



Branch LINES

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From the Dean's Desk

In the fourth feature of our new series of guest editorials by Faculty members, Dr. John Innes addresses "The need for an international perspective in forest management." John, our recent appointment as Forest Renewal BC Chair in Forest Management, suggests that concentration on issues in British Columbia is reducing the effectiveness of forest managers here. He believes that the rapid increase in access to information from all over the world will make it necessary for future forest managers to be much more aware of recent developments in science and technology than they are today. As a starting point, there is a need for a clear vision for forestry, not just in British Columbia but also in Canada and globally.

John A. McLean, Acting Dean

■ EDITORIAL by Dr. John Innes

A few months after I moved to Switzerland, I told a group of foresters that forestry could sometimes have negative effects on the environment. This caused outrage; "How dare a foreigner", demanded one delegate, "cast aspersions on Swiss forest management?" I replied that I had been referring to information gathered in my previous job in the U.K., and that *of course*, there was nothing wrong with Swiss forestry. Ruffled feathers were smoothed, but maybe the point was made. Now, once again, I am asked to stick my neck out after only a few months in a new job, new country and new continent.

My impressions of British Columbia are quite mixed: majestic scenery, lots of strikes, very curious politics, and a widespread and overbearing attitude that it is only what happens in British Columbia that is important. This last impression is puzzling. The majority of wood cut in British Columbia is exported. Of the three biggest forestry companies operating in the province, two are under foreign control. Why is there so little interest in what is happening in our export markets and in the countries of some of our major forestry employers? Surely, it would be prudent to pay greater attention to some of the changes that are occurring elsewhere?

This introversion runs deeper. Some students at UBC appear interested only in courses that are a requirement for professional forester status. These courses fulfil an essential function in ensuring that certain minimum standards are attained that will

enable graduates to enroll as foresters in training in those provinces with professional forestry associations. However, knowledge of what is happening in forestry outside of Canada does not feature strongly, if at all, in the national forestry school accreditation requirements. This knowledge is essential if foresters are to be effective land managers in today's global environment.

As identified in the previous editorial by Dr. John Barker, we are in a time of great and rapid change. One of the fuels of this change is the increasingly well-informed criticism that is being made of forest management. There is a rapidly increasing amount of information available on the internet, supplemented by information sources designed to help private individuals assess and criticize forest management plans. Take, for example, the recent book by Gordon Robinson called *The Forest and the Trees: A Guide to Excellent Forestry*. Whether or not you agree with his views, the book provides access to material that makes it necessary for today's forest manager to be fully aware of new developments if plans are to be justified.

Globalization is placing new pressures on forest managers. Last summer, an environmental pressure group was able to flash pictures across the world on a daily basis of a developing clearcut in northern British Columbia. All they needed was a digital camera and a satellite-linked modem. Sights normally hidden to all but the most determined were suddenly made available to anyone anywhere in the world with a link to

the internet. Armed with such material and presenting one side of the story only, critics of forest management are becoming increasingly plausible, especially to decision makers.

Given the application of such information technology, there is now no excuse for a forest manager to be uninformed. Equally, we might hope that everyone with an interest in forestry in the province would take the trouble to become acquainted with recent developments in forest science and forest management around the world. There is much that resource managers here could learn from elsewhere, but we are failing to do so. Free electronic journals, such as the *Journal of Ecosystems and Management* (<http://www.siferp.org/jem/>) may help, and there are many other sources of pertinent information.

One of the conclusions reached by the World Commission on Forests and Sustainable Development was that there is a lack of global leadership in forestry. This seems to be a problem at all levels: global, national, and provincial. It is time for a clear vision of the future of forestry in British Columbia, a vision that is shared within *and outside* the province. We need to move forward rapidly and with determination – while industry and environmental groups here continue to bicker, other countries have made significant progress on issues such as certification, increasing their chances of capturing yet more of the market share previously held by B.C.

We glibly ask students to develop "desired future conditions" in their management plans. This is a near-impossible task given the absence of a clear vision for forestry in the province, in Canada and in the world as a whole. Maybe we can inspire the current generation of UBC forestry students to broaden their horizons and maybe, just maybe, some of those students will use that knowledge to become tomorrow's leaders in resource management issues in B.C. and elsewhere.

Dr. John Innes can be reached at (604) 822-6761, fax (604) 822-9106 or e-mail innes@interchg.ubc.ca.

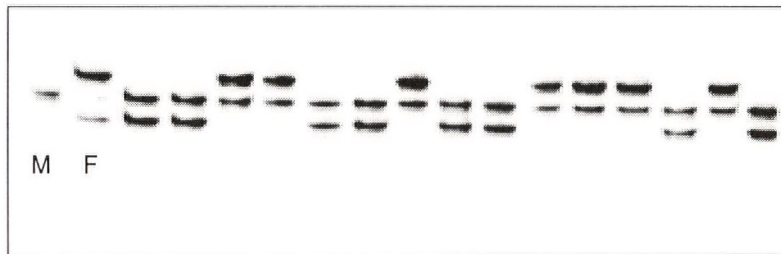
RESEARCH HIGHLIGHT

From tissue to data point in the Genetic Data Centre

GENETIC markers have traditionally played a strong role in forest genetics. A "genetic marker" is a gene with usually many forms, and is used to trace ancestry for a variety of purposes. These include (among many things): estimating levels of self-fertilization, assessing levels of genetic variability, detecting pollen contamination in seed orchards, and speeding the rate of tree breeding. The newest class of genetic markers is called "microsatellites"; such markers are short stretches of a DNA sequence where the same pair or short repeat of nucleotides is repeated many times, and the number of repeats is quite variable among individuals. This variability provides superior statistical information for studies such as those mentioned above. However, the technical requirements have likewise increased, and unfortunately, many researchers lack the equipment and knowledge base for using markers such as microsatellites in their research.

In 1999, we obtained a grant from the Canadian Foundation for Innovation for the establishment of a "Genetic Data Centre" (GDC), whose purpose is to provide space, equipment, and the knowledge base for the

collection and analysis of molecular genetic data in forestry, agriculture, conservation, and evolution. It is open to all faculty, technicians, postdoctoral fellows and graduate students who wish to carry out molecular marker studies using the latest equipment and the best technical and statistical assistance. This Centre was



Microsatellite of weevil family (M = male, F = female). Courtesy of Cherdasak Liewlaksaneeyanawin.

the vision of Dr. Gene Namkoong, our former departmental head. The new Forest Sciences Centre has been instrumental in providing ideal laboratory space. Equipment in the Centre includes three LiCor automated sequencers, many polymerase chain reaction machines and three growth chambers.

I highlight three projects, currently conducted in the GDC, which use the equipment in breeding and conservation genetics. Western red cedar (*Thuja plicata*), a very important conifer in British Columbia,

can exhibit high rates of self-fertilization, which can be detrimental to successful regeneration as "selfed" trees are less viable. We have found 12 microsatellite loci in this tree species, and are using them in studies of selfing rates in the wild and seed orchards, and in studies of gene diversity and geographic population structure. The second project involves the white pine weevil (*Pissodes strobi*), which is responsible for an enormous reduction in the potential productivity of Sitka spruce. This project has also involved discovery of microsatellite loci and studies of its mating system.

With six microsatellite markers, we are determining the roles of female choice, sperm storage and sperm competition in the production of new larvae; this knowledge will aid in pest management decisions. The third project involves the use of eight microsatellite loci to study the genetic structure and mating system of Garry

oak (*Quercus garryana*), a keystone species in the dry environment of southeast Vancouver Island, providing unique niches for many other organisms. Since many Garry oak populations are at risk due to development, we need more information about their genetic diversity and patterns of mating.

These are three of the many projects currently underway. For more information about the GDC, please contact Dr. Carol Ritland at (604) 822-3908, fax (604) 822-9102 or e-mail critland@interchg.ubc.ca. □

DEPARTMENT NEWS

Dr. Scott Hinch was recently awarded a UBC Izaak Walton Killam Memorial Faculty Research Fellowship. Scott will use this award for his sabbatical leave starting September 1, 2000. He will spend a portion of his leave as a visiting scientist in the Zoology Department at the University of North Carolina.

Dr. Peter Arcese will deliver a plenary talk at the 8th International Meeting of the Society for Behavioral Ecology in Zurich this coming August. As well, he is an invited speaker at a special symposium on 'Animal

Dispersal' at the annual meeting of the Animal Behavior Society in August. He also recently accepted an editorship for the *Journal of Avian Biology*.

Dr. Sally Aitken will be promoted to Associate Professor effective July 1, 2000.

Dr. Chris Chanway will be on sabbatical leave from July 1 until December 31, 2000.

Dr. John Richardson has assumed the role of co-chair of the species recovery team for the critically endangered Oregon spotted frog.

Dr. Kathy Martin became president of

the Society for Canadian Ornithologists in January 2000. She is currently involved in planning for the upcoming Birds 2000 tri-national ornithological meeting (Canada, United States and Britain) in St. John's Newfoundland next August.

Dr. Brett Sandercock has joined the department as a Killam Post-Doctoral Fellow with Dr. Kathy Martin. His research interests include applying new demographic analytical techniques to avian species of conservation interest. Brett can be reached at (604) 822-9368. □

RESEARCH HIGHLIGHT

The whole is greater than the sum of the parts: Sustainable wood housing

FOR the past four years, an interdisciplinary team of researchers from the Department of Wood Science and Fuyosoken (Winter Research Institute, Hokkaido, Japan) have been conducting collaborative research into sustainable wood housing on a continuing nine-year project. This multi-year international project was first described in *Branch Lines* (Volume 7 No. 3) in December, 1996. The project is based on recognition that a key component of sustainable forestry is to use renewable wood products for their "best" purpose. The overall research theme in this initiative is to explore many of the innovative ideas and practices that contribute to a "total housing system." These practices, which are all based on strong ethical and philosophical underpinnings, include design, promotion, production, construction and research. The ideas relating to sustainability include not only ecological impacts but also social and health concerns. In fact, it is this interaction of so many diverse ethical concerns that creates the holistic approach to a healthy and sustainable house where "the whole is greater than the sum of the parts."

Researchers from the University of British Columbia are involved in several innovative interdisciplinary research projects as part of this overall initiative.

The following list includes the name of the primary UBC researcher in brackets:

- An examination of historic and current use of wood in construction in Japan. Published in the *Forest Products Journal*



Interdisciplinary UBC research team (Brock, McKay, Cohen, Prion and Cole) studying traditional Japanese house built by Akira Yamaguchi (founder of Fuyosoken).

1996 46 (11/12):18-24 (Dr. David Cohen, Department of Wood Science).

- Examination of traditional Japanese temple construction. Faculty members from the School of Architecture, Departments of Wood Science and Civil Engineering plus industry representatives.
- Examination of the theory and practice of bioregionalism in Hokkaido and Vancouver Island (Dr. Ray Cole, School of Architecture).
- Analysis of roofing forms and systems in areas with heavy snow loads (Ms. Linda Brock, School of Architecture).
- Exploration of the Japanese house as a reflection of changing Japanese society – a book with the working title "Within These Paper Walls" (Dr. David Cohen, Department of Wood Science).
- An exhibition of historic and current models of Japanese and Canadian prefabricated houses entitled "*Assembling Utopia: Packaging the Home*" exhibited Vancouver in 1999 and Tokyo in 2000 (Dr. Sherry McKay, School of Architecture).
- Developing an integrative model of parameters for a "healthy house" (Dr. Robert Kozak, Department of Wood Science).

For further information, please contact Dr. David Cohen, Project Leader at (604) 822-6176, fax (604) 822-9104, e-mail dcohen@interchg.ubc.ca. □

DEPARTMENT NEWS

Dr. Urs Buehlmann has left UBC to take up a position at North Carolina State University Department of Wood and Paper as an extension specialist.

Dr. Les Paszner retired from the Department after over 30 years of service. Les will continue to participate as an emeritus professor in wood chemistry.

Dr. Jack Saddler gave the inaugural presentation at the U.S. Department of Agricultural Millennium, year-long symposium series. He spoke on "sustainable chemicals and fuels from agriculture and forests."

Dr. Shawn Mansfield joined the Department as assistant professor (see page 5 for details). Shawn was an invited speaker at the conference "New Opportunities on

Fibre Raw Material for Paper and Board Production," hosted by the Centre of Competence for Paper and Board, the Argotecnological Research Institute and Industry in Doorwerth, The Netherlands on February 9 and 10. His paper was entitled "Improvements in mechanical pulp processing with enzymatic treatments." □

RESEARCH HIGHLIGHT

The effect of patch size on timber supply and landscape structure

A traveller flying over British Columbia will observe forested landscapes altered by harvesting. To the trained eye, the harvest patterns read like a history book of forest policy. Over the past 30 years, the typical landscape cutting pattern in British Columbia has evolved through three stages: 1) progressive clearcutting, 2) the 3-pass cut/leave system, and 3) small openings combined with adjacency and green-up rules. The move towards smaller openings was first driven by biological and environmental concerns and later by social values. However, in moving from one extreme to another, we have created new environmental and social problems, such as short-term timber supply, access management, and forest fragmentation. We are in for further change as ecosystem management evolves, including a range of patch sizes distributed across the landscape.

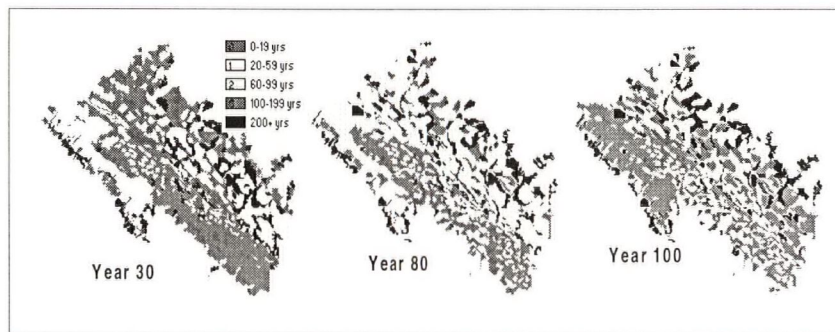
A research team lead by Drs. Fred Bunnell and John Nelson has been developing computer simulation models to forecast the long-term consequences of forest management on timber supply, forest structure and wildlife. In a recent project, we investigated how alternative patch management strategies affect timber supply and landscape structure. Options were developed that in-

clude a range of opening sizes, levels of compliance for opening size targets, and rotation ages. These options were simulated for 240 years on a 30,000 ha forest.

When attempting to *force* a target patch size distribution on to a very different landscape pattern, we should expect decreased harvest levels, especially in the short-term. The more the existing pattern deviates from the target pattern, the greater the impacts on

isolated reserves and inoperable lands grew very old – with a huge age gap between the two (i.e. a generation gap). This is of concern because it forecloses options to recruit old growth should this be necessary for conservation and response to natural disturbances. If we want large, old patches on a continuous basis, and located throughout the forest, then longer rotations and an appropriate patch size distribution are necessary.

The temporal aspects of patch dynamics are as important as the spatial ones. We observed that two periods were significant for the recruitment of large patches into the late seral age class (years 30 and 100, see figure). The patch that recruits in year 30 originates from a large fire, and the patch that recruits in year 100 from a large clearcut. These periods represent substantial opportunity to influence both landscape pattern and seral stage distributions. Conversely, by year 80 a decline in late seral patches was observed when harvesting of the large patch that recruited



Recruitment of large, old seral patches in years 30 and 100 represent management opportunities to influence the landscape structure. The absence of patch management leads to the depletion in year 80 of the patch that recruited in year 30.

timber supply, especially in the short-term. However, if we work with the existing landscape when introducing new patterns, and we are prepared to compromise on the target structure, we can, at the minimum, maintain short-term timber flows.

Regardless of the patch size strategy, rotation ages of approximately 100 years do not lead to large, old patches. The forest developed a normal age class structure on the harvested land (0–100 years), while

in year 30 is complete.

Most importantly, we need to think of patch size, adjacency, and rotations age as objectives rather than absolute constraints, and to be prepared to deviate from these objectives from time to time.

For additional information, please contact Dr. John Nelson at (604) 822-3902, fax (604) 822-9106, e-mail nelson@interchg.ubc.ca or Ralph Wells at (604) 822-0943, e-mail rwells@interchg.ubc.ca. □

DEPARTMENT NEWS

Dr. John Innes recently co-edited a book on "Biomass Burning and Its Interrelationships with the Climate System" published by Kluwer Academic Publishers, 2000. In November, he co-chaired the World Forest Forum on Forests and Society focussing on the role of the media in environmental communication and in methods to raise public awareness and strengthen public participation.

Drs. Val LeMay & Temesgen Hailemariam hosted a workshop on January 21, 2000 at UBC entitled "Generation of Tree Lists from Aerial Information" sponsored by the University of B.C., the B.C. Ministry of Forests and Forest Renewal BC.

Dr. Roy Sidle was one of three invited international participants at the U.S.–Japan joint seminar on the Hydrology and Biogeochemistry of Forested Catchments held at the East-West Center in Hawaii, January 31 to February 4. Dr. Sidle chaired one ses-

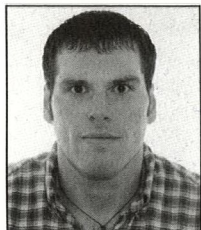
sion and presented a paper on "Preferential flow contributions to storm runoff: evidence of self organization."

Dr. Amod Dhakal, a recent graduate from the University of Tsukuba in Japan, has joined Dr. Sidle's Forest Hydrology group to work on landslide modeling.

Dr. John Innes is organizing a sustainable forest management workshop to be held at UBC on August 28–30, 2000. For further details, please visit our web site www.forestry.ubc.ca/workshop/index.html. □

Faculty News

New appointments



Dr. Shawn Mansfield has joined the Wood Science Department as an assistant professor. He obtained his B.Sc. (Hons.) in biology from Mount Allison University and completed his

M.Sc. in microbiology at Dalhousie University. After graduating from UBC with a Ph.D. in wood science, Shawn spent two years as a research scientist at the New Zealand Forest Research Institute, working on enzymatic applications to modify fiber morphology and products. During his tenure down under he also held a term position at the University of Waikato in Hamilton New Zealand as a lecturer in biological sciences. Shawn has returned "home" to UBC to help develop and teach in our new one-year non-thesis masters program in fibre and wood. His research interests focus on understanding how fibre morphology and chemistry/biochemistry influence wood, fibre and pulp properties.

Shawn can be reached at (604) 822-0196, fax (604) 822-9104 or e-mail shawnman@interchg.ubc.ca.



Cheryl Griffioen has been appointed to the position of Development Officer for the Faculty of Forestry. She will be working with the Dean, faculty members, alumni and

the Faculty's Advisory Committee to plan and implement our development program.

Cheryl comes to us from CIBC and her most recent fundraising position was as chairperson of CIBC's United Way Campaign. She is looking forward to working with the Faculty and promoting our work and needs to the community. Your ideas, knowledge, proposals and questions will help to strengthen our Faculty's development program, and Cheryl encourages you to share your thoughts with her.

Cheryl can be reached at (604) 822-8716, or e-mail cgriff@interchg.ubc.ca.

Dean search update

Our search for a new dean continues after the University was not able to bring the negotiations with a selected candidate to a successful conclusion. In the interim, Dr. John McLean will remain in the role of Acting Dean.

Position available ...

First Nations forestry coordinator

We are looking for an individual to fill the role of First Nations Forestry Coordinator in the Faculty of Forestry. The position involves working with faculty members, students and the community to increase the participation and success of First Nations students in the Faculty. We currently have 19 self-declared First Nations students, up from five when this initiative began under the guidance of our first coordinator in 1995. The coordinator will also work with the faculty to continue the development and implementation of First Nations content in our Forestry curriculum.

Closing date for applications is March 31, 2000.

For further information, please visit our web site at www.forestry.ubc.ca or contact Mrs. Barbara Alivojvodic at (604) 822-5542, e-mail alivoj@interchg.ubc.ca.

New on-line course for technology managers

Our Department of Wood Science is offering a new on-line distance learning course on "**Managing Technology for Value Delivery.**" The course, which starts on March 6, 2000 and will run for 8 weeks, is being led by Dr. Alan Procter, the former Research Director for MacMillan Bloedel and a proven leader in the innovative management of research and technology. A second session will begin in the fall of 2000. Recognizing that the management of technology is vitally important to the competitiveness of industry and research organizations, this internet-based course explains how technology can be better managed to deliver high quality products and services. The course is geared towards research and technology managers/professionals, technical directors, technology acquisition professionals, strategic planning executives and chief officers responsible for technology development in their organisations. The cost of the course is CDN\$1,000 per participant (with group discounts available).

For more information, contact Alan Procter at (604) 822-5936, e-mail a.r._procter@telus.net. Also, feel free to visit our demo site: <http://www1.cstudies.ubc.ca:8900/public/RMTD/>.

Adrian Weber – in memoriam

Adrian Weber, a senior Ph.D. student in Forest Ecology, died in a swimming accident on January 1. He started his post-secondary education with a degree in Physics at Queens University and went on to graduate in the first class of our Natural Resources Conservation program. Adrian was studying the successional relationships of the two stand types that characterize the landscape west of Port McNeil. The highly productive HA (western hemlock-amabilis fir) stand type has long been considered to be a wind-maintained early seral stage leading to the CH (western red cedar) stand type. Adrian's work is showing that this is probably entirely wrong. The failure of the supposedly shade tolerant red

cedar to invade the HA stands appears to be related to a combination of low light, the lack of appropriate mycorrhizal fungi, and the fact that while red cedar seedlings are very shade tolerant, the germinants are very shade intolerant. Adrian's work has clearly shown the need for an ecosystem-level explanation for these successional relationships.

Contributions to an Adrian Weber Memorial Scholarship in Forest Ecology can be sent to the Department of Forest Sciences. Sincere thanks to Western Forest Products and Weyerhaeuser for generous contributions to the completion of Adrian's work and to the Memorial Fund.

Adrian is greatly missed by family, friends and fellow students. Our sympathy goes to all of them.

Upcoming ... Careers Evening

Our **8th Annual Careers Evening** for forestry undergraduates will take place on **Wednesday, March 15 at 4:30 p.m. All alumni are invited.**

Further information can be obtained from Helen Samson, Coordinator of Student Services at (604) 822-3547 or e-mail helens@interchg.ubc.ca.

FOREST NEWS

from the Malcolm Knapp Research Forest

Variable retention on visually sensitive slopes – the Pitt Lake demonstration site

When the Malcolm Knapp Research Forest was founded in 1943, H.R. MacMillan described it as “potentially the most influential 10,000 acres in the province.” The expectations of this great man continue to be a tall order, as the Forest strives to be a role model of relevant issues in an era of social forestry that extends beyond both exploitation and pure science.

Over the years, forest operations have moved onto increasingly steeper and more sensitive terrain. Public criticism based on visual impact has led to an increasingly constrained landbase. Highly visible areas now comprise a large proportion of the mature timber supply in many regions of the province. Increasingly, forest planners are faced with the need to develop strategies for development of these areas.

- Do aesthetic concerns preclude timber harvesting on these sites?
- Are there silvicultural systems and harvest methods that can safely manage aesthetic impacts?
- What types of long-term planning are needed to implement these strategies?
- What are the operational costs and implications of these alternatives?

The Pitt Lake slopes are a highly visible area at the northwest corner of the Malcolm Knapp Research Forest (see photo below). The surrounding area is heavily used for recreation with more than 200,000 people visiting annually.

Research Forest staff, in cooperation with Dr. Stephen Sheppard, are setting up the area as a demonstration site for variable retention harvesting techniques. The following planning phases are underway:

- Total chance planning to delineate all productive forest, road requirements and environmental constraints.
- Development planning and economic analysis.
- Road layout and geometric design.
- Cutblock design and visualization.
- Site diagnosis (including visual impact assessment), landscape design and silviculture prescriptions.

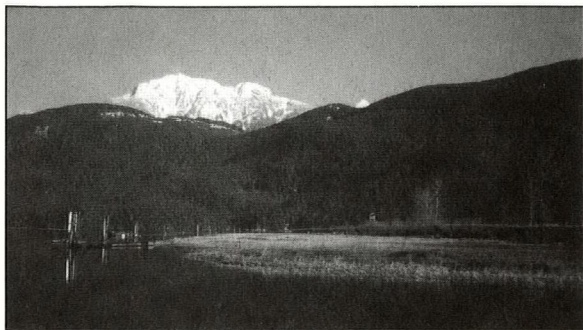
Road construction was completed in October 1999 (see photo) and multispanskyline harvesting will begin on two first phase cutblocks covering six hectares in the spring of 2000. These cutblocks have been designed as variable retention “snake and blob” cutblocks.



Road construction for first phase cutblocks.

Dr. Sheppard and his students are currently modeling the visual impact of this project. Stand modeling will predict green-up and the eventual amelioration of visual impact. The results of this visualization work will be displayed to the public both on the Forest and along the Pitt Lake shore.

For more information, please contact Paul Lawson, RPF, Manager of the UBC Malcolm Knapp Research Forest at (604) 463-8148, fax (604) 463-2712 or e-mail plawson@interchg.ubc.ca.



Pitt Lake slopes.

SFEIBC wins awards

The Silviculture and Forest Engineering Institute of B.C. has been awarded the **British Columbia Forests Excellence Award in Education** for 1999. The award was presented at a reception for finalists on February 22, 2000.

The Institute's diploma program in forest engineering, which will be producing its first graduating class this spring, was recently awarded the **ABCPF/APEGBC Forest Engineering Award of Excellence** for 1999.

Copies available ...

Leslie L. Schaffer Lecture

The Leslie L. Schaffer Lectureship was established in 1981 by Mrs. Kato Schaffer for the purpose of disseminating scientific information and achievement among forestry students, professional foresters, scientists and the public.

This year's lecture was given on February 2 by Dr. Gerald Rehfeldt of the USDA Forest Service. The lecture was held in conjunction with a Faculty Research Evening and attracted well over 100 interested individuals.

Free copies of Dr. Rehfeldt's talk “*Genes, Climate and Wood*” are available electronically at the Faculty's web site www.forestry.ubc.ca, or can be obtained by writing to the address below.

NEWSLETTER PRODUCTION

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