



tomorrow's forests

THE SFM NETWORK NEWSLETTER

Research excellence through training, networking,
partnerships and knowledge exchange

SPRING 2007



NCE Chairs' Award Winner: Dr. Christian Messier

Courtesy
Networks of Centres of Excellence

Ecologist finds way to maximize timber production while protecting ecosystems

The winner of the inaugural NCE Chairs' Award is putting Canada on track to develop the best forestry practices in the world – practices that are socially acceptable, ecologically viable and profitable.

It may seem like make-believe, but Dr. Christian Messier has won over both conservationists and the timber industry with a radical new approach to managing Canada's vast forest resources. In fact, it could represent the single largest change in forest management anywhere in the world.

Dr. Messier is the winner of the inaugural NCE Chairs' Award and a principal investigator with the Sustainable Forest Management (SFM) Network. He is working with governments, industry, native groups, conservationists and recreational users to demonstrate his theories on a one million-hectare forest in central Quebec.

If he's right, as a growing number of experts believe he is, timber shortages predicted within the next 30 years could be averted. His discovery could also save thousands of high-paying jobs for people living in over 300 forest-dependent communities across the country.

In Quebec, where the most severe timber shortages are expected, the provincial government is taking an active interest in Dr. Messier's

research. Several ministries, including Quebec's Ministry of Natural Resources, are participating in the SFM Network project, and the government is looking at the potential of implementing these new forest practices province-wide.

"The SFM deserves a lot of credit for this new approach. The NCE's focus on interdisciplinary research has forced me – and I say 'forced' because I wouldn't have done it otherwise – to work with social scientists and economists, as well as hydrologists, engineers, foresters and many different groups," says Dr. Messier, a professor and forest ecologist at the Université du Québec à Montréal.

"As an ecologist, I was a bit arrogant in thinking that if I improve the ecological knowledge, people will change their practices. I was totally wrong," he admits. "The SFM helped me to realize that you need the social and economic elements to bring about real change in forest management. Governments and local communities aren't going to adopt your ideas if it means closing factories and losing jobs."

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NCE Chairs' Award The NCE Chairs' Award recognizes outstanding researchers who have contributed to achieving economic and social benefits for Canadians. Researchers nominated for the Chairs' Award must first be formally recognized for research excellence by their individual Network in a separate competition. The NCE Program mobilizes the excellence of Canada's research talent in the academic and private sectors.

Can tree plantations rescue our natural forests?

At conferences across North America and throughout Europe, Dr. Messier is promoting an approach called “functional zoning,” also known as the TRIAD concept, which attempts to balance economic, social and environmental issues to satisfy all interests. The idea dates back in forestry literature nearly 50 years, but as Dr. Messier points out, “nobody was willing or crazy enough to try it on a large scale” – until now.

“The conventional view has been that the best way to manage a forest is by trying to please everyone – protect biodiversity, produce a lot of timber and protect the landscape. In reality, it doesn't work well,” he says. As a result, industry is unhappy because of all the constraints. Environmentalists are unhappy because not enough is being done to protect the forests, and recreational users say forestry practices are affecting the beauty of the landscape.”

Quebec is arguably facing some of the most severe industrial wood supply shortages in Canada. Much of Christian's work over the past decade indicates that he saw it coming, and worked to justify the impact, mitigate it, or demonstrate that it was unnecessary where appropriate. His work in forest sustainability (TRIAD), adult and juvenile tree mortality, development of decision support models and tools, and his initiation and leadership of the Réseau de Ligniculture de Québec (RLQ) are all indicators of a dynamic, proactive and productive scientist who is well connected to real world issues.

*George Bruemmer
Former Manager of Forestry
Research & Development, Tembec Inc.*

The TRIAD concept would divide landscapes into three zones. The majority of the forest would be set aside for “extensive forestry” or “ecological forestry,” which allows limited timber harvesting in a way that protects biodiversity and habitats.



Dr. Christian Messier
Centre for Forestry Studies
Université du Québec à Montréal

Less than 20% of the land would be zoned for “intensive forestry,” where fast-growing native and hybrid tree species are planted and harvested much like an agricultural crop. It enables timber companies to maximize yields near the mills and factories that process it, while leaving larger tracts of land untouched.

Finally, between 5-25% of the land would be protected areas free of industrial activity.

The approach is winning praise from industry. Not only could companies produce up to 15 times more cubic metres of timber per hectare per year, making them more competitive internationally, functional zoning would also help them to obtain the strictest environmental certifications, such as Forest Stewardship Council (FSC) Certification.

Dr. Messier says that just 10 years ago, he was “dead set against” intensive forestry and tree plantations. “I was promoting an ecosystem-based approach. But by working with social scientists and economists and by looking at the reality of the land, to do what I was

proposing would have required closing some mills, and maybe make forestry less economical than it is now.”

Conservationists have been similarly opposed to plantation tree framing in the past, but that's quickly changing as they see functional zoning as a practical way to protect more



SFM Network Scientific Director Dr. Jim Fyles
Professor and Tomlinson Chair in Forest Ecology
Department of Natural Resource Sciences
McGill University

forested areas and increase biodiversity. If a company can meet its wood fibre needs from one hectare of plantation instead of 15 hectares of natural forest, it enables more natural forests to be protected, as much as 15-20%. In Quebec, less than five per cent of forests are protected.

The United Nations Organization for Food and Agriculture estimates that plantations, as a result of their increased production of wood fibre, could satisfy world demand while using only 5% of the world's forest land.

From computer modeling to the forest floor

Dr. Messier developed his theories through a mix of laboratory and field experiments conducted in Canada, Finland, France and Panama. He also collaborated to create two new highly sophisticated computer simulation tools to analyze data from these large landscape experiments and to predict how a complex mixture of native tree species will develop over time. The information is being used to determine the most efficient way to organize different zones.

The computer simulation models include highly specialized ecophysiological information, basic research information on how plant cells become woody, and latest information to simulate how various trees species might grow under almost any kind of environmental conditions.

“Modeling allows us to better predict how different approaches to forest management will impact an area over the long-term, rather than doing it, waiting 100 years or so, and then finding out you were wrong,” says Dr. Messier. “These simulations enable us to show people in government and industry as well as environmentalists what will be the consequences of this zoning and what is the best zoning for each particular area.”

As part of the SFM Network project, Dr. Messier and his team are developing a five-year plan, to begin in 2008, to determine the best approach for managing the one million hectare forest in Quebec. By 2013, the world should know whether Canada's experiment in functional zoning could become the gold standard for sustainable forest management around the world.

Partnership at the Edge of the Agenda

We've seen it many times. Just as the first part of the agenda threatens to go on forever, the coffee arrives. With a sigh of relief, the meeting breaks and the group heads for the urn. With cups in hand, the crowd rearranges as pairs and groups form to chat. Over here, two high-up government officials from different ends of the country have their heads together. Over there, two Aboriginal reps are in heated discussion with a forest company manager and a university researcher. In another corner reps from competing companies are comparing notes. What are they discussing? It's hard to say. But you can be sure that it isn't the hockey game...not yet anyway.

Time and again, when partners and researchers get together for Network business in Board and committee meetings, workshops or conference calls, around the outside of the official agenda business is transacted, news is exchanged, connections are made and valuable ideas are passed. Folk who seldom get the chance to meet without representing their jurisdiction can converse as individuals. Many of these conversations have nowhere else to happen. Such exchanges are frequently held up as the real value of participation. Knowing this, we often build our agendas to make sure there are opportunities for exchange.

It's ironic, but even though we value highly the conversations we have around the edge of the agenda, we would have a hard time putting them on the top of our 'to-do' list, let alone fly across the country to make them possible. We need another agenda to build those exchanges around. Fortunately, to run a world-class research and knowledge exchange program we need people to get together: people from across the country, from government, Aboriginal organizations, companies, non-governmental groups and universities. Together we run a program that supports the best research in the country and sees it delivered where it is needed. The contribution is remarkable. But as good as it is, at times I wonder whether the program just provides agendas that allow the really important work to happen around the edges.

Loose ends?

Creating a Student Run HQP Association

By Henrik Hartmann
Interim Representative
SFM Network Student Association

A network can be defined as a system of things or people, woven together at regular intervals and forming knots of connection to facilitate communication and the exchange and sharing of resources within the network. There is no doubt that resources are shared and exchanged within the SFM Network.

My own Ph.D. project, investigating the potential causes of post-harvest mortality of residual tress following the selection cut, is supported with \$15,000 annually for three years by funds from the SFM Network. Without this support, my field seasons would have been short and the data sparse.

I am aware that in the past the Network has developed short courses and symposiums on various topics, organized exchanges to help students to develop new skills and knowledge in the labs or field sites of other researchers, participated in Network organized field trips and field camps and organized an Internship program. Is it now time to organize the strategic direction of these events ourselves, with the necessary administration supports from the SFM Network?

The NCE annual meeting clearly showed there is an imminent need for more communication and networking among students within and among the different networks.

Recently, I participated at the NCE (Networks of Centers of Excellence) annual meeting as the SFM Network's student representative. The NCE is a national funding program currently fostering 24 networks of excellence with the aim of developing Canada's economy and improving the quality of life of Canadians. Considering the importance of Canada's forests as an economic, ecological and recreational resource, the SFM Network has no difficulty proving that its research serves the well-being of Canadians.

As to its networking quality, there is no doubt that the Network's governance has a neatly woven structure and that it maintains well functioning interconnections with its research members and various partners. Most networks within the NCE program don't have a student run committee as is the case of the SFM Network. This means that communication, exchanges and sharing of resources, particularly important to students and HQP (e.g., participation at workshops and courses, national and international exchanges with collaborating researchers), become difficult to realize for everyone.

The NCE annual meeting clearly showed there is an imminent need for more communication and networking among students within and among the different networks. Also, since students comprise the future generation of researchers, it is particularly important that the baton be handed over seamlessly from one generation to the next and that future research needs are determined by those of us forming the future generation. It is therefore crucial that students be much more tightly linked within and among individual NCEs.

I am willing at the moment to serve as an interim representative of a new SFM Network Student Association. Please let me know if you are interested in organizing such a committee, as there is much to do for our collective benefit. There should not be any loose ends!

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Tara Bond: tara.bond@sfmnetwork.ca



SFM Network Publications

In addition to publishing its research project reports, the Network from time to time summarizes research, including its own and other sources, into critical synthesis documents and shorter research notes. In so doing, the Network is striving to make this accumulated information more accessible to both researchers and partners. Many more synthesis reports and research notes are in the works. Check the Network's website for new release announcements. (www.sfmnetwork.ca)

Detach along perforation for future reference.



The synthesis report on variable retention, for example, was particularly useful in Tembec's FSC certification.

Annie Morin, Forestry Research Partnership, Ontario

Synthesis Documents

FEBRUARY 2007

A compendium of Sustainable Forest Management Network computer simulation modeling (1995-2003).

R. Duchesneau, February 2005

A review of spatial distribution guidelines for the managed Canadian boreal forest.

S. Sougavinski and F. Doyon, March 2006

Alternative silviculture for boreal mixedwood forests of Alberta.

V. Lieffers and B. Grover, March 2004

Effect of stand versus landscape level forest structure on species abundance and distribution.

S. Hannon, January 2005

Establishing representative ecosystems within a managed landscape: an approach to assessment of non-harvestable areas.

D. Huggard, April 2004

Fire cycles and forest management: an alternative approach for management of the Canadian boreal forest.

È. Lauzon, Y. Bergeron, S. Gauthier and D. Kneeshaw, January 2007

Partnerships between First Nation and the forest sector: a national survey.

C. Hickey and M. Nelson, January 2005

Public participation in sustainable forest management: a reference guide.

T. Beckley, J. Parkins and S. Sheppard, March 2006

Traditional knowledge and sustainable forest management.

M. Stevenson, January 2005

Using the focal species approach for conserving biodiversity in landscapes managed for forestry.

S. Hannon and C. McCallum, March 2004

Variable retention harvesting: research synthesis and implementation guidelines.

R. Serrouya and R. D'Eon, April 2004

SFM Network Publications

Research Notes

FEBRUARY 2007

Soil Nutrition

1. Fire and stand nutrition in Canadian boreal forests
2. Food for thought and for forests: A look at forest nutrition
3. Organic matter: Does it matter?
4. Nutrient budgeting in Canadian boreal Forests
5. Nutrient budget for aspen forest on clay soils in west-central Alberta
6. Nutrient budgeting for jack pine plantations in Northern Ontario
7. Nutrient accounting for black spruce plantations in Northern Ontario
8. Woody debris and nutrient cycling: Should we care?
9. Drawing line in the sand: Ecosite mapping and soil nutrition
10. Managing impacts of kalmia and salal on tree growth
11. When texture matters: Compaction in boreal forest soils
12. Deadwood in Canadian boreal forests
13. Deadwood habitat in Canadian boreal forests
14. Tree nutrient availability: Concepts and interpretation
15. Dealing with diversity: Nutritional site classification
16. Forest floor: Mix, move or manage it?
17. Compaction of boreal forest soils

Tolko Tree Farm License #49 (British Columbia)

18. The TFL 49 project: criteria and indicators and a decision support system for an alternative zoning approach to sustainable forest management
19. Considering climate change in sustainable forest management
20. Modeling stand-level indicators of sustainable forest management in TFL 49

Additional Topics

21. Assessing SFM values: A tool for describing attachment to place
22. Wood-ethanol in Canada: Production technologies, wood sources and policy initiatives
23. Wood-ethanol plantations: Implications for sustainable forest management



Research, knowledge exchange workshops, and synthesis reports were cornerstones to the development of LP's long-term forest management plan.

Donna Grassia, Louisiana-Pacific Canada Ltd., Manitoba

The Network's knowledge exchange program has provided excellent tools for the transfer of information to planning and operational personnel.

Elston Dzus, Alberta-Pacific Forest Industries Inc., Alberta

Climate Change Options

Selected Network Projects

By Marvin Abugov
SFM Network



The UN Intergovernmental Panel on Climate Change (IPCC) recently hiked its rating of global warming from “likely” to “very likely,” an increase from a 60% chance to a 90% chance. While the global impacts of climate change are of interest, impacts on Canada’s forests are of even greater interest to the SFM Network and its partners. Recent Network research related to climate change has helped outline how forest management can account for carbon and the likely future impacts of climate change.

IPCC recently hiked its rating of global warming from “likely” to “very likely,” an increase from a 60% chance to a 90% chance.

SFM Network Principal Investigator **Professor Dave Sauchyn**, Prairie Adaptation Research Collaborative, University of Regina was an expert reviewer for the IPCC report. He is a lead author of Canada’s National Assessment of Climate Change to be released in 2007. He has also recently completed a report for the Alberta Vulnerability Assessment based on a new set of Climate Scenarios for Alberta developed by Barrow and Yu (2005). The report

predicts that moisture will become increasingly limited in the forested portions of Alberta. By 2080, for example, Grande Prairie could have the same moisture index value as present-day Lethbridge. With higher temperatures, insect activity will also increase.

Professor Van Lantz, SFM Network Principal Investigator, University of New Brunswick is working on the potential of addressing insect management primarily through the use of insecticides to contribute to measurable carbon stock changes in forests during the 2008-12 Kyoto commitment period. Specifically, he is assessing the cost effectiveness of investing in pest management activities for forest carbon sequestration. Using the Spruce Budworm Decision Support System, he is including insecticide spray program cost components, determining volume of carbon saved per dollar spent on various land bases and comparing cost estimates to other program options. He is also exploring long-term costs and benefits of an institutional arrangement, whereby carbon credits can be purchased by companies, and the revenues used for pest management activities.

Professor Glen Armstrong, SFM Network Principal Investigator, University of Alberta is leading research to help understand how property rights and policy mechanisms could affect forest management decisions, carbon stocks and other forest values. The team’s work is proceeding as a combination of legal analysis and landscape level modeling. For example, the research team is linking the Canadian Forest Service’s carbon budget model to a forest optimization model to inform forest management decisions when standing timber is valued as a carbon sink. Work is continuing with respect to Aboriginal rights to forest carbon, constitutional jurisdiction over forest carbon management and trading, and optimal regulatory approaches to establishing forest carbon markets.

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SFM Network Partners

GRANTING COUNCILS

- Networks of Centres of Excellence / Government of Canada
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Social Sciences and Humanities Research Council of Canada (SSHRC)

PARTNERS

Governments

- Government of Canada (Environment Canada) (Natural Resources Canada, Canadian Forest Service) (Parks Canada, Ecological Integrity Branch)
- Government of Alberta (Advanced Education and Technology) (Sustainable Resource Development)
- Government of British Columbia (Ministry of Forests and Range)
- Government of Manitoba (Manitoba Conservation)
- Government of Newfoundland and Labrador (Department of Natural Resources)
- Government of Ontario (Ministry of Natural Resources)
- Gouvernement du Québec (Ministère des Ressources naturelles et Faune)
- Government of Yukon (Department of Energy, Mines and Resources)

Industries

- Abitibi-Consolidated Inc.
- Ainsworth Lumber Co. Ltd.
- Alberta-Pacific Forest Industries Inc.
- Bowater Incorporated
- Canadian Forest Products Ltd.
- Daishowa-Marubeni International Ltd.
- J.D. Irving, Limited
- Louisiana-Pacific Canada Ltd.
- Manning Diversified Forest Products Ltd.
- Tembec Inc.
- Tolko Industries Ltd.
- Weyerhaeuser Company

NGO

- Ducks Unlimited Canada

Aboriginal Groups

- Gwich'in Renewable Resource Board
- Heart Lake First Nation
- Kamloops Indian Band
- Kaska Tribal Council
- Little Red River Cree / Tallcree First Nation

- Métis National Council
- Moose Cree First Nation
- Treaty 8 First Nations of Alberta

Institutions

- University of Alberta (host institution)
- Concordia University
- Dalhousie University
- Lakehead University
- McGill University
- Memorial University of Newfoundland
- Mount Royal College
- Royal Roads University
- Ryerson University
- Thompson Rivers University
- Trent University
- Simon Fraser University
- Université de Moncton
- Université de Montréal
- Université de Sherbrooke
- Université du Québec à Chicoutimi
- Université du Québec à Montréal
- Université du Québec à Rimouski
- Université du Québec à Trois-Rivières
- Université du Québec en Abitibi-Témiscamingue
- Université Laval
- University of British Columbia
- University of Calgary
- University of Guelph
- University of Lethbridge
- University of Manitoba
- University of New Brunswick
- University of Northern British Columbia
- University of Ottawa
- University of Regina
- University of Saskatchewan
- University of Toronto
- University of Victoria
- University of Waterloo
- University of Western Ontario
- University of Winnipeg
- Wilfrid Laurier University

Affiliated Members

- Canadian Institute of Forestry
- Forest Ecosystem Science Cooperative, Inc.
- Forest Engineering Research Institute of Canada (FERIC)
- Lake Abitibi Model Forest
- Manitoba Model Forest
- National Aboriginal Forestry Association

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10% POST-CONSUMER FIBER

Vision

The forests of Canada will maintain their extent, diversity and ecological vitality and be managed in a manner that will provide for the broad social, cultural and economic needs of all Canadians.

Mission

The Sustainable Forest Management Network is a national partnership in research and training excellence. Its mission is to deliver an internationally recognized, interdisciplinary program that undertakes relevant university-based research. It will develop networks of researchers, industry, government and First Nations partners, and offer innovative approaches to knowledge transfer. The Network will train scientists and advanced practitioners to meet the challenges of modern natural resource management.

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