branch lines

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Stanley Park's recovery

THE POWERFUL WIND STORM that hit British Columbia's lower mainland on December 15, 2006 made a great, and to some, shocking change in the appearance of Vancouver's oldest, largest and most popular park. Approximately 40 hectares out of 250 hectares of forest in Stanley Park suffered severe damage. Several thousand trees were uprooted or broken and many trees lost branches and tops. Wind speeds at the peak of the storm gusted to 119 kilometers per hour at Point Atkinson and likely reached similar speeds near Prospect Point, the highest point in Stanley Park. The wind uprooted trees behind the acclimated stand edge that faced onto English Bay. These gaps rapidly expanded to the east through tall, dense hemlock-dominated stands, reaching across the causeway in several places. The storm also caused considerable damage to the seawall and there are a number of slope failures associated with windthrown trees near Siwash Rock. Vancouver residents and visitors love this park and it will take some time for them to adjust to

(cont. on back page)

An ill wind?

THE WINDS THAT FELLED one tree in ten in Stanley Park have created an exciting opportunity to redesign and rebuild; both naturally and with human intervention. The financial and moral support has been amazing, with $9 million being raised towards the recovery, in addition to over $1 million in timber value from downed trees. Logs retrieved will be used for a number of projects including the 2010 Olympics and the new Vancouver Convention Centre.

While appearing to be a devastating blow to the park, it is not widely known that this natural disturbance was in fact predicted when forest health in the Park was extensively studied by Dave Bakewell in the 1970s and by MacMillan Bloedel foresters in the 1980s.

The recovery ahead will showcase the role of forestry in the twenty-first century to the 8 million park visitors each year. Today's forest professional is a designer as much as a harvester, and Stanley Park will not be a timber production forest. It is a "designer forest" in the same way that gladed ski runs or golf courses are designed to produce a special recreational experience. The structure and function of this designer forest will require consideration of both its biological and social purposes.

Wind shattered bole.

Planning for Stanley Park's recovery must reflect this complex set of objectives and constraints. The challenge is in maintaining community support for actions taken and in being seen to do no harm. The overall objective will be to recreate a resilient native forest on the majority of the damaged areas. Selected blowdown will be retained to regenerate naturally for education and demonstration. Other scattered blowdown areas will be cut to lie

Aerial view of wind damage at Prospect Point.

View to the Northwest from Prospect Point.

on the ground with the residual stand subsequently underplanted. The majority of the blowdown material will be recovered and used. Remaining trees and snags within the blowdown areas will be kept or recreated.

Paul Lawson, Manger of the UBC Malcolm Knapp Research Forest, has been seconded to the Vancouver Parks Board as Project Manager during the Park's initial recovery efforts. Paul is part of a large team comprising foresters, geoscientists, ecologists, biologists, several private consultants and even psychologists. This team is guided by a Steering Committee, chaired by Jim Lowden, Director of the Stanley District of the Vancouver Parks Board.

A major geotechnical problem is the escarpment above the seawall. Upturned trees are hanging over the escarpment and some have slid down onto the walkway. An excavator at the top of the escarpment will remove these trees and the associated overhanging root wads. Bioengineering will be used to stabilize the escarpment once this is completed.

In order to minimize the number of workers on the ground, blowdown will be hoe-forwarded to existing roads and trails. Due to soil moisture conditions, work will not start until soils have dried enough to minimize damage to the forest floor and risk to workers.

Key to success is risk management of issues such as: further blowdown, fire hazard, geotechnical and slope stability, and safety of workers and the public. These dangers must be addressed before restoration can begin. UBC, PheroTech, Forestry Canada and the CFIA are cooperating in monitoring the area for outbreaks of both native and exotic insects. Plans are also underway to use proceeds from the sale of timber to create a long term fund that will support forest stewardship in the Park.

One way that the Faculty has been supporting these efforts was by co-hosting (along with Simon Fraser University and the Vancouver Parks Board) a Public Forum held on April 12 at the Roundhouse Community Centre. That Forum was moderated by Bruce Larson, and included presentations by Faculty members John McLean, Hamish Kimmins, Stephen Sheppard, Steve Mitchell and Ken Lertzman of SFU.

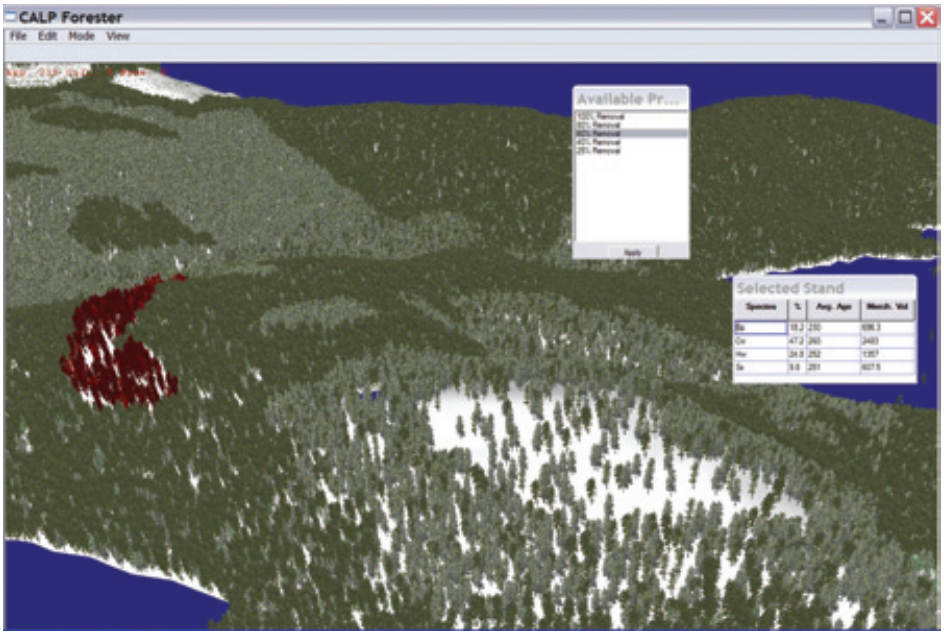
I welcome your feedback. You can reach me at jack.saddler@ubc.ca or 604-822-3542.

Stanley Park after the storm: unnatural disturba

THE STORM DAMAGE at Stanley Park, with its spectacular devastation in a much loved and scrutinized locale, has created a complex tangle of park management dilemmas, forest sciences, and public perceptions. This presents a unique opportunity for learning, communication, and collaboration on all sides. Decisions on designing and implementing restoration activities after the storm and into the future will require close coordination between various scientific disciplines, interest groups, and the management team. Clearly communicating alternative futures for Stanley Park under an intense political spotlight and a changing climate will be vital, but a major challenge.

Similar storm damage in most other parts of this heavily forested province goes largely unseen and unheralded; natural disturbance of this scale has always happened, and some ecosystems depend upon it. However, Stanley Park has a history of man-made and natural disturbance, with logging, clearing, road construction, park development, and previous 'damaging' storms leaving their mark on the landscape. The present state of the Park, then, provides a unique opportunity to inform the public and park users about some key messages:

- The role of natural disturbance in BC's forests generally;
- The Park's own history of disturbance and resilience in returning to its apparently natural state; and



Visual management interface for LLEMS

- The legacy of past disturbance and management in contributing to the recent Park damage, as a precedent for considering the longterm implications of upcoming management decisions.

In addition, however, the storm has raised questions and the public consciousness on the threat of climate change. International climatologists agree that the incidence of severe weather events is projected to increase, and many parts of the world have already observed such increases. While we cannot know for certain if this last storm can be attributed to climate change, we can expect more frequent events of this type, events that Stanley Park, in its exposed location, will need to be able to withstand. Recent regional data from Environment Canada climatologists working with the Faculty of Forestry at UBC suggests that the area will experience longer, hotter, drier summers during this century due to global warming, and this can be expected to alter growing conditions, encourage pests, and increase fire risk in vulnerable locations such as Stanley Park. The storm thus presents an opportunity to convey a broader but urgent message about the need (and ways) to reduce greenhouse gas emissions rapidly, in the hope of reducing the risks and impacts brought by climate change on our communities and beloved areas.

There is therefore a need for much longer-term thinking in the public consideration of park options and in making decisions on park planning and management. Restoration and management options that may seem damaging to treasured places and values in the short term may be in the best interest of a resilient, healthy, and attractive forest over the

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long haul. However, the public cannot be expected to simply accept the word of scientists and park planners in this; they need to be presented with the evidence from past records and future modelling, using tools such as ecosystem successional models (eg. Forecast and LLEMS) and windthrow modelling. Furthermore, these models need to be translated into realistic visualisations of recognizable park places under alternative conditions; these pictures can increase general awareness of complex scientific issues and solicit meaningful input and support for emerging solutions that will strongly influence aesthetic, recreational, and psychological values. Research in BC and elsewhere has shown that such methods can reduce misinformation and help build consensus through constructive engagement. These pictures and their supporting models, can act as a meeting ground for the many disciplines which need to be involved in developing long term solutions, ranging from ecologists and engineers to landscape architects and public involvement specialists.

Without a serious and innovative two-way process for participation of the public and stakeholders in the decision-making, any plan is in for a rough ride. Without some solid science to inform public opinion and weigh park options, we risk perpetuating future park problems and may lose a crucial opportunity for improving our collective understanding of both natural and unnatural disturbances.

For further information contact Dr. Stephen Sheppard, Professor and Director of Collaborative for Advanced Landscape Planning, at 604-822-6582 or email stephen.sheppard@ubc.ca

Log and timber frame construction research and

BUILDING WITH WOOD has undergone a renaissance in recent years – led by the revival of the log and timber frame building industry in British Columbia. Historically, log homes were the settler's building of choice. Many of our ancestors grew up in drafty, dirt-floored cabins built from logs that were cut from their homestead. They were efficient and economical because materials were plentiful and labour was cheap.

Over the years, the log home on the shore of a frozen lake became a Canadian icon more recognizable than either the maple leaf or beaver. But the scarcity of raw materials and skilled labour increased both cost and difficulty of construction to a point where Canadian demand for log homes had virtually disappeared by 1960.

The revival of the industry has been fueled by international demand – based mainly in Japan and the United States. In those countries, log homes have become a status symbol for the wealthy. Technological change has also benefited the industry in the techniques for log handling, manufacturing and joinery. Those improvements have resulted today in a product that is weatherproof, and built to accommodate the inevitable shrinkage that plagued the early versions of the romantic log cabin.

Hybrid log frame/conventional construction home.

Today the log and timber frame building industry in BC employs over 1800 people from all regions of the province. Log homes represent the second highest value added product made here, second only to guitars. They are incredibly labour intensive and also increase employment in spin-off industries such as wood window and door manufacturing.

House logs command a premium price as the straightest and cleanest timber available both on the coast and in the interior, and are highly prized by the market logging sector. There is little doubt that the log building sector is a showcase for the future of the forest industry.

Yet major challenges lie ahead. Increasing labour and materials costs as well as scarcity of raw materials could easily put log built homes out of reach of the wealthiest customer. Lack of skilled workers has led many log builders to downsize their operations and turn away excess orders. There is a constant need for innovation through research and development of new technology in order to keep the industry competitive.

training at the Malcolm Knapp Research Forest

Log home construction site at the MKRF.

In 2005, the Malcolm Knapp Research Forest (MKRF) began working with Artisan Custom Log Construction of Mission B.C., to develop a site on the Research Forest where log and timber frame construction research and training programs could be carried out.

Full log construction home.

The site opened in July 2006 and the first building was completed and shipped in September. Plans are underway to offer pre-apprenticeship and apprenticeship level training programs at the site.

Artisan's owners, Rob and Kathy Littler began building log homes in Quesnel in 1976. They and two of their sons now operate the company from the Research Forest and are working on plans to construct our replacement cabins at Loon Lake (see previous article). Their site is adjacent to the MKRF sawmill and they plan to integrate their operations to produce custom timbers and building logs using the sawmill whenever possible. Artisan has specialized in "hybrid" timber frame buildings that combine log framing with conventional construction – thereby reducing log consumption and cost.

Rob Littler sees the future of his industry tied to gains in productivity, cost and quality. "Every log represents a day's work by a skilled craftsman" he says, and adds that "continued demand for log buildings depends on our ability to work smarter – to get more done with less". Rob's passion is in developing equipment that can mechanize certain labour intensive and repetitive aspects of log construction, while maintaining the creative hand-crafted joinery unique to each builder. His vision is that "if the product is more affordable, then the average homeowner will want it".

For further information contact Paul Lawson, Manager of the Malcolm Knapp Reserach Forest at 604-463-8148 or paul.lawson@ubc.ca

Stanley Park's recovery (cont.)

the new look - and there is more change to come. The storm has generated enormous quantities of fuel, and has exposed formerly stand-grown trees that are now vulnerable to routine peak winds. Needless to say, the parks managers have some challenges ahead of them.

This is not the first time that Stanley Park has seen this level of destruction. Stanley Park was extensively logged in the 1880s and regenerated to a mix of dense, hemlock dominated stands, and mixed conifer deciduous stands. Areas close to Lost Lagoon were burned during the 1886 Vancouver fire and now have a higher Douglas-fir component. A major storm in October 1962, locally known as Hurricane Frieda, created large openings which became the Prospect Point picnic grounds and Children's Zoo.

Strong winds and resulting blow downs are a common natural phenomenon in our coastal forests. In any given year, Vancouver Island and the Queen Charlotte Islands sustain 10 to 20 times the damage that occurred in Stanley Park. These storms are correctly called extra-tropical cyclones (ETCs). These large, low pressure systems have counter clock-wise circulation and develop over the Pacific in response to the difference in ocean temperatures between the tropics and the northern latitudes. We experience several low intensity ETCs every month during the winter time and they produce gusty winds and lots of rain.

Intense ETCs with high winds occur less frequently but they are part of the normal climatology of the west coast. Our coastal forests are well adapted to them in terms of re-growth and regeneration. Major wind storms damaged forests on Vancouver Island in 1886, 1906 and 1921 and the even-aged stands that regenerated are clearly visible on aerial photographs today.

The forests in Stanley Park will regenerate naturally if left alone. The windthrown areas will seed in with red alder and western hemlock, with large volumes of decaying coarse woody debris and many wildlife trees. As the downed trees decay they will become nurse logs for regeneration and important habitat for invertebrates and amphibians. The broken trees will become excellent sites for cavity nesters. It is not uncommon for windthrown areas to burn, in which case Douglas-fir and redcedar would become the dominant species. In reality however, parks managers have to manage for recreation as well as conservation and in this busy urban park public safety and management of fire hazard must take precedence.

With assistance from the Faculty of Forestry and the forestry community (see page 2 article), the parks managers are preparing a plan that balances near term public safety and fuel management with long term conservation and recreation. The first priority is to remove hazard trees near trails and roads. The second priority is to begin windfirming sound trees that are newly exposed around the edges of new gaps and along roadways. This will be done by spiral pruning to reduce the sail area while maintaining crown shape. The next priority is to reduce the fuel loading from branch material. There are places where stems and branches are jumbled 10 meters deep so this will require use of skilled loggers and heavy machinery. But, imagine the consequences for the Park, downtown Vancouver and north shore commuters if this material caught fire during one of our summer dry spells.

The recovery program will take some time and will require use of forest management techniques that many urban residents will not have seen up close. The natural disturbance, clean up operation and subsequent regeneration will provide a first hand lesson in forest ecology and forest management for park visitors. This is an excellent opportunity for the forestry community to demonstrate our knowledge of coastal forest ecology and our ability to use forest management techniques to maintain forests with high aesthetic and conservation value.

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New MBA sustainability and business specialization at UBC

WHEN UBC FACULTY OF FORESTRY professor John Innes accepted the role of teaching business students about environmental issues and sustainability in 2006, he may not have realized that the coming winter was about to offer a number of headline-making global events to underscore his classroom teachings. Tsunamis, floods, ice storms and other natural disasters were part of the mix. So too were historic political and scientific announcements on the world stage. For Innes, teaching the course "Global Environment Issues" in the inaugural Master of Business Administration program with a specialization in sustainability and business, the timing couldn't have been better.

"There has been so much going on, and it's been so topical", says Innes, Forest Renewal BC Chair in Forest Management and Director, International Forestry. "During one class, we were talking about hurricanes while a hurricane was actually hitting Florida. In another, we were discussing the importance of climate change at the same time that members of the Intergovernmental Panel on Climate Change in Paris were announcing their conclusions on global warming."

All the while, Innes' teachings have ranged from insurance risk in the context of environmental and climate change, to the private sector's role in environmental conservation, to assessing the degree of corporate social responsibility at different organizations.

The MBA sustainability and business specialization at UBC's Sauder School of Business was created through an initial collaboration between the UBC Faculty of Forestry and Sauder. Both faculties have seen increased demand from industry, alumni and prospective students for graduate education that recognizes the convergence of business management and leadership skills with environmentally and socially sustainable practices. The program underscores a fundamental change in today's business and government environment: Businesses of all kinds now find their corporate ethics and their environmental impact held up to scrutiny by governments, consumers, and shareholders.

In addition to Innes, other professors from the Faculty of Forestry who are involved in the program include David Cohen, Robert Kozak and Thomas Maness.

The specialization consists of nine required modules, ranging from cost-benefit analysis to business ethics to the aforementioned global environment issues. It also includes a number of elective modules, which allow the student to pursue selected issues such as nonprofit management, environmental marketing, and social entrepreneurship with greater depth.

Industry presenters to the inaugural MBA specialization play a pivotal role in delivering real-world focus to the program. They include sustainability leaders from organizations such as Shell Canada, The Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC), and Catalyst Paper Corporation - formerly NorskeCanada.

"The goal of achieving sustainable development is arguably the greatest challenge mankind has ever faced," says Peter Nemetz, Sauder School of Business professor, coordinator for the MBA specialization in sustainability and business. "Only with the active engagement of the business community is there any realistic hope that our economic, social, and ecological systems can achieve sustainability," he says.

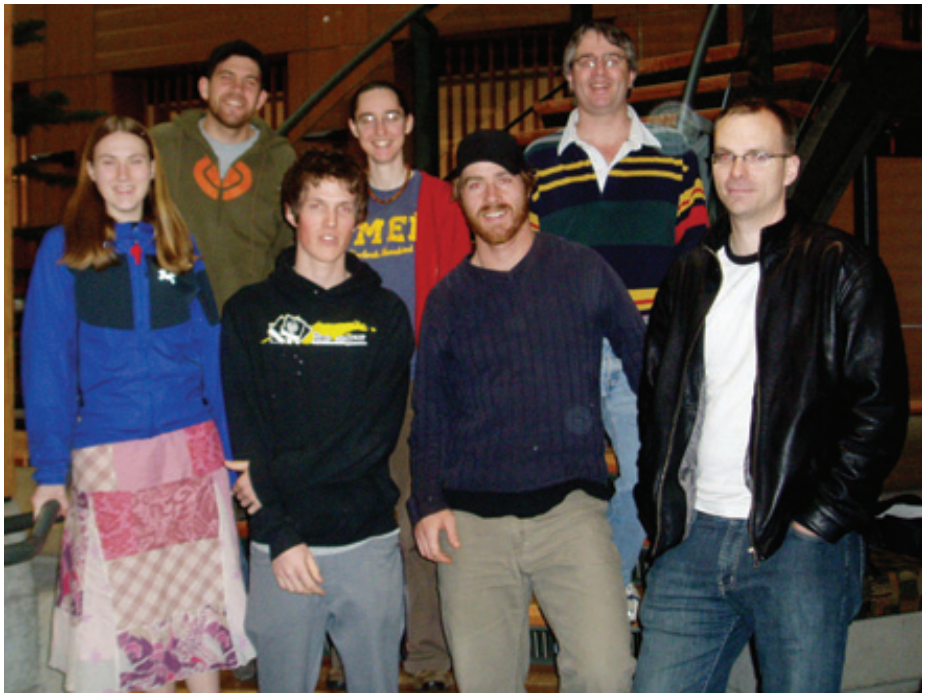
For more information about the MBA specialization in sustainability and business offered at the UBC Sauder School of Business, visit www.sauder.ubc.ca/mba/program_details/sustainability.cfm

The first annual UBCV-UW Grand Silviculture Challenge

Intercollegiate academic competitions are not the norm in forestry, but that may change if the success of a recent event is any indication. On March 9 & 10, six students and TA Craig Farnden from Bruce Larson's silviculture class undertook the 5 hour drive to the University of Washington's Pack Forest. There they joined students from David Ford's University of Washington silviculture class in a competition to devise management prescriptions for a unique piece of land.

The Nisqually Land Trust had recently acquired the first of many parcels they hope will form a wildlife corridor through primarily industrial forest lands between Mt. Rainier National Park and nearby National Forests. Their primary management objectives were twofold: maintain forest cover and structural attributes needed for habitat, while generating a modest income stream for the Trust. Members of the Trust were concerned about nesting habitat for spotted owls and marbled murrelets. Each of four student teams spent Friday afternoon reconnoitering the 187 acre property, with Friday evening and Saturday morning given to developing their plans.

The land parcel itself offers some interesting challenges. The terrain is very steep, with slopes averaging 60%. The existing stands of Douglas-fir, western hemlock and red alder are varied, with a past history of several thinning and clearcut logging events. Few of the current stands satisfy the habitat



From left to right: Marley Chewter, Matt Scott, Garrett McGaughlin, Emily Whiting, Tyler O'Farrell, Craig Farnden (TA) and Andy Peacosh.

requirements for either owls or murrelets, and several would require extensive modification as well as passage of time.

Each team was allotted 25 minutes to present their plans to a panel of three judges including Joe Kane, executive director of the Nisqaully Land Trust, Tim McBride, a habitat specialist with Hancock Timber Management Ltd., and Jeff Madsen from Port Blakely Tree Farms. Joe Kane was particularly impressed with the degree to which the students took the Land Trust's objectives to heart, finding innovative ways to balance the often conflicting objectives of habitat conservation and revenue generation.

The winning team consisted of Marley Chewter, Andy Peacosh, and Matt Scott from UBC's Faculty of Forestry. The other UBC team of Garret McGaughlin, Tyler O'Farrell and Emily Whiting also came up with a creative and inspired proposal, as did the teams from the University of Washington.

An excellent rapport developed between students from the various teams. Given the short time allotted for field reconnaissance, no team had the opportunity to see the entire field site. Teams shared their observations from various parts of the property, along with other resources such as air photos and GIS data.

The students involved agreed that it was an exciting and worthwhile event. The judges and instructors were, in turn, inspired by the students' level of dedication and ingenuity. All in all, a solid foundation was built for next year when we will be hosting the event at our Malcolm Knapp Research Forest in Maple Ridge.