



# Northern Notes

Canadian Forest Service • Northern Forestry Centre



## Welcome to Northern Notes!

Welcome to the first issue of *Northern Notes*, the first of two new newsletters from the Northern Forestry Centre (NoFC), Edmonton, Alberta.

*Northern Notes* will keep you up-to-date on our latest developments in forest research. Each issue will have brief highlights on four current NoFC research projects. Later this year, we will be launching *Insights*, which will provide more in-depth information on a recently completed research project or publication.

NoFC is one of five regional laboratories of Natural Resources Canada's Canadian Forest Service. The centre's 120 employees provide leadership for national initiatives and scientific knowledge and expert advice to the forest industry, provincial/territorial governments and other federal departments primarily in the three Prairie Provinces and the Northwest Territories.

Our key areas of research are wildland fire, ecosystem processes, climate change, and land reclamation.

We hope you will enjoy reading about our latest developments, but mostly we hope that you will benefit from some of the latest and leading forestry research.



Forest fire (Photo: NRCan)

## BlueSky Canada

Every year Canada typically experiences 8,000 forest fires, resulting in the evacuation of dozens of communities due to smoke. Health alerts impacting the lives of millions of Canadians are issued each summer, indicating the negative health effects of smoke exposure. Industries and tourism are also significantly affected by smoke.

Researchers from the Canadian Forest Service, BC Ministry of Environment, Parks Canada and the University of British Columbia, developed BlueSky Canada, based on a system originally developed by the US Forest Service. This is a national smoke forecasting system that provides agencies and the public with current and forecast conditions of smoke and expected exposures to fine particulates.

A national forecasting system will better inform the public, health protection agencies and hospitals, fire management agencies, and other federal, provincial and territorial departments across Canada, by

predicting and assessing the risk of smoke from wildland fires up to 48 hours in advance.

Health agencies will be able to make informed decisions on whether or not to evacuate communities, as well as provide alerts to the public on ways that they can reduce their exposure and risk to smoke. This interactive tool can also help fire managers plan prescribed burning operations to reduce the potential risk of a wildfire starting, or to minimize the size of a fire once it starts.

This work was supported by the Canadian Safety and Security Program (CSSP-2012-CP-1182) which is managed by Defence Research and Development Canada's Centre for Security Science.

Wildfire smoke forecasts are available at:

[www.firesmoke.ca/forecasts](http://www.firesmoke.ca/forecasts)

**Researcher: Kerry Anderson**  
[Kerry.Anderson@NRCan-RNCan.gc.ca](mailto:Kerry.Anderson@NRCan-RNCan.gc.ca)

# Northern Notes

Canadian Forest Service • Northern Forestry Centre



*Aspen die-back (Photo: Ted Hogg)*

## A Simple Soil Moisture Index

Tree ring studies have shown that drought is a major factor governing growth of aspen (*Populus tremuloides Michx.*) forests in western Canada. Researchers at the Canadian Forest Service, Alberta Environment and Sustainable Resource Development, and other Canadian universities and federal departments are studying how drought affects the productivity and health of aspen (poplar) forests across western Canada.

From looking at aspen tree-rings and weather station records, the researchers found that aspen growth is stimulated for up to 5 years following periods of abundant precipitation. They tested this idea by building a computer model that predicts how changes in temperature and precipitation affect soil moisture conditions within aspen forests.

The soil moisture model was remarkably successful in explaining the past year-to-year variation in aspen growth based on tree-rings. The researchers expect that this model will provide a useful tool for assessing and forecasting the impacts of drought on the productivity of aspen and other forest types under a changing climate.

One of the key outputs of this research was the development of a useful indicator called the "Soil Moisture Index" (SMI) which can be used to produce maps of drought severity across Canada's forested regions. An advantage of the SMI is that it can also be used to track seasonal droughts in winter-wet regions such as the west coast of BC and eastern Canada.

**Researcher: Ted Hogg**  
[Ted.Hogg@NRCan-RNCan.gc.ca](mailto:Ted.Hogg@NRCan-RNCan.gc.ca)

## First Nations Wildfire Evacuation Partnership

Aboriginal people comprise only 4% of the Canadian population, but are affected by almost 1/3 of wildfire evacuations that take place in any given year. In 2011, for example, thousands of residents in 35 Aboriginal communities in Alberta, Saskatchewan and Ontario were evacuated due to fire, smoke or power outages caused by wildfires. Although evacuations are always logistically complex, the remote locations and social and cultural characteristics of Aboriginal communities make them more challenging for emergency officials.

In order to better understand how Aboriginal residents and communities are affected by wildfire evacuations, researchers at the Canadian Forest Service (CFS) and the University of Alberta are partnering with First Nation communities in Ontario, Saskatchewan and Alberta that were evacuated due to recent wildfires, as well as with agencies responsible for conducting or providing support during these evacuations. Their goal is to help identify ways to reduce negative impacts of wildfire evacuations on Aboriginal people.

First Nations communities have primary responsibility for evacuating their local residents. The results of this research may assist them to better prepare for and carry out future evacuations. This research partnership may also enhance relationships between partnership members and develop a shared understanding of the impacts of wildfire evacuations on Aboriginal residents.

Funding organizations include the Social Sciences and Humanities Research Council (SSHRC), the Alberta Centre for Child, Family, and Community Research, and the Canadian Circumpolar Institute.

**Researcher: Amy Christianson**  
[Amy.Christianson@NRCan-RNCan.gc.ca](mailto:Amy.Christianson@NRCan-RNCan.gc.ca)

Aussi en française

To subscribe to *Northern Notes*, please contact:

Ray Darwent, Natural Resources Canada, Canadian Forest Service,  
Northern Forestry Centre, Edmonton, AB, Canada

780-435-7279 • [northern-nord@nrca.gc.ca](mailto:northern-nord@nrca.gc.ca) • [www.nrca.gc.ca/forests](http://www.nrca.gc.ca/forests)