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Information

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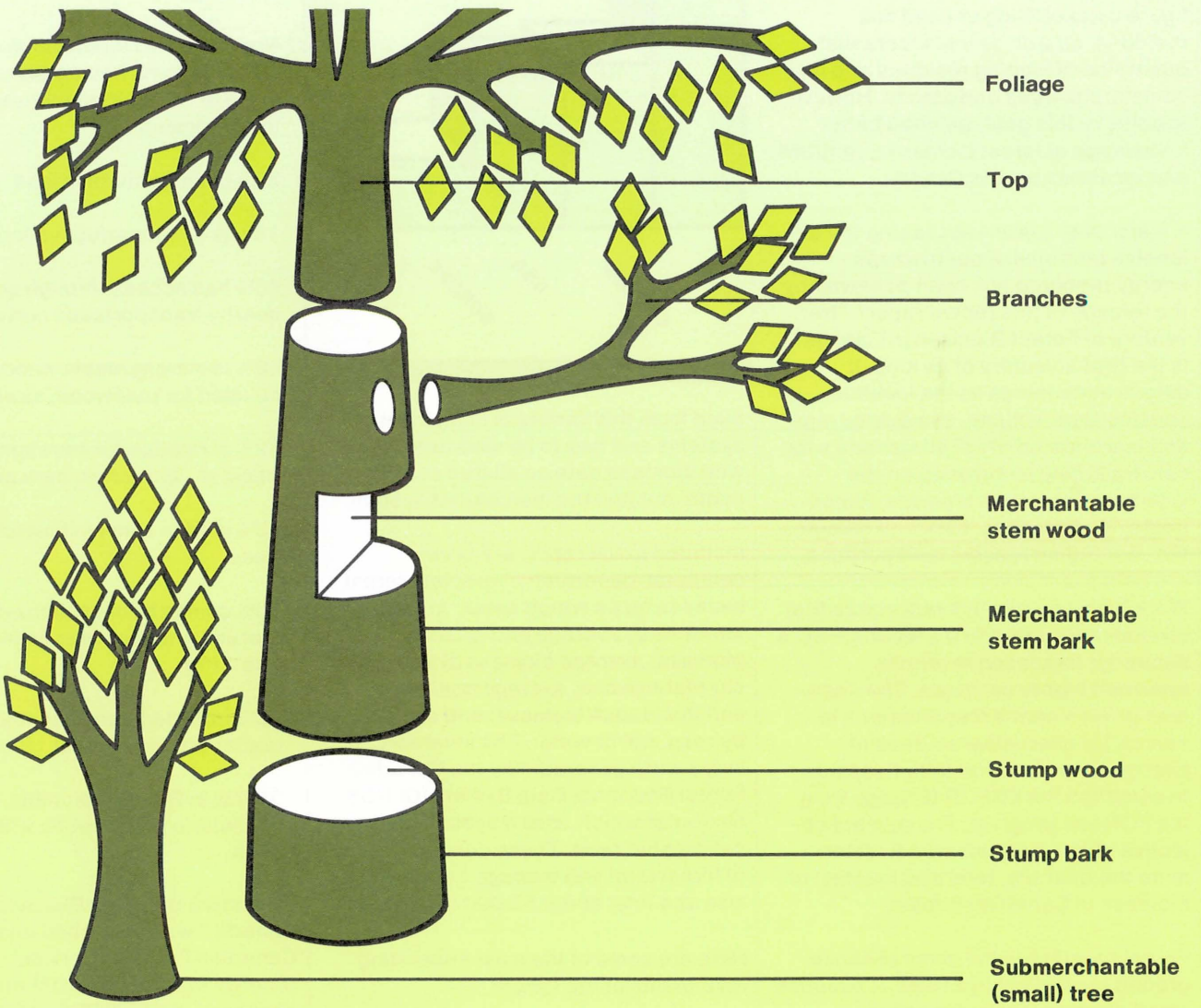


Biomass components

(See Page 2)

Government of Canada
Gouvernement du Canada
Canadian Forestry Service
Service canadien des forêts

CANADA'S FIRST INVENTORY OF FOREST BIOMASS COMPLETED

by Christopher Holt

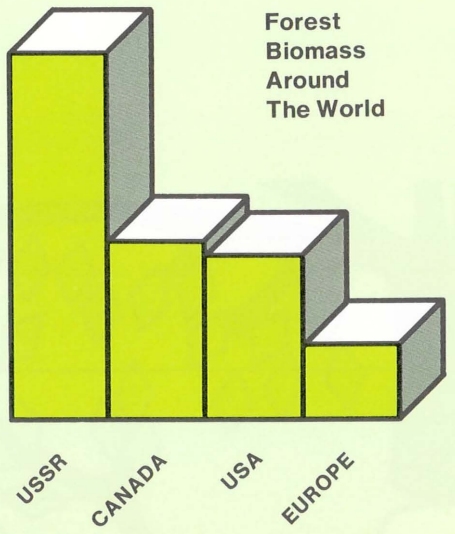
Canadian's derive about 4% of their total energy supply from forest biomass. According to the Pacific Forestry Centre's **G.M. "Mike" Bonnor**, author of, "Inventory of Forest Biomass in Canada", we can readily double this figure by exploiting unused mill residues, as well as the substantial quantities of logging residues and non-commercial trees and stands. However, to achieve this goal, we need better knowledge of forest biomass quantities and locations across Canada.

A major step toward accessing the extensive potential of our biomass energy resource has been achieved by the release of this recent report. "Inventory of Forest Biomass in Canada" is the first inventory of its kind. It details such things as the location, species type, volume, site quality, age and merchantability of all Canada's forests including summaries on the volumes of the eight biomass components, ie., branches, bark and foliage etc., excluding reserve land portions.

Work leading up to this report was first started in the late 1970's when OPEC's desire for increased revenues spawned higher oil prices. The Canadian government's response was to search for alternative sources of energy. One of its first initiatives was to establish the ENFOR (ENergy from the FORest) program. The primary objective of this program was to determine the quantity, form and location of biomass in Canadian forests.

Forest biomass is the mass of above ground portions of live trees. It includes small diameter trees, branches, foliage, bark and bole; but excludes dead trees and branches, roots and non-woody vegetation.

The biomass data presented in the report is based on existing forest inventory data supplied by various provincial and territorial forest inventory agencies across the country. The data was compiled from this variety of classification systems and had to be modified to provide biomass data on all tree components, not just the merchantable stem.



Included in the report are seven computer-generated choropleth forest biomass maps which detail: area of forest land; average and total forest biomass; average biomass of nonmerchantable wood; average coniferous and deciduous biomass; and access by road, rail or water. The inventory maps were generated by the Canadian Forest Resource Data System (CFRDS) computer which uses a system of geographic cells. These cells are areas of forest land and average 140 km^2 in size and total about 50 000 in Canada.

Here are some of the most interesting revelations of the report:

* The total amount of forest biomass in Canada exceeds 26 billion tonnes and is equivalent to 82 billion barrels of oil, or enough to meet Canada's energy requirements for the next 151 years.

* This 26 million tonne figure excludes biomass on forest lands reserved for purposes other than wood fibre production and harvesting, eg., federal parks. For these lands, no figures are available.

* Non-reserved forest lands comprise 411 million ha having a forest biomass of 25.3 billion tonnes. Of this total biomass:

  82% is on productive land.

  18% is on unproductive forest land.

  60% has access through some nearby transportation corridor.

  49% is merchantable wood, i.e., it can be used for pulpwood, sawlogs, etc.

  32% is residue for merchantable trees, ie., branches, bark and foliage.

  19% is from small submerchantable trees.

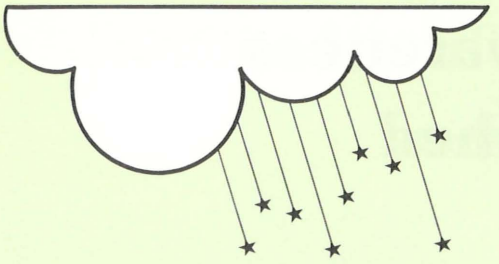
  80% comes from coniferous species (spruce and pine predominate at 35% and 17%)

  20% from deciduous species (aspen/-poplar predominate at 10%)

  38% is in British Columbia, followed by Ontario and Quebec with 17% each.

"Inventory of Forest Biomass in Canada," was published under the Canadian Forestry Service's ENFOR (Energy from the Forests) program in cooperation with FORSTATS, the former Forestry Statistics and Systems branch of the CFS.

Anyone wishing a copy of this report may obtain one by ticking off the appropriate box on the enclosed postcard and mailing it back to the P.F.C. ■



ACID RAIN — NO THREAT TO B.C., YET!

About half of Canada's productive forests are threatened by acid rain, says the Economic Council of Canada in its 1986 annual review called "Changing Times". It also warns that most of the accessible mature timber stands for use as forest products will be depleted in 60 years. The report points out that there is a need, in some provinces, for more vigorous action to protect the environment and to encourage sound forest management practices.

In response to the very definite threat to Canada's forests the Canadian Forestry Service (CFS), established the Acid Rain National Early Warning System (ARNEWS) in 1984. This system included the establishment of over 100 standardized forest plots across the country to detect and monitor possible changes due to acid rain.

Although not currently significant, there are signs of an emerging acid rain problem in B.C. Several million hectares of forest in B.C. are being significantly exposed to air pollution which includes sulphur dioxide (SO_2); nitrogen oxides (NOX) and hydrocarbons, the precursors of ozone.

According to Dr. **Allan Van Sickle**, Head of the Pacific Forestry Centre's (PFC) Forest Insect and Disease Survey (FIDS), which is one of the groups involved in monitoring acid rain in B.C., "there is potential for a significant problem."

PFC's Forest Insect and Disease Survey unit has set up 15 ARNEWS plots in B.C. including: Shawnigan Lake; UBC Research Forest, Haney; Saltspring Island; Campbell River; Castlegar; Penticton; Prince George; Terrace; Chilliwack; Cottonwood, Quesnel; and the various Vancouver area watersheds.

> The predominant source for long range air pollution is the Puget Sound Area

"These ARNEWS plots have been set up to collect baseline information on the effects of acid rain, so that in the event of damage we will have something to refer to. By regular monitoring we will have an idea of the history of damage being done," said Dr. Van Sickle.

Some of the information being collected from the plots includes the concentration of foliar and soil elements, foliar condition and tree growth.

Data collected indicates the rates of acid deposition averages 20-30 kg ha/year for sulphur dioxides and 10-20 kg ha/year for nitrogen oxides in the southern ARNEWS plots, while those plots in the north record lower average rates of 0-10 kg ha/year for sulphur dioxides and 0-10 kg ha/year for nitrogen oxides. As well as monitoring the 15 ARNEWS plots in B.C., FIDS rangers are also examining trees in their permanent CFS sampling areas.

Acid rain in B.C. is caused by both local and transboundary emissions. Pulp mills, natural gas processing, lead/zinc smelting and the burning of oil in industrial plants are the major sources of SO_2 in B.C., while automobile emissions are the largest source of NOX. Vancouver is the major source of the nitrogen oxides and hydrocarbons responsible for the elevated levels of ozone found in southern B.C. forests.

The largest single source of SO_2 emissions in B.C. is the Cominco smelter in Trail which releases 23 000 tonnes/year into the atmosphere; but according to Dr. Van Sickle, "The major source of air pollution is not the relatively few point source emitters in B.C. The predominant source for long range air pollution is the Puget Sound Area."

Sulphur dioxide emissions in the Puget Sound Area total 100 000 tonnes/year while the lower mainland produces a total of 25 000 tonnes/year. Rainfall on the west coast, coming in from the Pacific, usually has a pH level of 5.6 — this is the normal acidic level for precipitation. Storm systems moving northward from the Puget Sound area, are however, characterized by much lower pH levels (indicating acidity); contributing to the average pH rainfall level in Vancouver of 4.77* and the significantly lower level in Victoria of 4.4*.

B.C. emits about 205 000 tonnes of sulphur dioxide per year (1982), making up 5% of the nation's total. In 1978 it was estimated that B.C. was ranked fourth in the country for the emission of nitrogen oxides, an estimated 173 000 tonnes representing 9% of the nation's total.

Through close monitoring of the B.C. ARNEWS plots, the CFS is taking a large step forward in ensuring up-to-date data on acid rain is available upon which forest management decisions can be made to protect the province's number one resource.

* (Atmospheric Environment Service data) ■

National Forestry Awareness Campaign Launched

January 1987 marked the launching of a $4 million National Forestry Awareness Campaign that is designed to instil in Canadians a sense of pride of ownership and a sense of responsibility for Canada's forests. The campaign will emphasize the importance of the forestry sector and forest management.

A national poll conducted in January 1986 showed that most Canadians are not aware of the importance of forestry to their economic and social well being. The main target audience of the campaign is the group that was identified as least well informed about the forestry sector, the 18- to 44-year-old urban adult.

The campaign is a joint project undertaken by the Canadian Council of Forest Ministers, which is made up of the federal, provincial and territorial ministers responsible for forestry. The Council is supported by a team of federal and provincial communications specialists, with advice from a consortium of advertising, promotion and public relations firms.

A theme of international trade has been chosen for the campaign. All regions of Canada are involved in trade, with more than 70% of Canada's forest products being exported.

There will be two phases to the campaign. The first, from January to April 1987, will be national in scope and will build credibility and profile for the forestry sector. It will focus on identifying the components of the forestry sector for the general public and challenges facing the sector. The second, from September to November 1987, will focus on specific regional issues and challenges and how they are being managed.

Advertising will be the largest component of the campaign, accounting for $3.6 million. Public relations, promotion and documentation will account for the remaining $0.4 million.

In the first phase of the campaign, advertising will comprise a series of four 30-second television commercials and four two-page magazine ads. The ads will feature noted international figures who will highlight the importance of Canadian forest products to their countries and stress the need for Canada to stay ahead of its competitors through aggressive marketing, up-to-date technology and increased research. Advertising in the second phase of the campaign will take the form of newspaper ads supported by television and focusing on regional forestry issues.

The public relations component of the campaign will ensure that Canadian leaders are well informed of the economic value and international importance of our forestry sector. It will be aimed at key individuals within the business and academic communities, politicians and members of the news media, as well as individuals within the forestry sector.

Promotional activities included the launching of the campaign in January at the Canadian Pulp and Paper Association meeting in Montreal, with a festive sound and light show by Michel Lemieux, a Canadian artist of International renown. In addition, information will be mailed to 300 000 employees in the forest industry, and there will be activities to augment National Forest Week (May 3-9), as well as field tours for members of the news media.

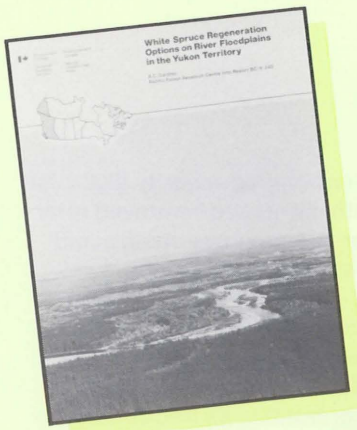
The documentation component of the campaign will provide support and additional information through the production of written and audio-visual material designed for various target groups.

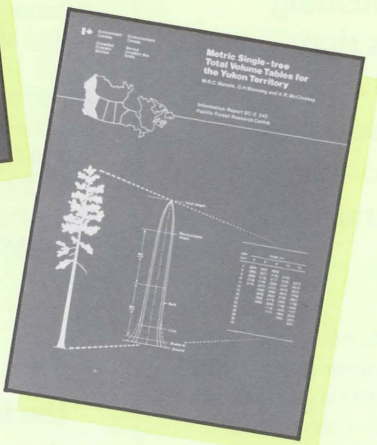
The campaign is an unprecedented cooperative effort on the part of our federal, provincial, and territorial governments to increase awareness of the value of our forests and the importance of forest management. All Canadians stand to benefit from this campaign, for the forest industry is essential to our economic and social well being. ■

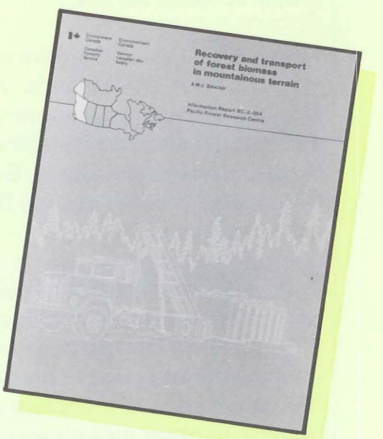
PRINCE GEORGE OFFICE OPENED

Present at the opening of the new CFS district office in Prince George are the Hon. Gerald Merrithew, Minister of State (Forestry and Mines), centre; Lorne McCuish, M.P. (Prince George-Bulkley Valley), left; and, Ross Macdonald, Regional Director-General, right.

Publications







New Publications

Forest insect and disease conditions — British Columbia & Yukon, 1986

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

This summary of forest pest conditions in British Columbia and Yukon Territory in 1986 highlights pests that are, or may become, major forest management problems.

BC-X-287

Forest insect and disease conditions in Canada, 1985

Publication contains a national overview of major forest insects and diseases with special emphasis on those pests which are likely to significantly affect the forest economy or environment.

Oldies but Goodies

White spruce regeneration options on river floodplains in the Yukon Territory

A.C. Gardner

White spruce regeneration options were replicated for two years on two sites. Results of these plantings are detailed in this report.

BC-X-240

Metric single-tree total volume tables of the Yukon Territory

M.R.C. Massie, G.H. Manning and K.R. McCloskey

Metric single-tree volume tables are presented for the four major tree species in the Yukon Territory. Total inside-bark stem volume is shown as a function of total height and outside-bark diameter breast height.

BC-X-242

Metric single-tree weight tables for the Yukon Territory

G.H. Manning, M.R.C. Massie and J. Rudd

Metric weight tables, by component, are presented for the four major tree species in the Yukon Territory.

BC-X-250

Recovery and transport of forest biomass in mountainous terrain

A.W.J. Sinclair

Field tests were conducted to document the costs and productivities of conventional and integrated systems for recovering and transporting roadside biomass in mountainous terrain.

BC-X-254

B.C. Forestry Awareness Poll Released

Reforestation is the number one forest policy priority with British Columbians and should be the number one priority of industry and government as well, say 68% of respondents in a recent province-wide survey.

These findings, and others on forestry issues in British Columbia, were part of a public opinion poll recently conducted for the Canadian Forestry Service, funded under the Canada/British Columbia Forest Resource Development Agreement (FRDA).

This is the first comprehensive opinion poll on the forest industry conducted in B.C. since 1978. The objectives included determining current preceptions of the importance of the forest industry in relation to other industries in the province, and assessing attitudes towards specific forest-related issues such as the use of pesticides and the co-existence of logging and other uses such as recreaton and wildlife.

The poll, conducted in mid-June, canvassed 1,000 residents, 18 years of age or over, in all regions of the province, on a number of forest-related issues. Summarized below are some of the findings:

— Reforestation is the number one forest policy priority with British Columbians and should be the number one priority of industry and government as well, say 68% of respondents.

> Almost two-thirds said forestry was important to the economic security and prosperity of their households.

> The overwhelming consensus is that logging and other industrial uses of the forest can co-exist with other potential uses.

— 62% of all respondents identified forestry as the number one industry in B.C. Tourism ranked second at 22%, fishing and hi-tech tied for third at 4% and mining came in fourth at 3%.

— Almost two-thirds of respondents (65%) said forestry was important to the economic security and prosperity of their households.

— The majority of respondents feel it is the industry's responsibility to make the largest investments in forestry — 45% say investments should come from industry versus 20% from provincial government and 17% from federal government.

— The majority identify economic benefits — jobs or products as the most important benefit. Just one in three British Columbians feels that the most important public benefit from forestry is the preservation of the provincial heritage or its wildlife.

— The overwhelming consensus (83%) is that logging and other industrial uses of the forest can co-exist with other potential uses, supporting the multiple use concept.

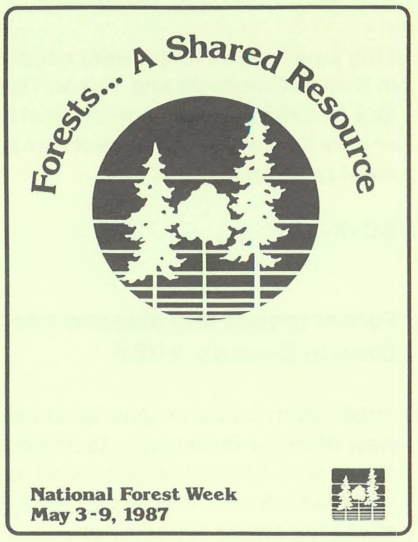
— On the issue of using chemicals in the forest, some 73% said spraying of the forest is justified if the resource was at stake.

— An overwhelming majority (83%) felt that with increased/improved reforestation the province could avoid future shortages of wood.

— Close to 60% of the sample characterized their use of the forest lands for recreational use such as hiking or hunting as frequent, however, membership in outdoor groups or organizations was low (12%).

> 73% said spraying of the forest is justified if the resource was at stake.

Copies of the poll are available by indicating appropriate box on mailback postcard enclosed in this issue of "Information Forestry". ■



CFS Scholarships & Research Grants Awarded U.B.C.

Eleven students enrolled in graduate studies at the University of British Columbia's Faculty of Forestry were recently presented with Canadian Forestry Service scholarships totalling $127,600. Dr. **Lorne Greenaway**, M.P. (Cariboo-Chilcotin), Parliamentary Secretary to federal Forestry and Mines Minister **Gerald S. Merrithew**, made the presentation.

Dr. Greenaway also took the opportunity to present the Faculty of Forestry with a $173,000 cheque for research. This sum represents half of the $346,000 research subsidy presented the Faculty of Forestry by the Canadian Forestry Service. Under this program more than $2 million will be divided equally in 1986-87 among the six Canadian universities with forestry departments.

The scholarships, each worth $11,600, were awarded under the Canadian Forestry Service's Human Resources program.

The forestry scholarship program was established in 1983 to promote higher education in Canadian universities offering graduate and post-graduate programs in forestry. Some 50 forestry students from the six Canadian universities with forestry departments will receive financial support this year.

The scholarships and the research grants are just two of the programs under the Canadian Forestry Service's Human Resources program. Other elements include student employment programs, research and development contracts to universities and upgrading of CFS professional staff skills. ■

Dr. Greenaway (l) presents C.F.S. cheque for $173,000 to Robert Kennedy, Dean, Faculty of Forestry, UBC.

New Data Bank in Silviculture

As foresters, researchers, etc., optimal utilization of existing information could help you to answer questions related to silvicultural practices such as: Is spring more efficient than autumn for reforestation? Who has data concerning the growth of Balsam fir? What factors control the natural regeneration of White birch or Black spruce? What is the best fertilizer for Jackpine and what is the optimal concentration? Answers for these questions require time, money and a considerable amount of research. However, nowadays a new convenient solution is available to you.

In fact, a new data bank dealing with silviculture has been built up by **Jacques Bélanger** and **André St. Pierre** of the Faculty of Forestry and Geodesy at Laval University in collaboration with the Quebec Department of Energy and Natural Resources, the Canadian Forestry Service and the Association of Forest Industries of Quebec. This could provide you with extensive information quickly.

This data bank is microcomputerized and includes descriptions of studies, publications and reports in silviculture carried out in 143 000 permanent and semipermanent sample plots and published by the federal and provincial governments and forest companies since 1920. With this system it is now possible to pick up people involved in various silvicultural fields and get acquainted with their experimental results. Finally, it is also possible to identify data or plots for particular needs.

This system is easy to use and the directions are thoroughly explained in a user's guide. You need an IBM-PC and the software DBASE III to operate it. You can order a complete kit of this data bank including two floppy disks and the documentation for $55 and possibly save several months of work. For any further information you may contact:

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Faculté de Foresterie et Géodésie
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Sainte-Foy, QC G1K 7P4
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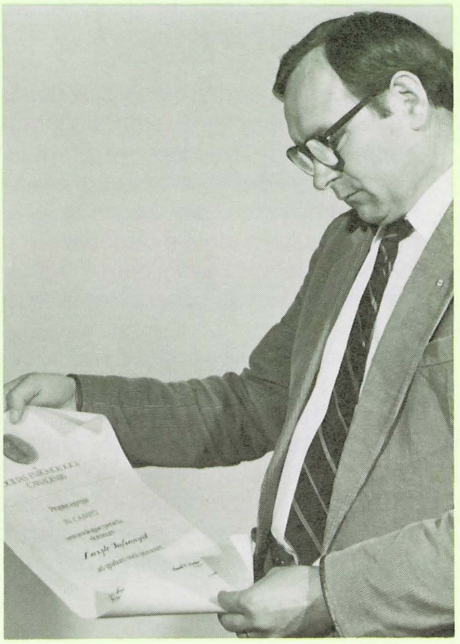
Entomological Fellowship Awarded Safranyik

The Pacific Forestry Centre's Dr. **Laszlo "Les" Safranyik** was recently awarded one of two "fellowships" at the Entomological Society of Canada national meeting held in Winnipeg last October.

Dr. Safranyik was given this special recognition for his valuable contribution to the science of entomology by the oldest scientific society in Canada, founded in 1863. Dr. Safranyik is an internationally recognized authority on the population dynamics and management of bark beetles and joins the ranks of the 89 "fellows" of the society, becoming one of only 12 forest entomologists to receive this award.

Dr. Safranyik's research has contributed greatly to the understanding of mountain pine beetle and spruce beetle population dynamics. Through his input into the development of the regional forest protection plan, Dr. Safranyik has had a major influence on both the regional and national bark beetle research programs of the CFS. Some of his developments include a sampling technique that can be used to assess the effectiveness of pheromone-based suppression programs against major bark beetle species; the development of the first hazard rating system for mountain pine beetle based on climatic variables and the development of management guidelines that can be used to reduce losses.



Dr. Safranyik

Dr. Safranyik has 52 publications to his name of which 33 have been refereed. He has also authored/co-authored 12 special reports, 18 internal technical documents and three scientific publications were produced from research directed by him.

Dr. Safranyik has served on two national task forces, on the executive boards of four scientific societies, and as the chairman of an interagency committee on mountain pine beetle. He was elected in 1976 as the leader of the International Union of Research Organizations (IUFRO) Working Party: Integrated Control of Scolytid Bark Beetles. He has also held offices in the Entomological Society of B.C. and the Western Forest Work Conferences.

Congratulations Dr. Safranyik! ■

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