



e-Bulletin

The Great Lakes Forestry Centre (GLFC)



Climate Change Adaptation: Federal and Provincial forest researchers consider science and policy needs for the future

Overview

Climate change scenarios suggest that Canadian forests will face significant changes in coming decades; however, the uncertainties inherent in climate change projections challenge the ability of resource managers to confidently predict how forests will function in the future.

Climate change scenarios suggest that Canadian forests will face significant changes in coming decades; however, the uncertainties inherent in climate change projections challenge the ability of resource managers to confidently predict how forests will function in the future.

On September 25, 2007, over 40 researchers and forestry experts, representing NRCan-CFS and the Ontario Ministry of Natural Resources, gathered at the Great Lakes Forestry Centre to discuss climate change adaptation from both a national and provincial perspective.

Participants used the opportunity to identify and debate an extensive list of the most pressing climate change science and policy considerations requiring attention in the coming years. As a result of workshop discussions, numerous potential collaborative research initiatives were identified to help bridge some of the science and policy knowledge gaps impeding climate change adaptation. The cooperative relationship between the two levels of government was further strengthened during the workshop by commitments that were made to continue sharing and exchanging research data, information and resources as climate change adaptation research continues to evolve.

GLFC Researchers Influence Forest Management Policy

Overview

The White River Riparian Harvesting Impacts Project (WRRHIP) is turning heads within Canada's forestry sector. In July 2007, Great Lakes Forestry Centre researchers Dave Kreutzweiser and Steve Holmes led a two-day field tour of the research site where they are examining partial harvesting within riparian areas of boreal forest streams.

The White River Riparian Harvesting Impacts Project (WRRHIP) is turning heads within Canada's forestry sector. In July 2007, Great Lakes Forestry Centre researchers Dave Kreutzweiser and Steve Holmes led a two-day field tour of the research site where they are examining partial harvesting within riparian areas of boreal

forest streams. Their key research question: can harvesting be conducted in a manner that is compatible with environmental protection objectives for sustainable forest management?

In virtually all jurisdictions across Canada, riparian areas receive special management attention, often in the form of restricting harvest through the application of buffers. In Ontario, legislation requires that forest management emulate natural disturbance. Although riparian buffers are premised on the protection of aquatic systems from upland forest disturbance, the systematic application of these buffers can result in unnatural patterns, age class distributions and species composition across the landscape.

WRRHIP research is ongoing, and continues to compare baseline and post-harvest data for a number of riparian features including habitat complexity, songbird communities, stream habitat quality, water quality, and organic inputs and biomass production within water bodies. To date, the WRRHIP research has shown no significant negative impacts to the ecological integrity of the study sites, suggesting that partial harvesting within riparian areas may be a viable policy option for resource management in certain boreal forest conditions.

Is it worthwhile to plant trees for wood and carbon values in southern Ontario?

Overview

*Denys Yemshanov, Daniel McKenney, Saul Fraleigh and Steve D'Eon, all of the Canadian Forest Service, recently published a paper that examined the financial attractiveness of plantations of three different species across southern Ontario. Three species, red pine (*Pinus resinosa* Ait.), Norway spruce (*Picea abies* L.) and black walnut (*Juglans nigra* L.), were selected because they represent the different choices that typically face landowners in the south.*

Denys Yemshanov, Daniel McKenney, Saul Fraleigh and Steve D'Eon, all of the Canadian Forest Service, recently published a paper that examined the financial attractiveness of plantations of three different species across southern Ontario. Three species, red pine (*Pinus resinosa* Ait.), Norway spruce (*Picea abies* L.) and black walnut (*Juglans nigra* L.), were selected because they represent the different choices that typically face landowners in the south.

The authors developed growth and yield models, site suitability maps, and several management scenarios for each species and then reported on the economic attractiveness with and without carbon values. There is growing interest in including carbon sequestration values in financial analyses of forest plantation investments. To make the results more real to potential investors they reported several outcomes including net present values (NPV), internal rates of return (IRR) and break-even prices. For wood-value only scenarios, the IRRs range from 4.3 - 4.6% for red pine and 3.4 - 3.6% for Norway spruce. Even the somewhat slow-growing black walnut had rates of return 3.5 - 3.7 % for the most attractive 10000 ha area.

Adding carbon valued at Cdn \$3.4 per metric ton CO_{2-e} (roughly 2005 prices in the Chicago Climate Exchange) increased rates of return by about 0.6% for red pine and Norway spruce and 0.4% for black walnut scenarios. Perhaps surprisingly these returns are comparable and in some cases better than 20-year rotation hybrid poplar plantations. To achieve a 6% real rate of return break-even carbon prices were \$10.7/t CO_{2-e} for red pine, \$12.6/t CO_{2-e} for Norway spruce and \$17.2/t CO_{2-e} for black walnut (again for the “best” 10000 ha). The results

suggest that these longer-rotation species may be a better investment than was perhaps previously expected if landowners have the appropriate site conditions.

For further information: Yemshanov, D.; McKenney, D.; Fraleigh, S.; D'Eon, S. 2007. An integrated spatial assessment of the investment potential of three species in southern Ontario, Canada inclusive of carbon benefits. *Forest Policy and Economics* 10: 48-59.

Please note access to the full text of this article will depend on your personal or institutional entitlements. If you cannot access this website contact [Dan McKenney](#) for a pdf copy.

GLFC recent publications

If you would like to order any of the publications listed below, please contact Publications at the following e-mail address: glfc.publications@nrcan.gc.ca

Holmes, S.B.; Pitt, D.G. 2007. Response of bird communities to selection harvesting in a northern tolerant hardwood forest. *Forest Ecology and Management* 238: 280-292.

Holmes, S.B.; Venier, L.A.; Naylor, B.J.; Zimmerling, J.R. 2007. A test of Ontario's Habitat Suitability Matrix as a forest management planning tool for forest birds. *The Forestry Chronicle* 83: 570-579.

Kreutzweiser, D.; Good, K.; Chartrand, D.; Scarr, T.; Thompson, D. 2007. Non-target effects on aquatic decomposer organisms of imidacloprid as a systemic insecticide to control emerald ash borer in riparian trees. *Ecotoxicology and Environmental Safety* 68: 315-325.

Kreutzweiser, D.P.; Nicholson, C.L. 2007. A simple empirical model to predict forest insecticide ground-level deposition from a compendium of field data. *Journal of Environmental Science and Health B42*: 107-113.

McKenney, D.W.; Pedlar, J.H.; Lawrence, K.; Campell, K.; Hutchinson, M.F. 2007. Beyond traditional hardiness zones: Using climate envelopes to map plant range limits. *Bioscience* 57: 929-937.

McKenney, D.W.; Pedlar, J.H.; Lawrence, K.; Campell, K.; Hutchinson, M.F. 2007. Potential impacts of climate change on the distribution of North American trees. *Bioscience* 57: 939-948.

Upcoming Events

Evolving Challenges and Changing Expectations for Forestry Extension and Technology Transfer: Meeting needs of people and forests around the globe (An IUFRO-sponsored extension symposium) 21st - 26th September 2008 Mattawa and Ottawa, Ontario, Canada.

Subscribe/Unsubscribe

To subscribe or unsubscribe or to receive future issues of this bulletin electronically, visit
http://cfs.nrcan.gc.ca/e-bulletin?lang=en_CA

Contact us/Reader feedback

Great Lakes Forestry Centre
1219 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
email: glfc.ebulletin@nrcan.gc.ca