

# F O R E S T R Y

PACIFIC FORESTRY CENTRE

VOL.17 NO. 1 1990



## *Living Forests ...Giving Forests*

National Forest Week May 6-12, 1990



Forestry Canada Forêts Canada



# Ecoclimatic Regions of Canada

by Barbara Quaale

**I**n the early 1980s, the Ecoregions Working Group of the Canada Committee on Ecological Land Classification began efforts on a publication that would take almost half a decade to complete. The result was an 118-page document and map on the Ecoclimatic Regions of Canada (ERC), published in 1989.

The working group consisted of professionals from several federal and provincial government agencies across Canada. Among them were the Pacific

Forestry Centre's Ed Oswald and John Senyk. Their contribution to the report included information from the Canada and B.C. Land Inventory as well as 11 years of previous Ecological Land Classification research in the Yukon Territory. They mapped and described the ecoregions, drew the boundaries in northern B.C. and Yukon Territory, provided several photographs used in the descriptions, and edited the map and text.

According to the report, the ERC "attempts to describe roles and influences that climate has had in molding...our (Canada's) ecosystems."

"What it is," said Dr. Oswald. "is a broad partitioning of land into ecologically similar areas."

The whole point to the ERC report, according to Dr. Oswald, is to provide students and national planners with information on the interactions within wide-ranging ecosystems.

"You can't get down to local management with a map of this scale," said Mr. Senyk.

The map has 10 ecoclimatic provinces ranging from Arctic to Grassland, with a total of 74 ecoclimatic



Ed Oswald (left) and John Senyk examine a copy of "Ecoclimatic Regions of Canada".

regions delineated at a scale of 1:7,500,000.

"It gives you some basis for national planning; big picture sorts of things like planning major transportation corridors, pipeline alignments, etc.," said Mr. Senyk.

In drafting the map, consideration was given to other ecologically based national maps such as Forest Regions, Wetland Regions, Permafrost, Agricultural Zones, and Canada Land Inventory Resource Capability, and physiographic, soil and climate maps.

Previously, scientists looked at land and classified it. This group compiled such classification information and generated new data on large scale ecosystem types. Now, the ERC report gives guidance as to why the land supports one particular vegetation or

*It gives you some basis for national planning; big picture sorts of things like planning major transportation corridors, pipeline alignments . . .*

wildlife ecosystem instead of another. Land types are grouped according to similarity in water regimes, soil types, plant growth, succession patterns and so on.

Forest managers can know beforehand how useful a management practice is likely to be for a given area based on what responses a similar area had to the same method.

Researchers can examine likely impacts of global temperature increases or decreases on different areas by looking at warmer or cooler regions of similar ecosystem types. They can also investigate

what economic impact such changes would have by looking at different land uses.

Dr. Oswald added that the information will be useful for secondary and university students, particularly those interested in geography. The report will also be used by scientists from other countries to gain better knowledge of what Canada has in the way of renewable resources and terrain.

For example, if Norway or Sweden wanted to import commercially valuable tree seeds, they would need to know what sort of terrain or ecosystem supported the trees in Canada. They would then find a similar ecosystem, if possible, in their own country.

Though both Mr. Senyk and Dr. Oswald enjoyed working with scientists from various different disciplines, it was not the chief point of their efforts.

"Probably the publication of the document is most significant," said Dr. Oswald. "Making the information available to those who need it."

Copies of "Ecoclimatic Regions of Canada" are available free of charge from: Sustainable Development Branch, Environment Canada, Ottawa,



# Acid Rain

**W**ho will stop the rain?—acid rain, that is. Twenty-five Canadian delegates attended the international U.S.

National Acid Precipitation Assessment Program (NAPAP), conference to find out.

The conference was held on Hilton Head Island, South Carolina, last February. More than 650 scientists from at least 25 countries came to review NAPAP's past ten years of research into causes, effects and control of acid rain.

During the conference, the Canadian Department of the Environment gave the delegates an overview of Canada's position on acid rain.

## Canadian Acid Rain Report Summary:

### Aquatic Effects:

- thousands of eastern Canadian lakes have suffered serious damage due to acid rain.

- aquatic organisms are damaged when acidity levels measure below pH 6.0.

- more than 14,000 rivers and lakes in eastern Canada are acidified (pH level below 5.0).

- 13 historically plentiful salmon rivers in Nova Scotia no longer support salmon.

- researchers conclude damage will continue until acid levels drop to the point which watersheds can tolerate.

### Forest Effects:

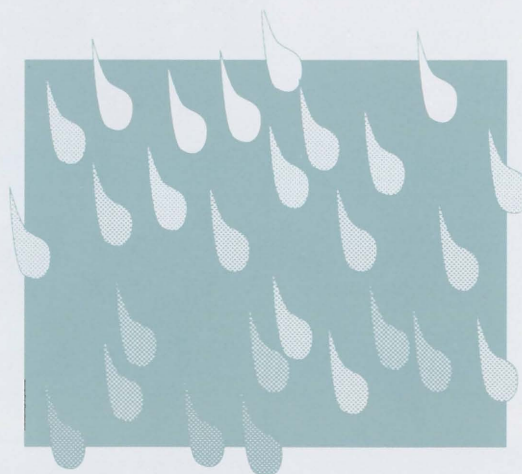
- acid rain may be a contributing factor in some forest decline.

- sugar maple decline has occurred in Quebec and Ontario.

- white birch decline has occurred in New Brunswick.

- both decline areas received moderate to high levels of acid rain and relatively high concentrations of ground level ozone.

- forest decline may result from accelerated nutrient leeching in soils and increased susceptibility to disease and climatic stresses in the trees.



### Health Effects:

- research indicated adverse health effects as the result of increased levels of sulphuric acid aerosols, ground level ozone, and other air pollutants.

- two Canadian studies discovered an average two percent decrease in lung function in more polluted areas.

- increased frequency of asthma attacks and bronchitis are associated with higher levels of air pollution.

### Property Effects:

- corrosion and deterioration is occurring to heritage and other buildings partly as a result of acid rain.

- acid rain has a significant roll in stone weathering.

- increased corrosion rates caused by acidic compounds has decreased over the last 30 years.

- negative effects on paints is also proven.

### Conclusions:

- the technology exists to significantly reduce sulphur dioxide emissions from the major sources.
- research shows about 50% of acid rain in eastern Canada originates in the United States.

- in 1980, 3.8 million tonnes of sulphur dioxide flowed into Canada from the United States, only 15% less than the total Canadian emissions in the region.

- regional reduction in emissions will lead to a nearly proportional reduction in acid rain.

- Canada has implemented an acid rain control program which will reduce emissions 50% by 1994.

## Major B.C. Forestry Book Released

A new textbook entitled "Regenerating British Columbia's Forests" - a comprehensive educational text on the theory and practice behind forest renewal in British Columbia has just been released.

Until now foresters, forest workers and forestry students in British Columbia have had to rely on texts written for other parts of Canada and the United States. The wide variety of forest types and huge scale of forestry and reforestation operations in British Columbia have made it difficult to have B.C.'s information needs met by these sources.

This book provides silviculturalists with a broad reference to the science and technology of reforestation in British Columbia - the single most diverse forest region in North America.

"Regenerating British Columbia's Forests" will assist those responsible for planning reforestation projects to reach informed decisions and will challenge them to consider primarily the biological factors basic to reforestation success rather than the short term costs and production technology.

Although its main audience is the practising forester and forestry students of British Columbia, the text will be of considerable interest to foresters in other parts of Canada, the United States and Europe who manage reforestation.

The book was authored by more than 50 academics and foresters and edited by a small team led by Dr. Dennis Lavender, head of forest sciences at the University of British Columbia. This book includes 22 chapters covering all phases of reforestation from history through planning and development, to integrated resource management. It is published by the University of British Columbia Press and retails for \$25.95.



# OPEN HOUSE 1990

**25<sup>th</sup>** Anniversary  
1990



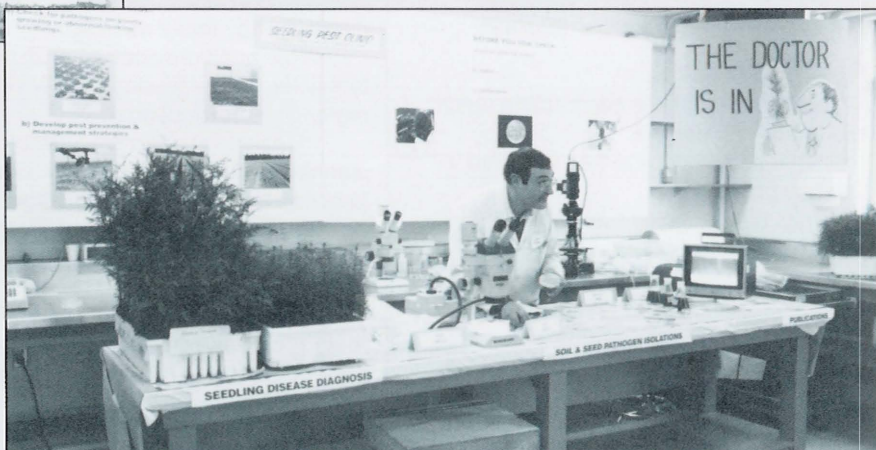
Doug Linton tells of the ins and outs of bark beetles to some high school students.



Director General Dr. John Drew looks on as Forestry Minister Frank Oberle and Michel Champagne cut the 25th Anniversary cake.



Friends and former colleagues got together for PFC's 25th Anniversary, February 15, 1990. From the left: Boie Myher, Lorne Ebell, and Mell Hughes.

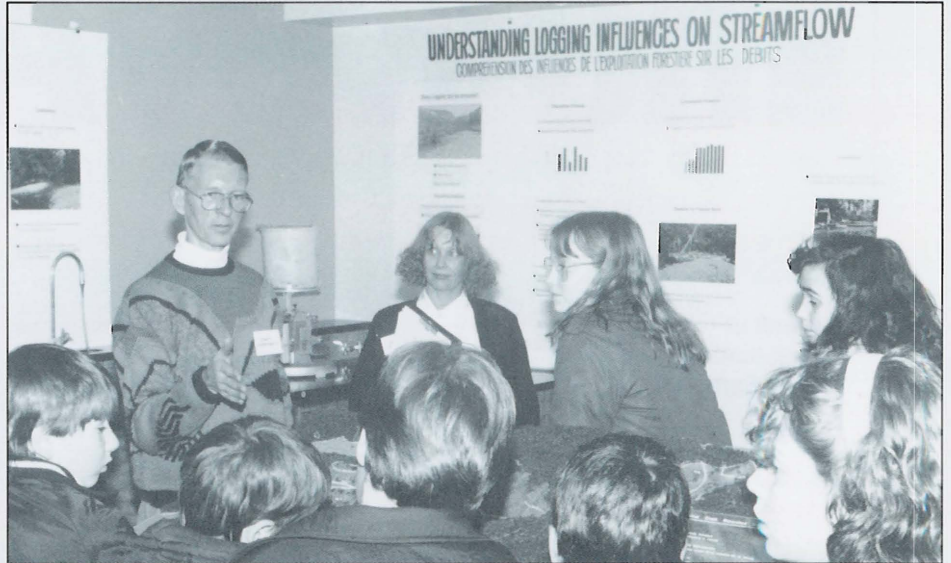


Tree doctor John Dennis examines disease samples at his Open House display in the PFC greenhouse.





Smokey the Bear said hello to hundreds of small children during the public days of Open House.



Dr. Eugene Hetherington describes research findings on the effects of logging on water flow to a school tour.



Dr. Rene Alfaro explains pest impacts on forests to a group of school children.



Director General Dr. John Drew and Minister of Forestry Frank Oberle sign the certificate commemorating the coming into force of the Department of Forestry Act.

**The Pacific Forestry Centre** celebrated its 25th anniversary on February 15, 1990. To help celebrate this silver jubilee event a 7-day Open House was staged. Among those who toured the Centre were thousands of school children who explored over 35 exhibits and displays. Special events were planned for former employees, with the highlight of the week being a visit by the new Minister of Forestry, the Honourable Frank Oberle and his parliamentary assistant Michel Champagne, M.P.

Photo Credits: Tamara Fraser, Doug Taylor, Barbara Quaale.



# "The Way Ahead"



**Council of  
Forest Industries of  
British Columbia**

With major participation by:



**Forestry  
Canada**

**Forêts  
Canada**



**Province of  
British Columbia**

**Ministry of  
Forests**



The **1990 Forest Sector Conference** will show participants **The Way Ahead** for the forest sector by dealing with vital issues such as:

- sustainable development
- land use
- timber supply
- access to international markets
- new technologies
- and much more



Attend the **1990 Forest Sector Conference** to hear the latest on these issues from leading national and international speakers.

Attend our companion event, **Wood Expo'90**, the largest forest industry trade show in Canada and western North America.

**Vancouver Trade and  
Convention Centre**

**September 26-28, 1990**

☐ Please send me \_\_\_\_\_ package(s)  
of program and registration information  
on **1990 Forest Sector Conference**

☐ Please send me \_\_\_\_\_  
package(s) of information  
on **Wood Expo'90**

**1990 Forest Sector Conference**

303-134 Abbott Street  
Vancouver, B.C.  
V6B 2K4

Tel: (604) 688-0189  
Fax: (604) 688-1573

Name

Title

Company/Organization

Address

City

Province/State

Country

Postal/Zip Code

Telephone

Fax





# Publications and Papers

## A conceptual model of spruce beetle population dynamics

L. Safranyik, C. Simmons and H.J. Barclay

A forest-based conceptual model of spruce beetle population dynamics was developed based largely on the collective hypotheses, experience and intuition of the bark beetle research team at P.F.C.

BC-X-316

## Site index equations for black spruce and white spruce in the Yukon

R.V. Quenet and G.H. Manning

The procedures employed for site index equations follow the two-stage method of developing site index equations and curves from stem analysis data described in the literature.

BC-X-317

## Forest insect and disease conditions, British Columbia & Yukon 1989

C.S. Wood and G.A. Van Sickle

Compiled from field report and other records, this summary of forest pest conditions highlights pests that are or may become major forest management problems.

BC-X-318

## Fertilization and thinning effects on a Douglas-fir ecosystem at Shawnigan Lake: 15-year growth response

E.R. Gardner

This report documents the 15-year growth response of a Douglas-fir stand to thinning and urea fertilization. The initial treatments were carried out when the stand was 24 years old. Growth responses were analyzed on a per

hectare, individual tree, crop tree, and tree size class basis.

BC-X-319

## The Canadian Forest Fire Danger Rating System: An Overview

B.J. Stocks, B.D. Lawson, M.E. Alexander, C.E. Van Wagner, R.S. McAlpine, T.J. Lynham and D.E. Dube

This paper, reprinted from the Forestry Chronicle - December 1989, briefly outlines the history and philosophy of fire danger rating research in Canada discussing in detail the structure of the current CFFDRS and its application and use by fire management agencies throughout Canada.

Copies of these publications may be obtained by filling out the enclosed card and returning it to the PFC Information office.

## UPCOMING CONFERENCES OF INTEREST

### Recent Advances in Pest Management

October 22-24, 1990  
Water Town Inn  
Sault Ste. Marie, Ontario

The second in a series: "Advances in Canadian Forest Research" under the auspices of the Canadian Institute of Forestry.

Contact: Peter de Groot, Forestry Canada, (705) 949-9461

### National Conference on Canada's Timber Resources

June 3-6, 1990  
Victoria Conference Centre  
Victoria, B.C.

Co-sponsored by Forestry Canada and the B.C. Ministry of Forests. Purpose is to review and improve our knowledge of Canada's forests, and the prospects of sustained yield and sustainable development in the future up to the year 2050. Conference chairman: Gordon Baskerville, Dean of Forestry, University of New Brunswick

## Staff Changes

### Welcome to:

#### Janice Hodge



Janice made Forestry Canada history by becoming the first female ranger with the Forest Insect and Disease Survey (FIDS) team. Janice is a forest technical graduate from Sir Sanford Fleming College in Ontario. She took additional courses from the University of Alberta and Lakehead University. Janice will be located in Summerland for the summer/early fall (see page 8).

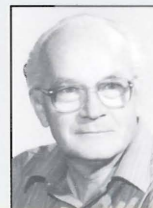
#### Ray Fautley



Ray Fautley joined PFC as FRDA Implementation Officer joining us from Forestry Canada's Saskatchewan District office where he served as District Manager. Mr. Fautley will oversee the finalization of FRDA I over the next two years. He has a B.A. and B.Sc. in geography studies from the Universities of Saskatchewan and Regina and has co-authored several publications.

### Goodbye to:

#### Dr. Alvin "Al" Funk



Dr. Al Funk, mycologist and research scientist at PFC since 1958, retired recently after a forestry career that spanned nearly 40 years. Dr. Funk is recognized as an authority on the microfungi of western trees and authored two books used widely in labs and universities in identification and teaching of forest fungi - "Parasitic Microfungi of Western Trees" and "Foliar Fungi of Western Trees".



# 1990 Forest Insect and Disease Survey Assignments



**PETER KOOT**  
Kamloops  
372-1241



**JANICE HODGE**  
Summerland  
494-8742



**LEO UNGER**  
Wasa  
422-3465



**JOHN VALLENTGOED**  
New Denver  
358-2264



**BOB FERRIS**  
Prince George/  
Cariboo 963-7238



**ROD TURQUIST**  
Prince George  
963-7394



**ROD GARBUTT**  
Smithers  
847-3174



**ALAN STEWART**  
Terrace  
635-7660



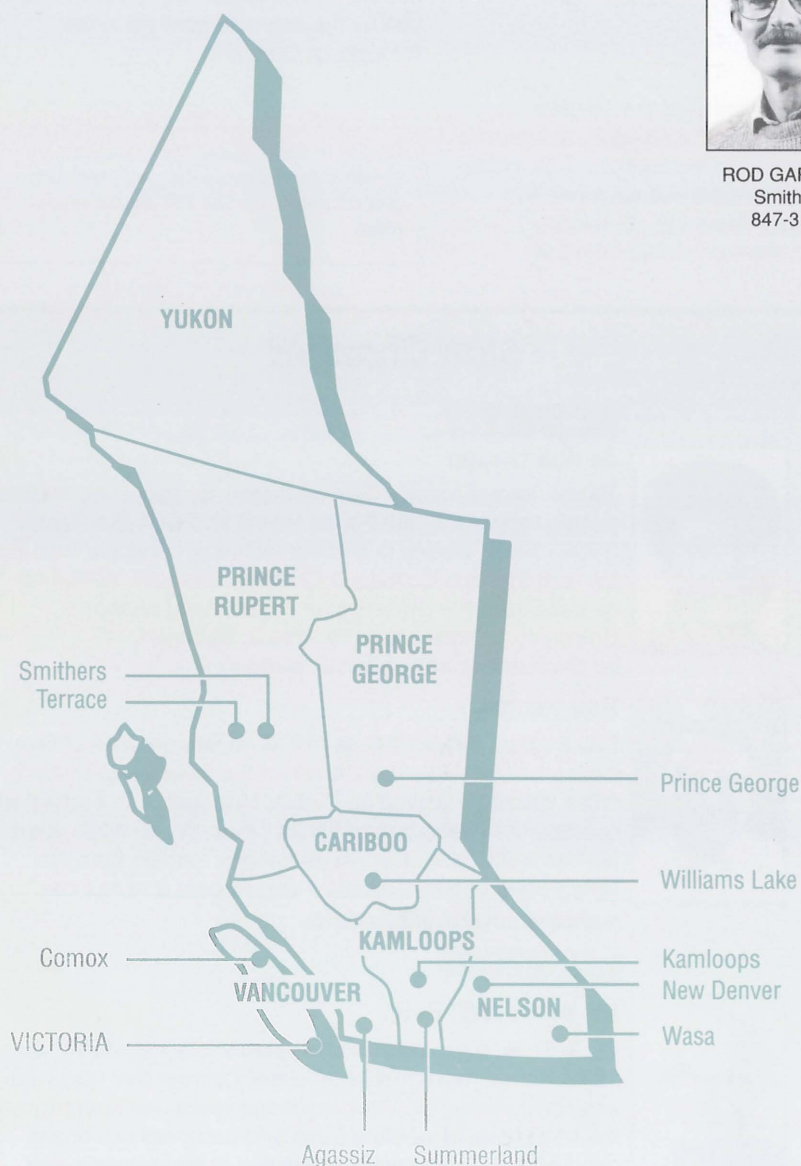
**NICK HUMPHREYS**  
Agassiz  
796-2042



**DENNIS CLARKE**  
Victoria 388-0600  
Comox 339-4722



**BOB ERICKSON**  
Williams Lake  
392-6067



## INFORMATION FORESTRY

Published by  
Forestry Canada  
Pacific and Yukon Region  
Pacific Forestry Centre  
506 West Burnside Road  
Victoria, B.C. V8Z1M5  
388-0600

Editor: Elaine Teske  
Design: John Wiens

Canada