

branch lines



FACULTY OF FORESTRY
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Where have all the fish gone?

A team from Forest Sciences looks at why salmon are perishing during migration.

IN THE FALL when most students find themselves knee deep in courses, the graduate students, technicians and post-docs of Dr. Scott Hinch's team are wading throughout the Fraser River Watershed. In mid summer they are in the Fraser estuary but by early fall the students have migrated upriver to small streams, in essence following the famed sockeye salmon. Ph.D. student Glenn Crossin has been studying the energetics of sockeye salmon for more than 4 years. "They are amazing beasts – it's fascinating to watch these fish travel hundreds of kilometers from the ocean, dodging nets and predators, many eventually reaching their natal spawning grounds". Although chrome and torpedo-shaped in the ocean, by the time they reach spawning grounds, Crossin describes them as "hooknosed, scarlet, sex machines".

Perhaps as a reader of "Branch Lines" you are looking for the link to forest sciences? Grad student Todd Mathes can help out. "It's all about the dead salmon. Bears, eagles, and even maggots help to release marine derived nutrients to the riparian environment that were delivered to the spawning grounds by the salmon carcasses". Todd and the rest of Hinch's students are all too familiar with how excited bears get about dead salmon. Unfortunately the bears have had fewer fish to choose from in recent years and as it turns out, bears aren't the only ones to get "excited" over dead salmon-- fishers and fisheries managers get rather "anxious" when salmon die before reaching their spawning grounds. It is natural for some fish to die en route to spawning grounds each year, but recently upwards of 90% (in some stocks) of migrants have died prematurely. Hinch's group (the Pacific



Sockeye salmon that has died before reaching natal spawning grounds (Photo courtesy of Steven Cooke)

Salmon Ecology and Conservation Laboratory) is trying to answer "Why?" And that is the reason his students are chasing salmon across British Columbia.

Work in the lab has already provided some clues to the high levels of premature mortality. M.Sc. student Jeff Young spent the summer of 2003 on the Thompson River. "We captured fish and inserted telemetry transmitters so that we could determine which salmon did not make it to spawning grounds. We also assessed their energetic and physiological status before releasing the fish." Young was able to show that the fish that died were more stressed, had advanced reproductive development, and

were running out of energy. “The fish that died were in rough physiological shape compared to those that made it to spawning grounds” said Young. Identical findings have been reported by the UBC research team in telemetry studies from other Fraser tributaries in other years. Higher than normal encountered river temperatures have played a significant role in these physiological changes.

Although most of the students in the Hinch lab come from backgrounds in animal ecology, they learn quickly that management issues on important fish such as sockeye salmon are complex and require working with a diverse group of stakeholders – and knowledge of more than biology. Hinch says that this is perhaps more apparent this year than in the past. “This year

members of our research team have been called upon to provide testimony at a recent federal inquiry into the management and conservation of Fraser salmon. ... the work conducted by my students is helping to bring real science to debates that typically involve little science and lots of finger pointing.”

This article was written by Dr. Steven Cooke, a Killam post-doctoral fellow in Forest Sciences, and is based on interviews with members of the Pacific Salmon Ecology and Conservation Laboratory.

To find out more about the research team visit: <http://faculty.forestry.ubc.ca/hinch/> or contact Scott Hinch at scott.hinch@ubc.ca or call 604-822-9377.

Value-added at the Malcolm Knapp Research Forest

Getting the most from UBC’s timber

HOW DO SMALL landowners maximize the value of their timber? That question continues to challenge the small scale forestry sector. UBC’s Research Forests are attempting to answer this question with some innovative joint ventures in value added manufacturing.

In January 2005, UBC’s Malcolm Knapp Research Forest (MKRF) began operating a sawmill in partnership with Gallant Enterprises Ltd. of Maple Ridge. The new mill specializes in producing custom components for timber frame buildings. Doug Woods is owner of Gallant, and has over 15 years experience in this specialized market. With the current boom in construction generally, and soaring interest in timber frame structures in particular, he is optimistic about this new enterprise. His resume

already includes the music room for singer Sarah McLachlan. Sarah’s project required special timbers manufactured on just three sides (see photo below).

Doug Woods says that “construction leading up to the 2010 Olympics will increase the demand for difficult-to-source timber components such as specialty curved pieces, angle-cut components and extra long timbers. Such items can only be supplied by boutique producers”. The new MKRF mill can cut and surface large timbers up to 19.5 metres long. Dimension lumber is not a target product for the mill, according to Doug, who added that “we’ll leave that business to the big boys”. He is currently cutting for the Olympic Preview Center under construction in Squamish, as well as the Delta Hotel in Whistler.

Doug works closely with UBC staff to obtain the right diet of logs to match his order book. MKRF operations manager, Rick St. Jean, commented that the new mill will cut 10-15% of the logs produced by the Forest, and will generate a much higher revenue per cubic metre than could be achieved by selling the logs on the open market. The mill is also supplying many of the components, at significant savings, for the Loon Lake Student Centre currently under construction at the Forest.

With loaded lumber trucks leaving the Malcolm Knapp Forest every day, custom cutting of timber is creating an entirely new outlet for the UBC Research Forests.

For further information on this project contact Paul Lawson, manager of the Malcolm Knapp Research Forest, at 604-463-8148 or email paul.lawson@ubc.ca



Beams coming to life for a singer’s music room

UBC's Timber Building Technology Group

Linking world experts in architecture, engineering and wood products technology

THE TIMBER BUILDING TECHNOLOGY GROUP (TBTG), created to promote and expand wood use in building construction, is the first interdisciplinary research cluster within UBC's Centre for Advanced Wood Processing. The group includes faculty from the departments of Civil Engineering, Wood Science, the School of Architecture and research collaborators from European, Japanese and Chinese universities and research organizations.



The global trend to adopt new building technologies that promote, whole building design practices, green, and sustainable buildings is creating new opportunities to exploit the environmental, aesthetic and structural benefits of building with wood. Demand for engineered wood products, complete building solutions and new innovative wood products is growing worldwide in response to the need for energy-efficient, durable, and environmentally sustainable wood based structures. New multi-billion dollar market opportunities exist for wood structures in low-to-mid rise commercial and mixed use structures. The wood products industries in North America and Europe have launched major wood promotion programs (Wood Promotion Network and CEI Bois) to capitalize on these emerging opportunities. The key challenges in both the housing and commercial building sector are to demonstrate that wood solutions can provide high performance and cost effective alternatives to steel and concrete structures.

The TBTG links world experts in architecture, engineering and wood products technology to develop the integrated solutions needed to create wood building designs that meet the strength, durability, fire safety, sound and energy efficiency standards of modern building codes; to improve the quality of wood buildings; and to deliver innovative education and research programs. March 2005 marked the Group's launch with the official opening of a state of the art timber processing centre at UBC. Hans Hundegger of Germany's Hundegger Maschinenbau GmbH was on hand to unveil UBC's new Hundegger K2 Timber Processing Centre. Laurent Decousterd of CADWORKS and Oliver Amandi of Dietrich's North America demonstrated their state of the art

CAD/CAM systems that allow designers and builders to create high quality custom prefabricated wood structures and then download component processing data to the Hundegger K2 Timber Processing Centre.

The Timber Building Technology Group is in the process of setting up a new **Chair in Wood Building Design and Construction** for an internationally recognized architect/engineer to lead innovative integrated research and education towards expanding the structural use of wood in buildings. (For further information, contact one of the individuals listed below). Currently, members of the group are undertaking a wide range of research, software development and advanced engineered wood product development projects in collaboration with industry partners. Research initiatives include:

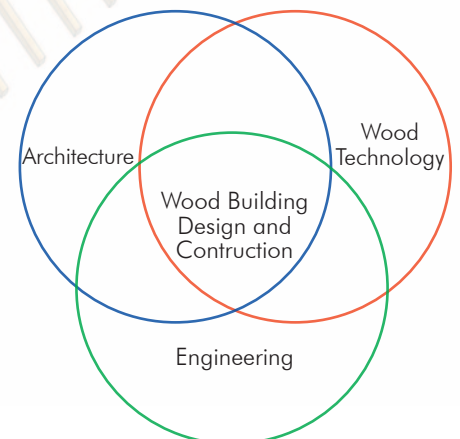
- Next generation engineered lumber and panel products development and manufacturing technologies (patents pending)
- Earthquake performance and reliability of timber structures
- Structural performance of value added building components
- New species lay ups for glued laminated beams
- Advanced structural lumber grading technologies
- Automation in wood building construction

The TBTG is also offering continuing education courses on Dietrich's and CADWORKS software and the Hundegger K2 Timber Processing Centre. Check www.cawp.ubc.ca for upcoming course listings.

Wood Building Design and Construction Technology: 2010 Olympics and Beyond

2005 International Wood Building Forum is expected to attract participants from Europe, Canada, the US and Japan. The forum will be held in Vancouver on September 14-15 2005. For further information, check www.cawp.ubc.ca

For further information, contact Frank Lam (604-822-6526), David Barrett (604-822-5852), Helmut Prion (604-822-3864) or Robert Fürst (604-822-0034).



Symposium promotes dialogue on global changes

THE FOREST SECTOR in BC is facing unprecedented challenges, such as increased global competition from Russia and China, catastrophic insect attacks and fires, and the continuing trade dispute with the US. Many communities are threatened with losing their most important economic base.

To address these issues, the BC Forum on Forest Economics & Policy and the Forest Products Association of Canada (FPAC) gathered over 250 key sector representatives at a symposium in Vancouver on January 27th 2005. "We are looking at least



The BC Forum is a research and education institute dedicated to improving the present and future well being of Canadians by promoting public dialogue and providing unbiased inquiry on vital economic and policy issues that concern our forests and the values we derive from them.

20 years out, well beyond the realm of most corporate and governmental planning exercises," said BC Forum director Thomas Maness, associate professor in the Faculty of Forestry at UBC. "To achieve change involves building a shared vision. The purpose of the symposium was to involve forest sector stakeholders in understanding the changing market dynamics and in influencing decision making for the future."

A highlight of the symposium was a panel discussion with key representatives from major forest sector stakeholder groups. The panel was moderated by Vaughn Palmer, Vancouver Sun columnist and host of Voice of BC. Panelists presented a brief vision for the future of the forest sector. Keynote presentations are available on the Forum's website at www.bc-forum.org.

Thomas Maness can be reached at thomas.maness@ubc.ca or 604-822-2150.

Putting education to work in the Haliburton Forest

THREE AND A half hours north of Toronto is a nature enthusiast's dream; the 24,000 hectare Haliburton Forest and Wild Life Reserve, Canada's first "certified sustainable forest".

It's surprising to learn that the area, valued for its wilderness, suffered from high-grade logging practices from the late 1800s until the property was acquired by the Schleifenbaum family in 1962. Peter Schleifenbaum has maintained a stunning example of integrated resource use on the Reserve since assuming management in 1987. The area includes a wild wolf enclosure, dogsled excursions, wilderness camping, sport fishing, an observatory, and a multi-use trail system, while striving to maintain a 25,000 m³ annual harvest. Harvesting is done under contracts issued to local conventional logging companies, and to horse loggers, who work in the more visible and sensitive areas.

In February, Peter Schleifenbaum invited Drs. Gary Bull and John Nelson of UBC's Forest Resources Management department to bring a group of their students to the Reserve. Four undergraduate students (see photo inset) were charged with developing a comprehensive management plan for the area. Along with graduate student Steven Northway, Gary Bull guided the group in a four-day on-site study of the Reserve.

Returning with forest inventory data and digital terrain mapping information the group now faces the daunting task of designing a management strategy that can accentuate an already impressive operation. "We hope to bring more productivity measures into Peter Schleifenbaum's management scenarios," says Clark. "They've been focusing on rehabilitating the forest, relying on the use of natural regeneration. But they could be capitalizing on the

more productive areas." Lodge agrees, but says Schleifenbaum may need to shift his ideas as well. "We want to give him a 20-year plan that reflects shifting uses over time across the landscape."

Gary Bull hopes that joint-ventures, such as this one, will become an integral part of undergraduate education at UBC. "Our forestry students need to experience unique management situations. At the same time, land owners can gain the creative input of our students. We're not offering to increase a landowner's amount of activity, but to suggest improvements to their management."

Gary Bull can be reached at 604-822-1533, or email [gary.bull@ubc.ca](mailto:bull@ubc.ca)



Left to right, Mike Lodge, Tim Kester, Aaron Racher, Ryan Clark

The 1937 historical air photo project for Haida Gwaii

Looking to the past to guide the future

IF THE KEY to managing ecosystems sustainably is following natural patterns, we need to know what those patterns are, and the extent to which they have already been altered. Determining such environmental baselines can be difficult because modern landscapes have already been modified. However, we have an invaluable tool that is often overlooked – historical air photos. It is now possible to turn historic air photos into spatially accurate GIS coverages at reasonable costs. Aerial photography from 1937 exists for most of Haida Gwaii (Queen Charlotte Islands). Before World War II, logging was minimal and occurred primarily along coastlines, so stream/riparian systems and high site cedar forests are essentially intact. When combined with the most recent GIS ortho photo coverage, there is a landscape record spanning 70 years, unprecedented for coastal BC.

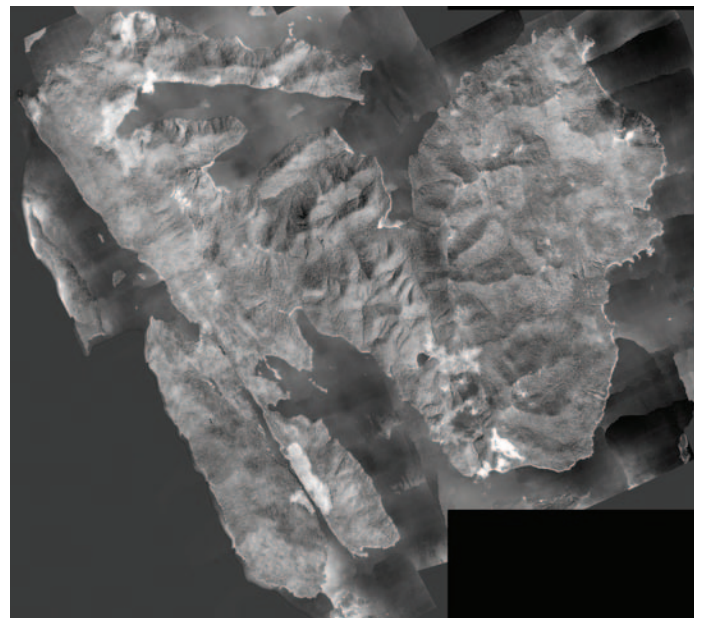
The second I saw the flightline map in the Geography Library, I knew the value of the 1937 photos. I wasn't sure how I could get them all. I mentioned the photos to Doug Louis (Queen Charlotte Forest District), and he said "You mean these photos?" and he opened a drawer and there they all were.

My current research (along with Steve Mitchell) is investigating wind disturbance patterns, using the historical air photos, as well as field work and modelling techniques. Co-operation makes impossible projects possible, especially when budgets are tight. The Ministry of Forests, Parks Canada, Terrasaurus, Weyerhaeuser, Teal-Jones and MSRM have all contributed in kind. We bring our technical and scientific skills and some trust that we will produce credible information. Many valuable linkages have been created from this project. Our study is funded by the South Moresby Forest Replacement Account, which is based locally. Our work is of great interest to the local community and makes UBC real to them.

There are many potential projects using the 1937 ortho photos. We now recognize that past logging practices have created undesirable ecosystem consequences. Restoration is an important priority, especially for salmon habitat, but we need to know what

to go back to. Historical air photos may provide the best answers because stream systems and riparian zones are still intact. Early photos contain the best records of the landscape prior to global warming. The Haida Elders' knowledge can be tied to original landscape condition, if they so chose.

Old air photos, maps, and timber inventory records are at risk of being lost in the digital age. Originally, there were forest cover maps based on the 1937 photos, but they are probably gone. Air photos contain a longer record with better resolution than satellite imagery, especially compared to early images. We risk losing the photos and the information they contain because of physical deterioration or because someone throws them out. Who knows what else is tucked away in a drawer somewhere?



1937 Ortho photo mosaic for Tilga Kun Gwaayaay/Lyell Island (Haida Gwaii)

If anyone has historical forest information for coastal BC, please email the author, Audrey Pearson, research associate in the department of Forest Sciences, at audrey.pearson@ubc.ca

Forests and Society – a new masters program

UBC'S FACULTY OF FORESTRY is unique in having a critical mass of faculty members with expertise in the social sciences and humanities such as philosophy, political science, sociology, Indigenous studies, planning, landscape architecture, psychology, geography, and economics. Our new masters program in Forests and Society will capitalize on this strength, and recognize that forest issues are increasingly being seen to have social dimensions.

The overall objective of this program is to provide graduates with an appreciation of the interactions between forests and people with particular emphasis on social science methods, the analysis of social values and policies, and the role of the social sciences in natural resource planning.

For further information, call David Tindall at 604-822-3482, send an email to forests.society@ubc.ca, or click on www.forestry.ubc.ca/forsoc/



Dean's diary

The United Nations' Millennium Development Goals (see inset) were regularly cited during the recent Food and Agriculture Organization (FAO) Committee of Forestry (COFO) meeting that I attended

in Rome. Forestry's ability to address several of these goals is significant, and it has an essential role to play in ensuring environmental sustainability. In many parts of the world forestry is key to eradicating extreme poverty and hunger and vital to developing global partnerships for development. Many communities throughout the world are dependent on forests for their livelihood, and British Columbia is no exception¹.

Eradicate extreme poverty and hunger
Achieve universal primary education
Promote gender equality and empower women
Reduce child mortality
Improve maternal health
Combat HIV/AIDS, malaria and other diseases
Ensure environmental stability
Develop a global partnership for development

UBC's goals, and how the university plans to meet its responsibilities to the citizens of British Columbia and the world, have recently been articulated in the document "TREK 2010: A Global Journey". The document identifies five foci (community, people, learning, research and internationalization) within its goals. This document challenges us to look more broadly at our global citizenship- something I believe the Faculty of Forestry is already committed to doing. Our alumni form a very special community which contributes significantly to the success and reputation of the Faculty. For example, it was one of our own alumni, Dr. Hosny El- Lakany who, as a senior FAO official, oversaw the COFO meeting in Rome that I mentioned at the outset of this article.

Over the past few years we have increased our efforts to connect with and engage our alumni. We keep them abreast of our research and education activities through regular events such as

Fifth Edition Forestry Handbook goes to press

AFTER A RECORD hiatus between editions, the all-new fifth edition of the Forestry Handbook for British Columbia has now gone to press! Since the first (1953) edition, which the students of the day were able to put together themselves, this new 800 page tome has involved the efforts of UBC students (undergraduate and graduate), staff, faculty and other experts from provincial and federal government agencies, consulting and professional organizations.

Every chapter has been re-written and several new chapters (visual resource management, fish and stream protection, ecosystem management and conservation biology, modeling stand and forest dynamics, and geographic information systems) have been added.



Check our web site in late May when we will be posting ordering information, or wait for an order form to be mailed out to all regular recipients of Branch Lines in June.

Contact Susan Watts (co-editor) for further information at 604-822-6316 or sue.watts@ubc.ca

the upcoming Malcolm Knapp Research Forest Tour and BBQ (see page 4 of the alumni insert), as well, distributing an Alumni and Development News newsletter at least twice a year.

The Faculty of Forestry's community does "think globally and act locally", and we are in the fortunate position of being able to (globally) contribute significantly to the Millennium Development Goals and to help support British Columbia's forest dependent communities (locally).

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

Jack Saddler

¹ This is despite the fact that a recent survey by the Truck Loggers Association in BC indicated that many British Columbians were not aware of the true meaning of a forest-dependent community. See "Growing stronger together. The changing forest industry. A coastal community perspective". TLA, Vancouver, 2004. 24pp.

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