

Ideas on the Edge

Divining a Forest's Future

GOOD FOREST MANAGEMENT DEPENDS ON SEEING THE FUTURE. LAKEHEAD UNIVERSITY RESEARCHER ELLIE PREPAS IS DEVELOPING SOFTWARE THAT HELPS MAKE IT POSSIBLE.

Dr. Ellie Prepas is looking into forest streams in northern Ontario, and seeing 200 years into the future.

as levels of suspended solids, and the nutrients phosphorus and nitrogen.

Dr. Prepas and her team have installed data-collecting instrumentation and small control structures at ten remote sites. The equipment enables them to gather highly accurate information about flow rates and water temperature in the streams under varying conditions, as well

RESEARCH THAT MATTERS
REAL-WORLD BENEFITS FOR ONTARIANS:

- More effective and efficient use of forest resources, leading to a more competitive forestry industry.
- Preservation of the natural environment.

Data from the ten sites is crucial to the creation of a piece of software that will enable the development of very long-term forest management plans. Because such plans can cover very long periods, the dynamics involved are complex and interconnected, particularly with regard



to water. Harvesting practices affect water resources and water resources affect the amount of timber that can be harvested.

This is where Dr. Prepas' software comes in. At the heart of the application will be a model that reflects all the key dynamics of a northern Ontario forest watershed—a term referring to any area drained by a single system of streams or rivers. The model is based on information from the stream sites as well as weather data and observations of soil, vegetation and key indicator animal species. Forestry companies and government regulators will be able to plug differing harvest scenarios covering periods of up to 200 years into the application, and see what the long-term environmental effects are likely to be.



DR. ELLIE PREPAS

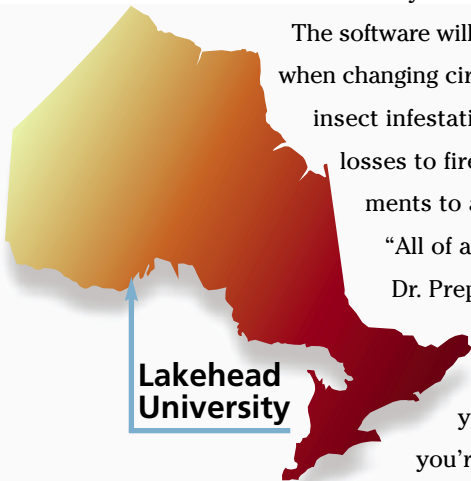
The software will be particularly useful when changing circumstances— an insect infestation, for example, or losses to fire—demand adjustments to a management plan. “All of a sudden,” explains Dr. Prepas, “you have to reassess how you’re going to collect your wood and where you’re going to collect it from, and what the effects will be. And in addition, you have to have a reasonable tool to project how the forest

is going to come back.” The new modeling software will do all of that.

Several forestry companies are enthusiastically partnering with the Lakehead initiative. So are representatives of the Ontario government; the new software will be a valuable resource for developing forestry regulations.

“In the end,” says Dr. Prepas, “everyone wants to have responsible management of the environment. But you can’t do that unless you have the tools.”

Project: Infrastructure for Watershed Integrated Nutrient Study Sites in the Boreal Forest
Institution: Lakehead University
Research Sector: Environment
Principal Investigator: Ellie Prepas
Trust Investment: \$365,696
ORF Investment: \$164,991
CFI Investment: \$530,687
Total research investment from all sources: \$1,340,752



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Infrastructure for Innovation About the Ontario Innovation Trust

The Ontario Innovation Trust was created in 1999 by the Government of Ontario to invest in research equipment and facilities at Ontario’s universities, colleges, hospitals and other non-profit research institutions. The Trust is governed by a volunteer Board of Directors, according to the terms of a Trust agreement established by the Ontario government. A small permanent staff looks after day-to-day operations.

Since its inception, the Trust has committed almost \$843 million to strengthen Ontario’s position in the global marketplace of ideas. This represents more than a third of the \$2.44 billion in total funding that has been invested in Trust-supported projects.