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INFORMATION FORESTRY

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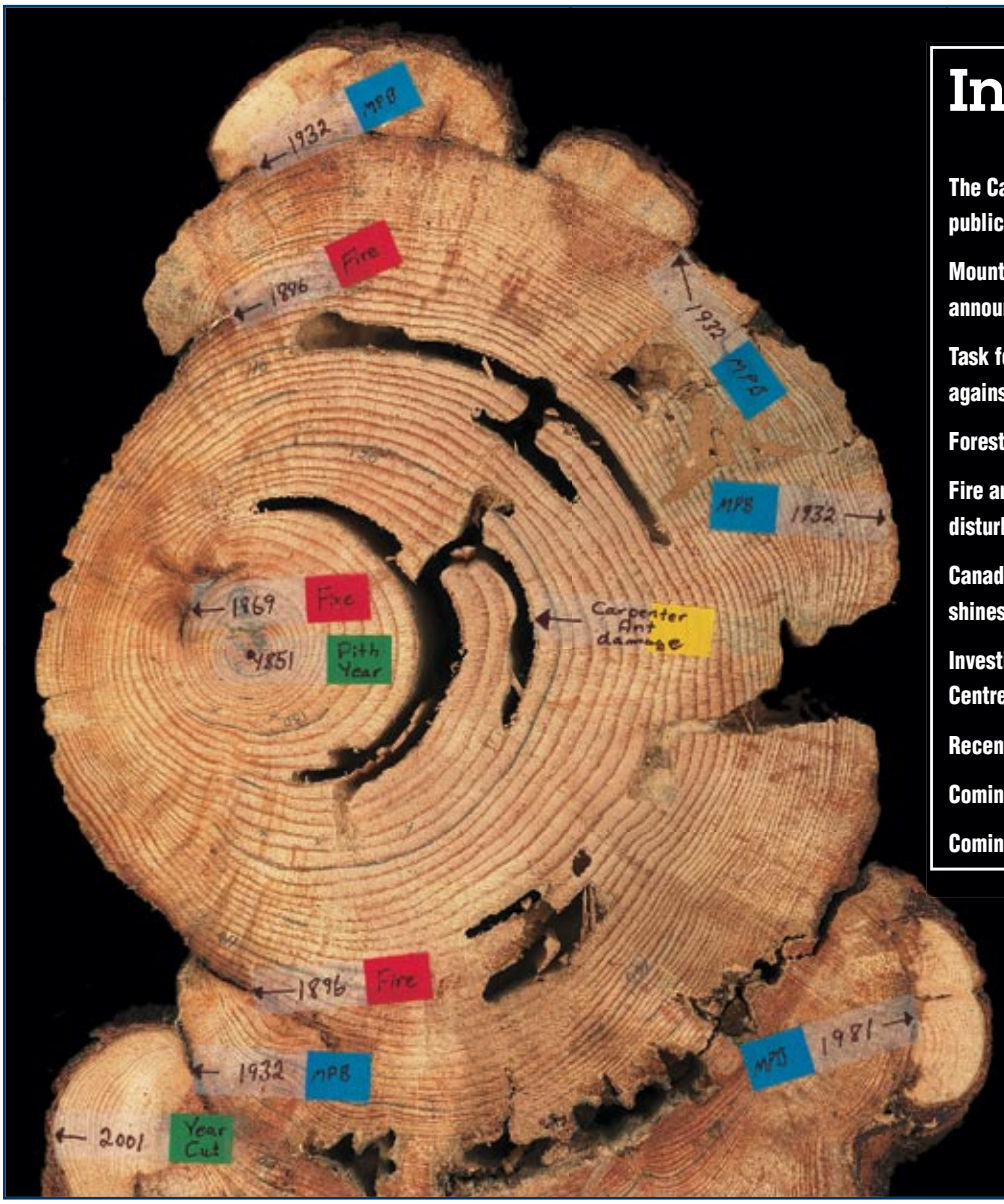

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Forest Disturbances

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Natural Resources Canada

Ressources naturelles Canada

Canada

The Canadian Forest Service Bookstore: publications at the touch of a button

"Nice system—easy to use; very straightforward"

It's been around for a while but still sounds magical: You wish for a new book and, without leaving home, you touch a few buttons and the publication appears before your eyes. The Canadian Forest Service Bookstore — officially launched at the World Forestry Congress in Quebec City in September of this year — provides readers worldwide such access to thousands of publications.

On the Internet at **bookstore.cfs.nrcan.gc.ca**, the Canadian Forest Service Bookstore offers most of its publications free of charge. Users can browse the catalogue, search for specific interests, and read not only abstracts and summaries of publications, but download and print entire publications. Or the reader can order hard copies of printed material to arrive by mail.

"Of course, publications can still be ordered from the printed Canadian Forest Service publications catalogues, but because new material is always being produced, these catalogues quickly become out of date. On the web, however, the bookstore is updated every week, ensuring that searches include current publications," says Steve Glover (**sglover@pfc.cfs.nrcan.gc.ca**), publications manager at the Canadian Forest Service, Pacific Forestry Centre. "A steering committee of about a dozen representatives from the Canadian Forest Service centres and headquarters worked together for over a year to develop a national database that was accessible to all the centres. The result is an enormous catalogue of forest-related material that is very easy to use and now available to the world. Moreover, the system automatically directs publications requests to the appropriate Canadian Forest Service office, so that orders are filled quickly and efficiently."

More than an on-line ordering web site, the Canadian Forest Service Bookstore offers many of its publications in PDF format which requires Adobe Acrobat® Reader. "Our records indicate that there are between 100 and 300 daily visits to the bookstore, particularly during the school year," says Glover. "And between January and December of last year, almost 9,000 of our publications were downloaded from the bookstore by readers throughout the world."

Response from users of the Canadian Forest Service Bookstore is positive. "Nice system — easy to use; very straightforward," says Dave from Massachusetts. "Thank you for an extraordinarily friendly site," says a reader in Washington. "Wow! impressively easy — much better than most web sites," says a user in Wyoming. And from Spain: "An example of excellent public service." A client from Spruce Grove, Alberta, writes, "This has been the most wonderful experience I ever had in searching for and ordering publications. Excellent work! Your developers deserve a sincere thank you."

"The Canadian Forest Service Bookstore is in keeping with the Government On-Line initiative, a Government of Canada project to provide improved access to information and services in both official languages on the Internet by 2005," explains Pacific Forestry Centre Director General Paul Addison. "The bookstore is also consistent with the current Canadian Forest Service strategic plan which includes establishing a national system to access forest-related information, and disseminating authoritative information and analysis to domestic and international audiences."

If a bookstore is only as functional as its ability to get publications into the homes of readers, then the Canadian Forest Service Bookstore is very effective. It is one of the ways the Canadian Forest Service is becoming Canada's foremost forest information source.

Mountain Pine Beetle Initiative announces research projects

The Mountain Pine Beetle Initiative launched its beetle research and control program this spring by providing almost $5 million to researchers across Canada. The 27 projects approved in the initiative's first round of mountain pine beetle research and development funding include investigations into the extent of the current epidemic, how it can be detected, mapped and predicted, impacts by the mountain pine beetle on forest ecology, and management options at both landscape and stand levels. Projects researching product and market options, timber supply and economic modelling to stabilize communities and manufacturing within sustainable forest management also received funding.

"We worked closely with stakeholders in the beetle-affected regions to identify research needs," says Bill Wilson (**bwilson@pfc.cfs.nrcan.bc.ca**), director of Industry, Trade and Economics at the Canadian Forest Service Pacific Forestry Centre and leader of the Mountain Pine Beetle Initiative. "We received an outstanding response to our call for proposals, and the review process proved to be both efficient and effective, largely due to the amount of time and effort initiative partners and stakeholders had put into determining priorities and review criteria at the start."

Research and development priorities were established after regional consultations with landowners, regulators, policy-makers, forestry companies, First Nations and other stakeholders battling the beetle. They address both immediate and long-term needs, and complement a suite of programs designed to help rehabilitate federal and private lands infested by the beetle. Calls for research proposals will be scheduled at intervals, making it easy for the initiative to modify priorities as improved information about the beetle outbreak becomes available and research is started.

"Initiative partners are committed to work with stakeholders throughout the process to ensure we remain focused on the most important questions facing us during the epidemic," Wilson says. In October 2002, the federal government announced it would invest $40 million over a period of five years in the Mountain Pine Beetle Initiative. The programs in the initiative are being delivered with a partnership of federal and provincial agencies, forest-sector research institutes, industry, First Nations, and academic institutions.

The second call for letters of interest ended in early September and approved projects will be announced soon.

Details on the approved research, how to apply for research funds, and on the review criteria and process are available at: **mpb.cfs.nrcan.gc.ca**.

Risk-Reduction Research and Development Projects, Spring 2003

Forest-management options to control and reduce pine beetle risk

- Expansion of beetle-proofing research, and operational evaluation for feedback and adaptive management, Canadian Forest Service
- Review and synthesis of historical adaptive management strategies to control mountain pine beetle: efficacy and economics, Forest Engineering Research Institute of Canada (FERIC)
- Synthesis of the economic efficiency of beetle-proofing management operations, Canadian Forest Service

Factors influencing magnitude and distribution of mountain pine beetle

- Environmental effects on dispersal and reproduction in mountain pine beetle, University of Calgary
- Incorporating present and future climatic suitability into decision support tools to predict geographic spread and risk for the mountain pine beetle, Canadian Forest Service

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Task force stands on guard against plant killer

Last June's discovery of *Phytophthora ramorum*, the cause of Sudden Oak Death, on five rhododendron plants in a British Columbia nursery, threatened two of the province's biggest industries — forestry and the nursery trade. Although harmless to humans, the pathogen has devastated oak forests in California. The Canadian Sudden Oak Death Task Force, a partnership of government agencies and industry professionals, wanted to avoid a similar epidemic here: it immediately began surveying nurseries and other at-risk sites for infected plants or soil.

"Of 6,532 samples taken from nurseries," says Rob Ormrod, horticulture specialist with the Canadian Food Inspection Agency's Plant Health Division and a member of the task force, "6,527 tested negative. This suggests infection may have been limited to the five original plants." All potential host plants at the ground-zero nursery were released from quarantine at the end of a 90-day observation and testing period. The agency will repeat the survey in the spring to see if the fungus-like organism re-emerges during the cool, damp coastal winter.

The list of plants to monitor grows almost weekly. *Phytophthora ramorum* is not a picky eater: in addition to oak trees and rhododendrons, it attacks arbutus, maple, roses, heathers, bearberries, honeysuckle, blueberry, huckleberry, raspberry, blackberry and Douglas-fir — all of which are found in the province's forests. It also feeds on many popular garden plants.

The task force, in partnership with the Canadian Food Inspection Agency, the federal agency responsible for monitoring and regulating plant diseases in Canada, is working with regulatory organizations in the United States and Europe to establish protocols to prevent the pathogen's spread into Canada. Future surveys may include botanical gardens, parks and other green spaces, all of which are vulnerable. The task force is also considering training gardeners to look for and report signs of Sudden Oak Death infection.

Meanwhile, researchers are studying *P. ramorum* to find out how it spreads and reproduces, and how to control it. "The depth of knowledge we have about this organism is pretty thin," says Eric Allen, research scientist at the Canadian Forest Service Pacific Forestry Centre and science consultant to the task force (**eallen@pfc.cfs.nrcan.ca**). "You don't have to scratch very far under the surface to realize there are many things we don't know about it."

Scientists do know *P. ramorum* is closely related to the organism that causes late blight of potato, which devastated Ireland's economy and population in the mid-19th century. They know the organism spreads through contact with infected plant material. They know that to kill *P. ramorum*, host plants must be cooked in high-temperature compostings or burned. They know two kinds of *P. ramorum* exist: the virulent North American strain found in California, and the European strain: they fear the two strains will interbreed, giving rise to new, more aggressive and adaptable strains.

Although California is hardest hit by the disease, Allen says British Columbia, with its cool, wet, coastal climate, its thriving nursery trade and its gardeners who import thousands of plants each year, could easily assume that unwelcome distinction. Only vigilance and strict controls on plant imports will keep *Phytophthora ramorum* from invading the province again.

For more information on Sudden Oak Death, visit: **www.pfc.cfs.nrcan.gc.ca/news/suddenoak_e.html**

Bigleaf maple leaf

Arbutus leaf

Douglas-fir twig

Sudden Oak Death symptoms vary for each host species, and can include spots, lesions or blotches on leaves, and bark lesions or cankers. Most hosts show a combination of symptoms.

Forest managers test carbon tracker

"The message we received from different participants is, 'You have to make it easy for us to use this.'"

Tracking carbon in Canada's forests moved one step closer to reality this fall. Thirty analysts and partners from Canada's Model Forest Network put Canada's first operational-level carbon-accounting tool through its paces.

The tool, developed in partnership by the Canadian Forest Service's Carbon Accounting Team and the Model Forest Network, allows forest managers to assess how harvesting, thinning and planting, as well as disturbances due to fire, disease or insect infestation, contribute to changes in forest carbon stocks. The tool tracks carbon stored in the trees, leaf litter, woody debris and soil that make up forest ecosystems. It can be used to analyze how past management decisions and forest disturbances have affected today's carbon levels, and to predict how today's forest-management decisions will impact future carbon stocks.

"Forest managers are increasingly being asked to understand and evaluate the consequences of their management actions in terms of their impacts on the atmosphere," says Werner Kurz, senior research scientist at the Canadian Forest Service, Pacific Forestry Centre, and a leader of the Carbon Accounting Team. "Trees are 50 percent carbon. As we grow or harvest trees, we either take up carbon from the atmosphere or release it back into the atmosphere. The effects we have on carbon levels in the atmosphere can be substantial."

The operational carbon-accounting tool tracks and predicts changing carbon stores in Canada's forests.

The tool that measures such changes builds upon a decade of work by scientists at the Canadian Forest Service to develop a carbon budget model for research purposes. With policy-makers, trading partners and the public pressuring the forest industry to answer for how its activities affect global climate, the Carbon Accounting Team and its Model Forest partners are now applying the research model to forest operations, thus allowing managers to include carbon as one of the criteria in the planning process.

The team had to be sure the tool could incorporate the best available science about forest-carbon stocks and processes as it becomes known, and comply with evolving international carbon-accounting rules. The scientists had to design it to be flexible to deal with the many scenarios and management questions that interest forest managers, and to address regional differences in climate and environmental conditions. It also had to be compatible with different inventory formats.

"The message we received from different participants is, 'You have to make it easy for us to use this.'" Kurz says. "The way to make it easy for them is by permitting them to build, to the greatest extent possible, on the data and data sources that they already have for other types of analysis. They've already done the hard part: getting the inventory, keeping it current, having the growth and yield data for each of the different strata within the inventory. We wanted to built on that."

"We look forward to the coming year when our partners begin to incorporate insights gained by using the model in sustainable forest management plans and practices," says Jim Taylor, general manager of the Western Newfoundland Model Forest, one of the sites involved in the November workshop. "There is a growing desire to understand the role of carbon as it relates to the practices of forest management."

The carbon-accounting operational tool will be available, free of charge, for use by provincial, territorial, industrial and private forest managers in late-2004. Even after testing is complete and the tool is released, the carbon accounting team will continue to update it as science and accounting rules evolve.

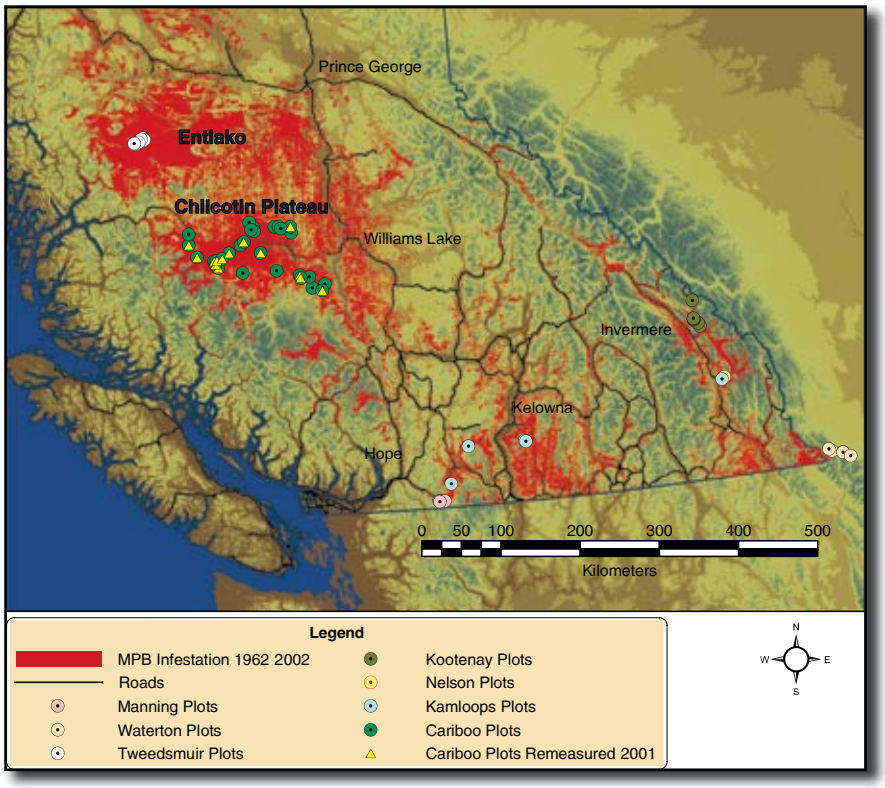
Information on Carbon Accounting programs is available at: **carbon.cfs.nrcan.gc.ca**

Fire and Beetles: how forest disturbances affect stand dynamics

When Canadian Forest Service Fire Research Officer Brad Hawkes walks through the forest in the Chilcotin region of central British Columbia, he cannot help but notice how open it is. The tallest trees are widely spaced, although many smaller trees stand close together. They vary in size from seedlings as high as his knee to trees with trunks as big around as his chest. Branches and deadfall snap underfoot and catch at his boots.

The forest is a testament to natural disturbances. About one-third of the larger-diameter trees were killed during a mountain pine beetle epidemic in the late-'70s and early-'80s. Fire- and beetle-scarred tree trunks, growth release in tree rings and deadfall document similar infestations in the early-'30s and late-19th century, as well as mixed-severity fires that burned the forest understorey every 20 or 30 years prior to the '30s, and occasionally reached into tree crowns.

Hawkes is part of a team of researchers investigating how those events and conditions shape the Chilcotin Plateau today. He and colleagues from the Pacific Forestry Centre, other government agencies, the University of Northern British Columbia and local industry are completing a three-year study of mountain pine beetle impacts on stand and ecosystem dynamics in the province's forests.



The study investigated fire, mountain pine beetle and stand dynamics in more than 40 stands in five different regions of British Columbia, as well as stands in Alberta.

"The way mountain pine beetle and fire affect stand dynamics changes across British Columbia over the entire range that mountain pine beetle occurs in," Hawkes says. "It changes from north to south, from low elevation to high elevation, from wet climates to dry climates."

The information collected will help forest companies compare stand conditions created by forest management with those produced by natural processes such as beetles and fire. Companies can use the data to determine stand-management options that are ecologically sustainable while minimizing losses to fire and beetles. It will also help them plan salvage operations in beetle-attacked stands.

"Research results like these help Lignum set harvest priorities and regeneration strategies which are economically feasible and meet land-use objectives," says Dave Conly, Senior Planning Forester with Lignum Ltd, a forest company that operates in the Chilcotin region, and one of the project's collaborators.

Mountain pine beetle is an agent of natural disturbance in the province's forests. The latest B.C. estimate of total area affected during the current epidemic is 4.5 million hectares—more than double last year's figures. Fire, another natural disturbance in provincial forests, affects much less area than the beetle does.

By comparing information collected in the '80s to that collected in 2001 from stands in the Chilcotin, the British Columbia southern interior, Kootenay National Park, and Alberta's Waterton Lakes National Park, as well as stands sampled in 2002 in the Entiako Protected Area and Manning Provincial Park, the researchers trace a complex web of beetle-attack, fire-impact and stand-dynamic interactions.

Brush with Flame

Fire is rarer in the Entiako Protected Area than on the Chilcotin Plateau. The region southwest of Prince George receives more precipitation, and has cooler summer temperatures than are found further south. Entiako stands are densely treed and even aged, a result of crown fires that swept through the area in the 19th and

From the cover: *A tree disc from Stand 125 in the Chilcotin records 150 years of mountain pine beetle (blue tags) and fire (red) activity, as well as current activity by carpenter ants (yellow).*

early-20th centuries. The fires opened serotinous lodgepole pine cones, releasing seeds that regenerate in the first years after fire.

"You could say fire conditions there set the forest up for mountain pine beetle today," Hawkes says. "The forest there doesn't ignite easily, but when it does and there are strong winds, it's a major fire. It crowns and takes out big parts of the forest. Then the forest regenerates as even-aged lodgepole pine, becoming more susceptible to mountain pine beetle as the stand ages."

Heat from intense surface and crown fires, such as those that occurred during a prescribed burn in Tweedsmuir Provincial Park in the mid-'90s, can penetrate tree bark to kill beetles.

On the Chicotin Plateau, low-intensity surface fires thin the forest by removing smaller trees without killing many larger trees. Because of fire-control efforts, surface fires are less common than they once were: frequent surface fires in lodgepole pine forests would have created stands that are more open with fewer understorey trees.

Beetle Impacts

"Unlike surface fires which thin a forest from the bottom up, beetles thin from the top down," says Hawkes. "They remove larger-diameter trees, and open up the forest. This allows light to reach smaller trees. They grow more vigorously, eventually becoming susceptible to mountain pine beetle."

Most of the even-aged lodgepole pine stands in the Entiako are more than 80 years old — an ideal age and size for mountain pine beetles. The insects have moved in. From the time when the current outbreak started in the late-'90s to when the research team sampled the stands in 2002, more than 75 percent of the trees with diameters greater than 12.5 centimetres had been beetle-killed in the Entiako plots. This differs from the Chilcotin Plateau where only 28 percent of the trees had been killed by beetles in the region's last outbreak.

Outbreaks fuel fire by increasing the fuel load within a forest, by layering fallen and standing fuel, and by opening the forest to wind and sunlight. Fire intensity is highest when most of the beetle-killed trees have fallen over. How long this takes depends on climate, soil moisture, rooting depth, stand density, and frequency of extreme wind events. For example, most of the Entiako's recently beetle-killed trees still stand, while 18 years after the Chilcotin outbreak, 36 percent of trees have fallen.

Beetles advance forest succession. When mature lodgepole pines die and open the canopy, Douglas-fir, subalpine fir, spruce and even younger lodgepole pine flourish. The forest changes: late-succession species dominate, stands show greater variety in size, age, species, and closure.

"This kind of information helps forest managers determine if other species will maintain forest productivity through to the scheduled harvest, or whether salvage of pine is necessary," Hawkes says. "They will be better able to forecast the structure and volume of the final harvest stand."

On the Chilcotin Plateau, where climate, soil and open, non-serotinous cones in the tree crowns combine to allow lodgepole pine to succeed lodgepole pine in the forest-succession cycle, mountain pine beetle epidemics might occur if two conditions are met: if trees that survived the previous outbreak grow big enough to become susceptible to beetle, and if there are enough such trees to support an outbreak. Because of the Entiako's cool, moist climate, the area experiences fewer outbreaks than on the plateau. In the region's lodgepole-pine-dominated forest, susceptible pine stands take longer to establish than in drier forests. In 2002, only 600 seedling and pole-sized lodgepole pine grew in each hectare of the Entiako Protected Area; in 2001, the Chilcotin stands averaged more than 3,000 such stems per hectare.

However, even when enough susceptible trees grow in a forest, climate determines whether a mountain pine beetle outbreak develops: long summers and mild winters allow beetles to multiply, survive, and spread to susceptible stands.

For more information, visit: **www.pfc.cfs.nrcan.gc.ca/ecology/stand_dynamics***; on natural disturbances in British Columbia forests:* **www.pfc.cfs.nrcan.gc.ca/fires/disturbance***; on mountain pine beetle:* **www.pfc.cfs.nrcan.gc.ca/entomology/mpb**

Historic fires in the Entiako Protected Area promoted stands of even-aged lodgepole-pine-dominated forests, which in time encouraged mountain pine beetle attack.

Canadian Forest Service shines at congress

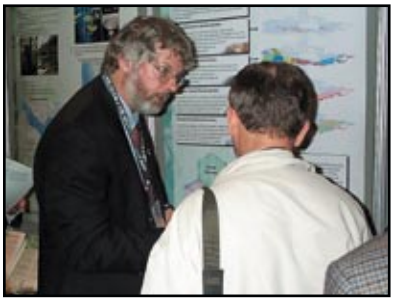
With more than 4,000 people from 150 countries in Quebec City to share information, learn about new forest research, meet colleagues and network, the XII World Forestry Congress allowed the Canadian Forest Service to promote research, programs and partnerships. A 200-square-metre exhibit highlighted agency programs and projects *(top left).* Research teams from the Pacific Forestry Centre joined more than 100 other scientists presenting poster sessions *(middle left and bottom left),* and Canada Hour featured presentations by Canadian Forest Service researchers and policy-makers, and related organizations. "The opportunity to present at Canada Hour allowed presenters to connect directly with folks who were interested in their topics," says Elaine Teske, director of Programs, Planning and Operations at the Pacific Forestry Centre, who also presented on the topic of *Women and Forestry* during Canada Hour *(bottom center).*

"In a venue the size of the World Forestry Congress, it can be difficult to make contact with folks who have a common interest and may wish to pursue the topic in an international arena or contribute to the debate."

One of the most important aspects of the congress was the opportunity to meet with colleagues from around the world. "The discussions held in the corridors and in and around the displays added tremendously to the formal sessions by providing an opportunity to discuss issues, and develop partnerships and collaborations," says Pacific Forestry Centre Director General Paul Addison *(top right).*

The quality and depth of a research paper written by student Laura Johnson *(right)* attracted the attention of the congress. The Canadian Forest Service provided assistance to the University of Victoria graduate student to attend the congress and present her research on forest fires in Southeast Asia.

Another highlight for the Canadian Forest Service was when Pacific Forestry Centre Senior Research Scientist Mike Apps *(on right in center photo, with the institute's past president, Len Moore)* was awarded the Canadian Institute of Forestry's prestigious International Forestry Achievement Award for 23 outstanding years of forest research.



Investing in the future: Pacific Forestry Centre graduate student awards

University of British Columbia student Lea Rietman had been struggling with a difficult decision. Funding she had been counting on to continue her research at the Pacific Forestry Centre in Victoria had been delayed, and despite taking on contract work, she faced having to interrupt her research.

Then she received a letter offering her a Pacific Forestry Centre graduate student award. The $5,000 scholarship, one of the first to be awarded, swept her concerns away: her research on biological controls for dwarf mistletoe continues.

"It was a big relief," she says. "At this stage, it's really important I focus on my project and not be worrying about other things. I'm so appreciative of the opportunity the award gives me."

Six students received awards this fall. Part of a new initiative by the Canadian Forest Service Pacific Forestry Centre, the graduate student awards are designed to direct more students into forest-science research, and to encourage students to work with the centre's leading-edge scientists on questions facing Canada's forest sector today. Any graduate student conducting forest-related research while registered at a Canadian university is eligible for the scholarship, provided one of the research supervisors is a Pacific Forestry Centre scientist or director.

The awards benefit the centre by allowing its scientists to tap into pools of talent at universities. "Where else are you going to find this kind of bright, young, energetic talent to work on your research priorities?" says Pacific Forestry Centre Director General Paul Addison. He is quick to point out the awards' other advantages. "They're a way for us to develop relationships between our scientists and universities, and to entice universities to become involved in research taking place in federal laboratories."

Students may use the award money to pay for tuition, cover living expenses or attend workshops, as Rietman intends, or in any way that benefits their research and careers.

For more information, visit **www.pfc.cfs.nrcan.gc.ca/award**

The Pacific Forestry Centre graduate student award permitted Lea Rietman to continue researching the use of the fungus Neonectria neomacrospora *as a biological control agent for hemlock dwarf mistletoe.*

University of British Columbia student Michelle Cleary plans to use her award to present research at an international conference on root- and butt-rot diseases. The move will boost her career and increase the profile of the Canadian Forest Service, the Pacific Forestry Centre and Canadian forest science.

Award recipients

Michelle Cleary,
University of British Columbia.
Project supervisor, Duncan Morrison

Gordon Frazer,
University of Victoria.
Project supervisor, Mike Wulder

Marcela Olguin-Alvarez,
Simon Fraser University.
Project supervisor, Werner Kurz

Lea Rietman,
University of British Columbia.
Project supervisor, Simon Shamoun

Grace Sumampong,
Simon Fraser University.
Project supervisor, Simon Shamoun

Christine Thorne,
University of Victoria.
Project supervisor, Imre Otvos

Risk-Reduction Research and Development Projects, Spring 2003

continued from page 3

- Interaction of fire and mountain pine beetle, Canadian Forest Service
- Projection of the efficacy of mountain pine beetle management at the landscape scale, Canadian Forest Service
- Provincial-level projection of the current mountain pine beetle outbreak, British Columbia Ministry of Forests
- Spatial-temporal analysis of mountain pine beetle infestations to characterize pattern, risk and spread at the landscape level, Wilfrid Laurier University

Epidemic detection, mapping and prediction

- Impacts of climate change on range expansion by the mountain pine beetle, Canadian Forest Service
- Modeling of mountain pine beetle transport and dispersion using atmosphere models, University of Northern British Columbia
- Mountain pine beetle outbreak development: the endemic-incipient transition, Canadian Forest Service
- Synthesis and assessment of remote-sensing techniques for detection of green, red and grey stages of mountain pine beetle attack, Canadian Forest Service

Responses and impacts of mountain pine beetle on forest ecology

- Fitness and pathogenicity of the fungi associated with the mountain pine beetle and other secondary beetle in green attack, University of British Columbia
- Historical frequency, intensity and extent of mountain pine beetle disturbance in landscapes of British Columbia and Alberta, Canadian Forest Service
- Incorporating mountain pine beetle impacts on stand dynamics in stand- and landscape-level models: evaluation and problem analysis, Canadian Forest Service
- Integrating silvicultural control of mountain pine beetle with wildlife and sustainable forest management objectives, University of British Columbia
- Phytosanitary risks associated with mountain pine beetle-killed trees, Canadian Forest Service
- Plan for establishment of long-term monitoring plots in mountain pine beetle-killed stands, British Columbia Ministry of Forests
- Test and refine a new approach to stocking assessments in stands resulting from mountain pine beetle-salvage partial cutting, British Columbia Ministry of Forests
- Time of burning and stand susceptibility to the mountain pine beetle in Canada's southern Rocky Mountains, University of British Columbia

Product and market development

- Alternative wood products from stained mountain pine beetle lumber, University of British Columbia
- Assessing market acceptance of mountain pine beetle-killed structural wood products, Forintek Canada Corp.
- Implication of properties of post-mountain pine beetle wood, Forintek Canada Corp.
- Maximizing value recovery from mountain pine beetle-attacked pine for veneer products, Forintek Canada Corp.
- Synthesis of impacts of increased use of chips with elevated pitch levels, dry chips (standing dead) and chips with blue-stain pulping, Pulp and Paper Research Institute of Canada (PAPRICAN)

Social, economic and timber-supply impacts

- Assessing the economic impacts of mountain pine beetle infestations and other natural disturbance in British Columbia, Canadian Forest Service

Recent Publications

Pacific Forestry Centre Graduate Student Award. (brochure) 2003. Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre, Victoria, British Columbia.

Bourse pour les étudiants diplômés du Centre de foresterie du Pacifique. 2003. Ressources naturelles Canada, Service canadien des forêts, Centre forestier du Pacifique, Victoria, C-B.

A sustaining vision. 2003. McGregor Model Forest Association, Prince George, BC. 20 p.

The Bridge – October 2003. Newsletter of Natural Resources Canada's First Nations Element of the Mountain Pine Beetle Initiative, and the British Columbia First Nations Forestry Program. 2003. Murphy, B., editor. 12 p.

Canada's model forest program publications catalogue. (Réseau Canadien de fôrets modèles catalogue des publications). 2003. Natural Resources Canada, Canadian Forest Service, Headquarters, Canadian Model Forest Network Secretariat, Ottawa. 49 p.

Shaping the future: Canadian Forest Service strategic plan 2003-2008. (Modeler l'avenir : Plan stratégique 2003-2008 du Service canadien des forêts). 2003. Natural Resources Canada, Canadian Forest Service, Headquarters, Policy, Planning and International Affairs Branch, Ottawa. 20 p.

Solutions. The Canadian Forest Service Newsletter. (Solutions. Le bulletin du Service canadien des forêts). Summer/Fall 2003. Natural Resources Canada, Canadian Forest Service, Headquarters, Communications and Executive Services, Ottawa. 8 p.

Advancing sustainable forest management from the ground up. Canada's Model forest program. (L'avancement de l'aménagement durable des forêts depuis la base). 2003. Natural Resources Canada, Canadian forest Service, Headquarters, Canadian Model Forest Secretariat, Ottawa. 32 p.

To order publications on-line, visit the Canadian Forest Service Bookstore at:
bookstore.cfs.nrcan.gc.ca

Comings and Goings

Welcome, Phil Burton

Comings

Phil Burton has been appointed the Pacific Forestry Centre's Manager of Northern Projects, to be based out of the University of Northern British Columbia, in Prince George, B.C. He plans to build a strong collaborative research unit for disturbance ecology, with emphasis on the mountain pine beetle outbreak.

Burton has been active in B.C. forestry research since 1989, first as a silviculture professor at the University of British Columbia, and then with Symbios Research & Restoration, an independent research and consulting firm based in Smithers. His research spans a range of topics in forest ecology, stand dynamics, silviculture and restoration, out of which he has authored more than 30 refereed publications. He recently edited a book on boreal-forest management while spending a year as a Bullard Fellow of Forest Research at Harvard University.

He and his wife, Carla, look forward to being part of the Pacific Forestry Centre and local university communities.

Goings

Fangliang He left the Pacific Forestry Centre to teach at the University of Alberta. A research scientist at the centre since 1995, He combined plant ecology and biodiversity patterns and conservation with applied statistics. Research included estimating species composition and explaining biodiversity patterns, studying interaction between wetland vegetation and its environment in northeastern Ontario, and investigating weevil-spruce interactions in British Columbia.

Forest Health Network Technician **Peter Koot** is retiring from the Canadian Forest Service. While at the Pacific Forestry Centre, Koot monitored and reported on changes contributing to national forest health, including the quarantine and rearing program for exotic pests intercepted at British Columbia ports, and provided national overviews of major forest disturbances due to air pollutants, insects and diseases using standardized monitoring systems.

Also retiring from the Pacific Forestry Centre is **Bob Erickson**. As a forest health technician, Erickson acquired, compiled and reported information on major forest disturbances such as forest-pest infestations. He monitored and reported on quarantine-related activities and ARNEWS/biomonitoring studies, and worked with other government agencies and with forest companies on forest-pest issues.

Coming Events

Communities and Natural Resources in Transition: linking social science and practitioners for a sustainable future

February 18 – 19, 2004

University of Northern British Columbia, Prince George, B.C.

www.unbc.ca/conted/socialsciences

Historically, links between natural-resource management, social sciences and forest-based communities have been weak. New emphasis on science-based sustainable forest management requires improved and innovative social and economic research and practices.

Join us to exchange knowledge from research and practice about the human dimensions of natural-resource management and to extend the use of social-science research and practice.

INFORMATION FORESTRY

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