Forest, the change away from reliance on timber sales began about 15 years ago. Manager Paul Lawson says that “it was clear in the late 90s that something had to give. We were too small to have clout in the log markets, but too big to be dependent on one revenue source”. Things began to change in 2001 when Loon Lake became a joint venture between UBC and Lakeside Caterers. In 2004, Gallant Enterprises opened a specialty sawmill on the Forest cutting UBC’s logs. Today the Knapp Forest has thousands of customers who come back time and again. “Repeat business is the key to our success, whether a customer is coming

**With huge amounts of beetle and fire kill timber salvage taking place, and with falling markets for end products, it was clear that we had to do something other than sell logs”**

for a weekend retreat or for Douglas-fir timber” says Lawson. “You have to do whatever it takes, from driving the bus up a snowy Loon Lake road to feeding the kiln, to keep the customers coming back”.

Steven Koerner of the Koerner and the Moss Rock Park Foundations has been instrumental in the diversification of the Forests. “The UBC Research Forests were a dream of my grandfather, Walter Koerner”, he says. “Our family has long believed in

the role of forest management as a foundation for the economy of rural BC. The Research Forests are a prototype of that vision”. A grant from the Koerner Foundation helped catalyze the redevelopment of Loon Lake at the Knapp Forest, and the Moss Rock Park Foundation has provided funding for projects at the Alex Fraser Forest. The Koerner family’s support and advice have been a huge part of the re-invention of the forests and they are supporting investigation of future opportunities at the Aleza Forest as well.



Timber mill at the Malcolm Knapp Research Forest

The future may look better, but it will always be surprising. There is a need to constantly re-invent business activities as conditions change. The Aleza Forest has just begun this process, but is looking ahead to the day when they can offer accommodations and paid recreation as commercial ventures. Fraser Forest is working to partner with the City of Williams Lake in the operation of a Community Forest. Knapp Forest has been working on a run-of-the-river hydro project. With today’s business climate, the need to be focussed on the future has never been greater.

*For further information contact Paul Lawson, Director of the UBC Research Forests at [paul.lawson@ubc.ca](mailto:paul.lawson@ubc.ca)*



Student Centre – Loon Lake

# alumni news

## Reunions and events

Members of the **Forestry Class of 1981** are planning a 30th reunion celebration in 2011. If you're interested in attending or receiving more information please contact Rob Kyle at [robkyle@telus.net](mailto:robkyle@telus.net) or Chris O'Connor at [cocsleetsis@telus.net](mailto:cocsleetsis@telus.net).

Members of the **Forestry Class of 1961** are planning a 50th reunion celebration in September 2011. If you're interested in attending or receiving more information please contact Jenna McCann at [jenna.mccann@ubc.ca](mailto:jenna.mccann@ubc.ca) and she will put you in touch with the organizers.

### Mark your calendars for the following events:

- February 25 – Alumni Breakfast at the ABCFP 2011 Conference
- March 15 – UBC Desert Classic Golf Tournament in Palm Desert, California
- March 24 – Three Minute Thesis Competition
- May 2 – Alumni and Friends Day at Loon Lake
- UBC Dialogues, various dates and locations

More information on each of these events and all the services available to Forestry alumni can be found at [www.forestry.ubc.ca/alum](http://www.forestry.ubc.ca/alum)

## Alumni in action

One of the common questions raised by our alumni is 'What happened to my classmates after graduation?' Similarly, 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.



### Hosny El-Lakany, PhD 1969

#### Why did you choose UBC Forestry?

I am originally from Egypt, near Alexandria, and attended the Faculty of Agriculture, University of Alexandria. I earned my masters degree in 1966, studying under the first Egyptian forester. I was a teaching instructor at the same school and for three years listened to his fascinating stories of the west coast of North America and was inspired to learn more. So, I applied to a number of schools and received three offers from North America – one from Syracuse, one from Toronto and one from

UBC in Vancouver. I knew UBC was where I wanted to be and with my professor's recommendations, applied to study silviculture under Phil Haddock.

Well, I arrived in Vancouver and Phil took one look at me and decided I wasn't too promising a student. So he sent me on to a young professor, Oscar Sziklai. To cut a long story short, I don't think Oscar thought much of me either and was ready to get rid of me within my first year, but I refused to fail. I did not want to go back to Egypt as a failure. I shifted my focus from silviculture to forest genetics and worked hard to get on Oscar's good side.

#### What path did you follow after graduation?

Immediately after graduation I was appointed as the tree breeder for the Canadian Forest Service in Alberta. Just as I was getting ready to make my move to Alberta, the Trudeau government came into power and instituted a hiring freeze. So I never did get started in that role but Oscar Sziklai, who had since warmed to me, was able to secure a fellowship for me as a researcher working on the Island, up north and throughout the interior. During that work, I was generously supported by Gerry Burch, who funded me for three years through BC Forest Products. Under Gerry's guidance I tried my best to be a field forester.

After a brief stint in Manitoba (much too cold there for an Egyptian) I returned to UBC as a post-doctoral fellow, then decided to return home to Alexandria. It was very hard at that time to be an Egyptian working in the BC forest sector. Where you came from really counted and I had difficulty being accepted.

On returning to Egypt I simultaneously taught at the University of Alexandria and acted as an international

forestry consultant. I enjoyed teaching but the students in Alexandria did not have a real passion for forestry – they had an interest in planting trees, not managing and stewarding the land – so I moved on to the American University in Cairo where I was the Director of Research and Development Centre for integrated land management including agriculture, forestry and socio-economics. The Centre was funded by IDRC of Canada and The Ford Foundation, among others.

Then the UN came calling. I was appointed Regional Forester for the Near East and Northern Africa, followed by what was supposed to be a one year secondment to Rome to work in the cabinet of the Director-General of the Food and Agriculture Organization (FAO). Well, one year turned into three years, after which I was appointed Assistant Director-General of FAO and Head of the Forestry Department, or 'Chief Forester of the World' as some people like to think of it. This was the top position I could have ever hoped for and I could not turn it down. I asked the Director-General if he knew what he was doing, appointing me to this role and he said "Don't worry about what I'm doing, just worry about what you're going to do!"

I remember that some of FAO member countries were not happy having an Egyptian leading the Forestry Department. But I worked hard and some years later at my retirement party I learned that the same members who so vocally rejected my appointment were the first to commend my work to the Director-General after my first year on the job.

#### **What have you been up to since retirement?**

I returned to BC to be with my family. We lived in Victoria and I tried golf, like a typical retiree. Then I received an invitation to come back to UBC as an adjunct professor. For two years I commuted between Victoria and Vancouver until we moved to Vancouver three years ago – I'm too old for such a long commute!

My position at UBC keeps me busy with teaching, lecturing, co-supervising post-grads, helping in the development of a masters degree in international forestry and building the International Partnership for Forestry Education but I'm also very busy with my work outside academia. I consult to the World Bank and the International Tropical Timber Organization among others. I'm a member of the Board of Trustees for the World Agroforestry Centre in Kenya and have just been named Chairman of the Board for the Centre for International Forestry Research in Indonesia. And on top of all this, I'm retired!

#### **Do you have any fond memories of your time at UBC?**

I came to Vancouver during a very culturally and politically exciting time. It was the late '60s, early '70s, when the hippie movement was sweeping the west coast. Coming from Egypt, I had never seen a man with long hair! I remember how we forestry students made good friends with the students in the Faculty of Education (where all the girls were), the building of the

E monument on Main Mall and the rivalry that followed with the Engineers, leading up to the day they got their revenge for some prank or another by compressing the Forestry truck down to the size of a small cube and leaving it out front of the MacMillan building. I also remember playing touch football out front of the Bio Sciences building with the likes of David Suzuki.

#### **If you weren't in your current role, what profession would you most like to try?**

My family wouldn't have approved but I would have liked to have been a cartoonist. When I retired a few years ago, I was hoping to go to school to take art classes, but I've been too busy!

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

The toughest decision was making the move from academia to the UN, but I realized that academia is for life, no one could take that from me. If I didn't snap up the opportunity at the UN I may not have had another chance. I'm very happy to be able to say I was in charge of the Forestry Department of FAO for eight years.

I also had some tough decisions to make once I got into the UN. I found it tough to fire under performing people but I believed then and still believe now that if you as a manager are not able to undertake and implement such decisions you are bringing your entire team down and should move out.

#### **What do you aspire to 10 years from now?**

I'm more static than dynamic now but as long as I'm on my feet I'd like to be working!

I have a vision for UBC and the Faculty of Forestry and that is we should be contributing more and more knowledge to BC while increasing our presence internationally. I hope to help achieve this over the next few years.

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

Students need to realize that forestry is a global issue and profession. By studying in the Faculty of Forestry you are arming yourself with the knowledge to become a true global citizen. Don't worry about the job situation in BC or Canada; you will be able to work anywhere in the world with a degree from UBC Forestry.

UBC helped me open a lot of doors. Saying you are a forester from BC carries a lot of cachet abroad so be proud.

#### **Is there anything else you'd like to share?**

Yes, one funny story that I remember from my early days as a student at UBC. I sat down in Professor Krajina's class next to a young lady. We struck up a conversation and she asked me "Where are you from?" I told her I was from Egypt so she asked "What are you studying?" I replied I was enrolled for a PhD in the Faculty of Forestry and I would teach forestry upon returning home. Her response was "That's funny." I asked her why that was funny and with a straight face she said "Well, to me teaching forestry in Egypt is like teaching birth control to a nun. Neither will ever use it so what's the point." That was 1967!



## Heidi Walsh, BSF 1996 and Sandy McKellar, BSc 1996

If you subscribe to the daily Tree Frog News then you'll recognize the names Sandy McKellar and Heidi Walsh. But did you know that they're both UBC Forestry grads? And that one tried her hand at fashion while the other was in the insurance industry before turning to forestry? Here's a bit more about the women behind the daily news.

### **What year did you graduate and from which program?**

SM: I graduated in 1995 from Forest Sciences (well, finished courses in 1995 and crossed the stage to get my degree in 1996).

HW: I finished the Forest Resources Management program courses in December 1995 and I too officially graduated in 1996.

### **Where did you grow up?**

SM: I lived all over the world growing up. Born in Montreal, I went to elementary school there as well as in Niagara-on-the-Lake, Ontario before moving to Tehran, Iran. Following Iran my family moved back briefly to Ontario, then BC where I attended grade seven and eight in Burnaby. We

then moved to Melbourne, Australia and then to Papua New Guinea and back to North America to Boise, Idaho where I finished grade ten. Our final move was back to BC, where I finished high school in Tsawwassen.

HW: I on the other hand grew up and attended school in one spot – North Vancouver.

### **Why did you choose UBC? And why study Forestry?**

SM: After high school I went to college and studied a year of fashion design. Realizing that fashion was not my passion, I worked in a variety of fields but mainly focused on photography. In 1991 I went back to college thinking that I would take the Engineering transfer program to UBC and follow in my dad's footsteps. However, my dad had very strong feelings about women in engineering and thought that I would always be the token woman. So, since as a kid I was always bringing home bits of nature in my pockets, I stumbled on forestry in the calendar and applied. I really knew nothing about the industry or the sector until I got there!

HW: I didn't go to university straight out of high school – I worked for a few years as I was undecided about what I wanted to do. I lived in Toronto for a while and ended up working in the insurance industry before deciding that I needed to return to school in order to have more career choices. I chose UBC Forestry because I wanted a program that was science-based, was environmentally inclined, allowed for outdoor work and had good career prospects. I looked at programs at both SFU and UBC and forestry appealed to me the most.

### **What was your first job after graduation?**

SM: My only real bush job was summer employment with the Pacific Forestry Centre in Victoria. Before I had even graduated from my program though, I was approached by then associate dean Tony Kozak and asked to fill in as a maternity leave replacement for the director of student services. I guess UBC kind of stuck, because I stayed there until 2003 in a variety of roles.

HW: I worked as a silviculturist

for a consulting firm in Victoria. The fieldwork was up on the North Coast and we often stayed on a boat or flew in on helicopters from Prince Rupert and Bella Coola. The terrain and weather was pretty rough but I got to see and experience pretty spectacular areas of BC.

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

SM: I am the owner of Tree Frog Creative Communications, a firm that specializes in providing communications support for the Canadian forest sector, and publisher of the Tree Frog Forestry News. I work with my business partner and vice-president, Heidi Walsh. Heidi recently joined the company but ironically, we met as first year forestry students sitting side-by-side in the third row of John Worrall's class.

HW: Since leaving UBC I have done a variety of jobs from silviculture to forest certification (ISO 14001), quality management (ISO 9001), software development and finally consulting specializing in forest modeling. As Sandy mentioned, I recently joined Tree Frog Creative Communications. I am excited to be working with Sandy – we have a good combination of skills and personalities.

SM: Why the news? It started with wanting to give back and support the people, the organizations and the non-profits who helped and supported me, personally, in the past. However, the task of making sure they were aware of what governments, NGOs and the public were thinking and saying about their world gradually consumed me such that the task became my passion – and now Heidi's too!

HW: Our main goal at the moment is to increase the number of readers for our news service and to take on a greater number of

communication and project management contracts, increasing our presence in North America.

**Do you have any fond memories of your time at UBC?**

SM: Studying with friends in Roots, chasing Hamish Kimmins through the woods on Forestry 202 field trips, and getting tormented by Worrall in Forestry 111 – and loving it! – all stand out for me. Also running for FUS president, that was a highlight.

HW: I had a great time in the Faculty of Forestry – it was a small Faculty and you really had a chance to get to know other students as well as professors and staff. You weren't just a number in a crowd of thousands. There was a good community feel and social side to life at UBC. The field courses were also a lot of fun (and work!).

**If you weren't in your current role, what profession would you most like to try?**

SM: TV news anchor!

HW: I would like to be a veterinarian – I like the idea of working with animals and owning your own business.

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

SM: It would have to be the decision to quit my full-time "real job" to go out on my own and start my own business.

HW: While I can't recall a single tough decision, a lot of my work has involved bringing change to a company – whether it be implementing a forest certification program, quality management system or new software system. Often the decision for change is not made by the people who have to live with it or implement it, so change can be very difficult and stressful for everyone involved. My experience has taught me to have patience and understanding for the people I am working with and

to ensure the end result is positive and worthwhile.

**What do you aspire to 10 years from now?**

SM: I hope to be rich and retired!

HW: Yes, that would be nice! But also to make the Tree Frog Forestry News the staple for information in the forest industry in North America. Personally, I hope to be riding my horse more and more and entering competitions.

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

SM: Having worked at recruiting students to forestry since the year I graduated (in one way or another) I have probably spoken to more than 17,000 kids (yes, really!) across Canada about forestry. My bottom line answer – forestry gives you limitless opportunities.

HW: The forest industry has many, many avenues to explore and many opportunities so I would recommend talking to people in the industry and trying different types of work to get an idea of what appeals to you and what is available. Also think about working in other parts of the world!

**Is there anything else you'd like to share?**

SM: Sign up today for the Tree Frog News! It's a free e-newsletter that captures the day's news stories, op-eds, blog entries and industry announcements. Visit [www.treefrogcreative.ca/join.html](http://www.treefrogcreative.ca/join.html)

HW: I know how busy everyone is with work and life, but I have recently been volunteering on the organizing committee for the ABCFP annual conference and have really been enjoying reconnecting with peers and meeting new people. I would recommend the experience to everyone. Volunteer or try something new to shake things up!

**Interested in sharing your story? Send submissions with a photo to Jenna McCann at [jenna.mccann@ubc.ca](mailto:jenna.mccann@ubc.ca).**

# Making a difference



Derek, Stephanie and Mark Goudie

When Stephanie Goudie's husband, Derek, passed away in 2007, she made the decision to create an award in the Faculty of Forestry to honour his memory. Here, she shares her story of giving.

Derek moved to Canada from Scotland when he was 10. He graduated high school in 1976 and as he was raised in a family that went to work after completing high school, he followed in his family's footsteps and did just that. For many years following high school, he worked cruising timber all over BC. Although he enjoyed the work and liked being out in the woods, he felt unchallenged and under-employed. So, at 24, and as a newly married man, he decided to pursue his dream of getting a university education. Derek spent the next 2 years upgrading his high school education in the evenings and at 26, Derek quit his job and started his first year at UBC in the Faculty of Forestry.

Initially, the adjustment to being a full-time student was a struggle. He had doubts about his decision during the first few months but he persevered. As

hard as he had worked during his years as a timber cruiser, he worked even harder as a student at university.

We paid for his tuition for the first year of university but in the years that followed, the many bursaries, awards and scholarships awarded to Derek paid for the rest of his studies, including a master's degree. After graduating with his Master's in 1994, Derek worked as an operations analyst for Interfor, then worked for the Faculty of Forestry at UBC and spent his last nine years as a process optimization scientist at FPInnovations (Forintek). The decision Derek made to pursue his degree in Forestry was a huge turning point in his life. He realized his dream, fulfilled his potential and went on to a rewarding career in the wood processing industry, in which he found much satisfaction and fulfillment. All the years Derek spent at university, we were extremely grateful for the financial assistance he received. Not only did the awards assist us financially, but they also served as recognition for Derek's hard work and encouraged him to continue. The

awards also highlighted to us the value the donors placed on higher education and gave us a sense of accountability to those that had contributed to the university.

When Derek passed away, I wanted donations made in his honour in lieu of anything else. Derek's years at UBC enriched his life in so many ways that I wanted UBC to be one of the recipients. My intent was to give back to an institution that had given us so much, to help and encourage students in the same way Derek was helped and encouraged, and to inspire my son, nieces and nephews and the generations that will follow to pursue higher education and to give back.

I cannot tell you how happy I am to be a donor. I was not aware of this opportunity until my sister contacted the Forestry Alumni Relations office and inquired as to how we could make a donation. Every year as an awards donor, I receive a notification letter letting me know that a recipient has been chosen and I am just thrilled. It reminds me of how we felt when Derek was on the receiving end of an award and I imagine how the recipient must feel. Every time I attend a donor or alumni event, I feel pride in my husband's achievements, am grateful to UBC for making it happen and am very happy to be part of such a rich community.

This award is truly a gift that keeps on giving – to the recipient and to me, the donor.

*If you would like to make a contribution to the Derek Goudie Memorial Centenary Bursary or if you have questions about establishing your own award, please contact Jenna McCann at 604-822-8787 or [jenna.mccann@ubc.ca](mailto:jenna.mccann@ubc.ca)*

## Lost in the woods

We're on a mission and we need your help. The Faculty's Alumni Relations Office is trying to track down contact information – email or mailing addresses – for all our alumni. If you happen to be in touch with anyone on our Lost in the Woods list, please ask them to get in touch with Jenna McCann at 604-822-8787 or [jenna.mccann@ubc.ca](mailto:jenna.mccann@ubc.ca). Visit [www.forestry.ubc.ca/alum](http://www.forestry.ubc.ca/alum) and click on the 'Lost in the Woods' page to find the list.

Are you moving? Don't forget to let the Faculty know where you're going so we can continue to update you on news, events and other items of interest.

Do you have a story to share? Please send it to us!

## Forestry Alumni Association

We are seeking nominations for the new Forestry Alumni Association. The role of the Alumni Association is to promote the interests of the Faculty of Forestry and to encourage and facilitate the support of the Faculty from both the alumni and general communities. Becoming a member of the Association is a wonderful opportunity and ensures you as a graduate are able to continue your involvement with the Faculty long after your studies are complete.

Would you like to be considered for a position with the Association? Or would you like to submit a nomination for a fellow alumnus? Please contact Jenna McCann at 604-822-8787 or [jenna.mccann@ubc.ca](mailto:jenna.mccann@ubc.ca)



This photo shows part of a panel donated to the Faculty by Sharon Li from the Beijing Olympic Forest Art Museum. It was made in China in the mid-1600s using Chinese fir (*Cun-*

*ninghamia lanceolata*) and describes life in southern China by contrasting the life of a royal family with two ordinary people, a farmer and a fisherman. This section shows the royal family.

## Electronic versus paper?

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](http://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 please send your request by email to [jamie.myers@ubc.ca](mailto:jamie.myers@ubc.ca)



## INTERNATIONAL YEAR OF FORESTS • 2011

The General Assembly of the United Nations has declared 2011 as the International Year of Forests. The primary objective of the Year is to raise awareness on the sustainable management, conservation and sustainable development of all types of forests. The Faculty of Forestry is well-positioned to play an important role in this activity, and is in the process of organizing a number of events.

These will be unfurled as the year progresses. The events planned for the next three months include:

Feb 14-16, Climate Change Adaptation – Sustainable Forest Management Workshop ([www.forestry.ubc.ca/ccs-sfm-workshop](http://www.forestry.ubc.ca/ccs-sfm-workshop)). This workshop, which is being co-sponsored by Environment Canada and the Faculty of Forestry, will seek to engage research and practitioner communities in incorporating climate change responses within sustainable forest management.

March 21, (World Forestry Day) Celebration tree planting event on UBC campus. This will provide a long-lasting commemoration of the Year.

April 27-29, Forestry Leaders Summit: Building Partnerships in International Forestry Education and Research ([www.forestry.ubc.ca/iyfsummit](http://www.forestry.ubc.ca/iyfsummit)). The Summit is intended for leaders from forestry education institutions, research organizations (both governmental and non-governmental) and other international stakeholder organizations in the forestry sector. The main outcome of the Summit will be an action plan that identifies new areas for future collaborative partnerships.

Further events will be posted on the Faculty website. In addition to specific events, we will also be involving our students in a networking campaign to raise awareness about the conservation and sustainable management of forests in British Columbia. This project will occur throughout the year, and is being undertaken in close collaboration with the BC Ministry of Forests, Mines and Lands.



Branchlines now displays this QR (quick response) code which allows users to access current or back issues online by scanning the code via their cell phone (using a QR code reader application).

### Newsletter Production

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