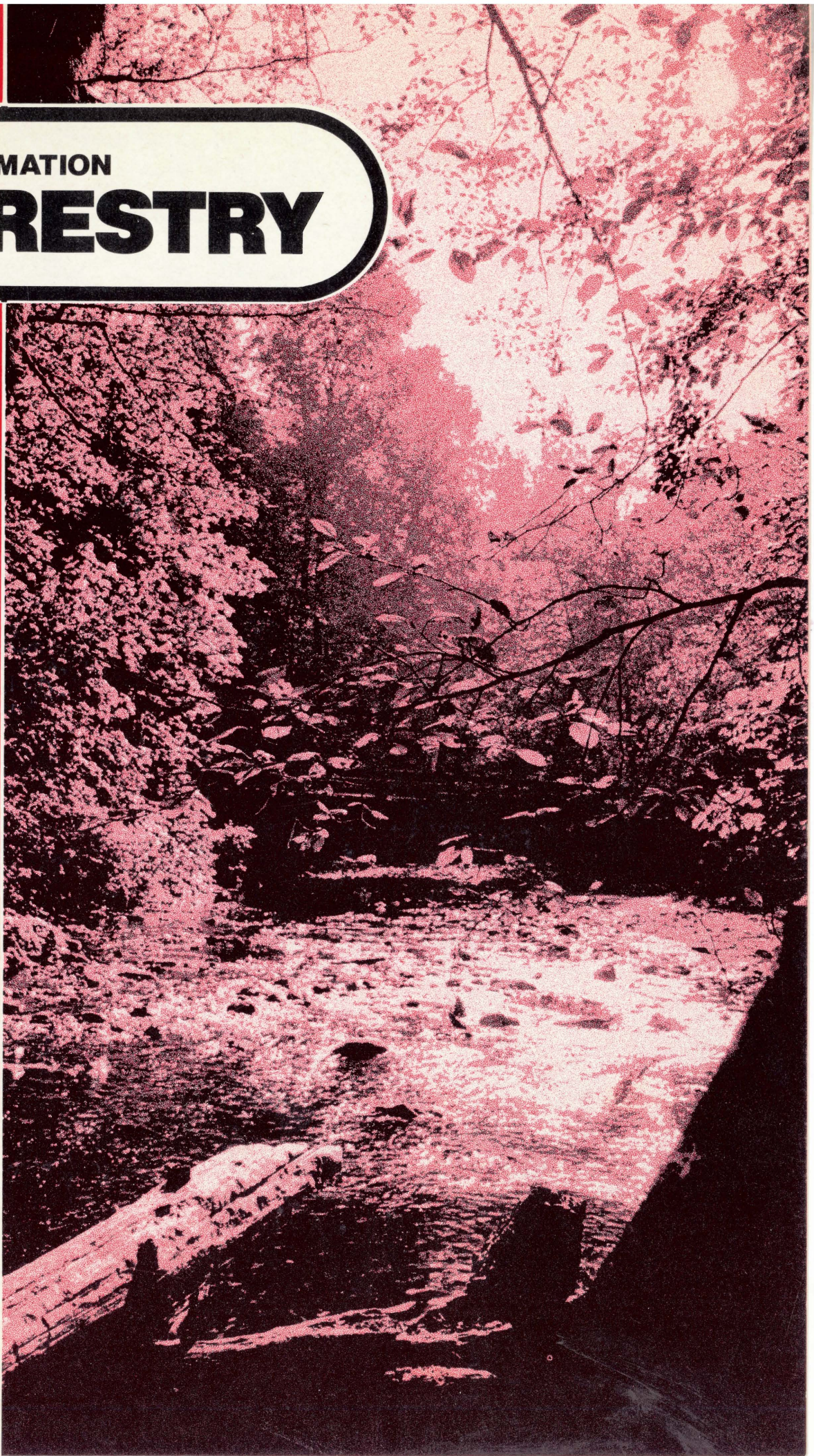


INFORMATION  
**FORESTRY**



Pacific Forest Research Centre

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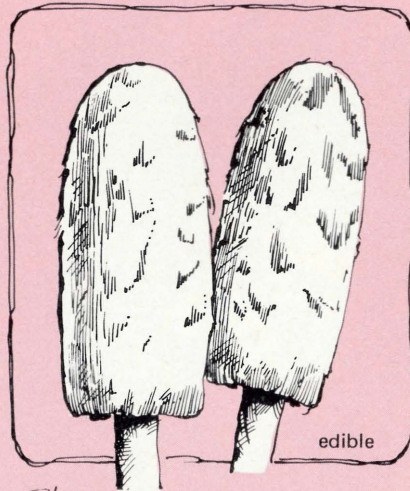
# Mushrooms are Forestry!

by  
Dr. Al Funk

All nature lovers are familiar with the great profusion of mushrooms that pop up in the forest as the fall season progresses. Somehow their ephemeral appearance suggests that they are not an important part of the scene, and even their names suggest they are related rather to an unknown half-world of goblins and magic. Few people realize that they have several essential roles in the forest, performing jobs that no other living thing is equipped to do; and some people do not know accurately what a mushroom is or how it performs its job.

What is a mushroom? It is merely the fruit of the "fungus plant" that produces "seeds" (spores) and then fades away. The "fungus plant" itself consists of an unseen network of microscopic threads (mycelium) that interpenetrates the habitat—soil, wood, duff, etc. Unlike the fruit that passes away quickly, the mycelium persists, often for many years, doing its job and sending up its annual crop of mushrooms.

What are the jobs that the mushroom performs? The most obvious work is in the area of recycling. Vast amounts of forest debris (fallen trees, branches, leaves, etc.) are continually being turned back to the elements and cleared from the forest floor. Imagine, if you can, a forest in which no debris decays, building up year after year to make an almost inaccessible fire hazard, not to mention the lack of recycled minerals for continued growth of the trees. The group of mushrooms responsible for recycling have the power to penetrate and break-down lignin and cellulose by enzymatic action.



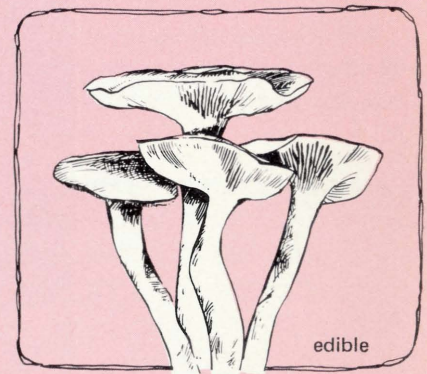
*Shaggy mane*

edible



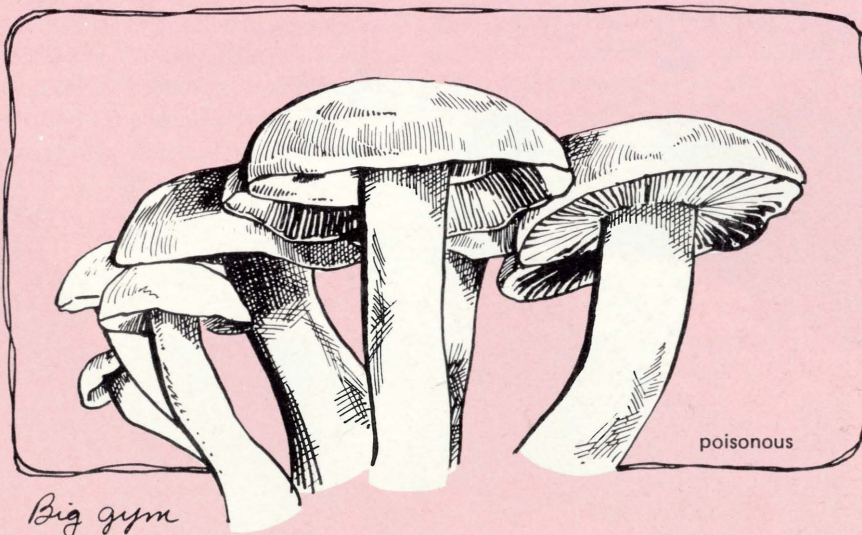
*Panther amanita*

poisonous



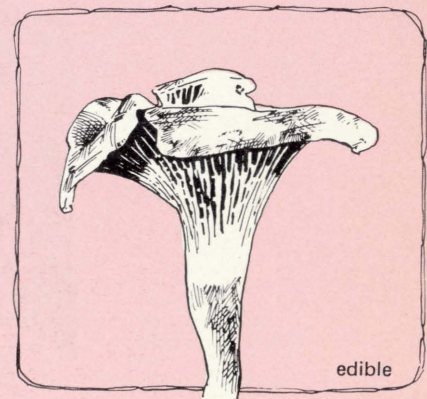
*Fried Chicken mushroom*

edible



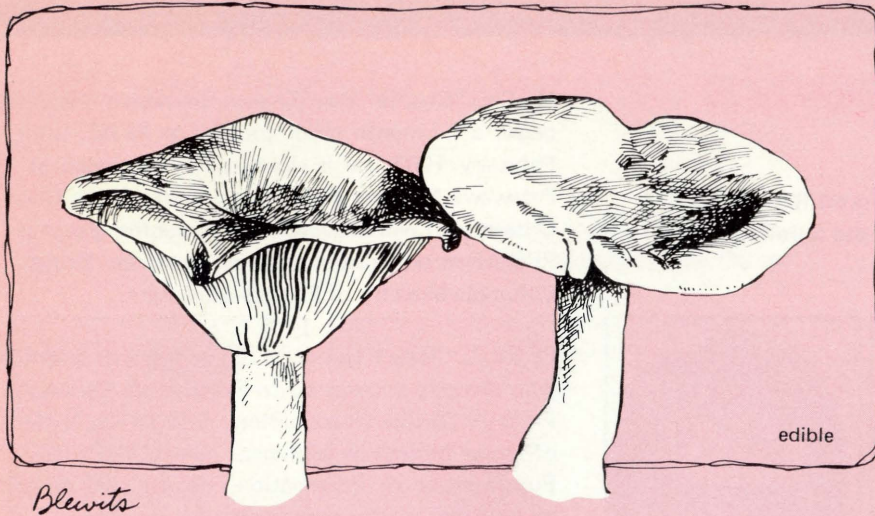
*Big gym*

poisonous



*Chanterelle*

edible



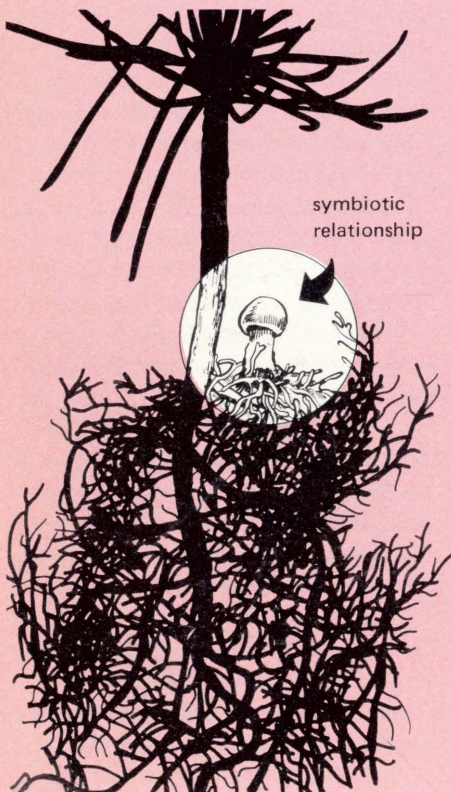
Blewits

Another group of mushrooms form a partnership with the roots of the living trees. This symbiotic relationship, known as mycorrhiza (= fungus root), is not obvious to the casual observer, but if roots are exposed, it can be seen that the fungus has woven a mantle about the roots. Through this mantle and its widespread network of mycelium, the fungus does the job of

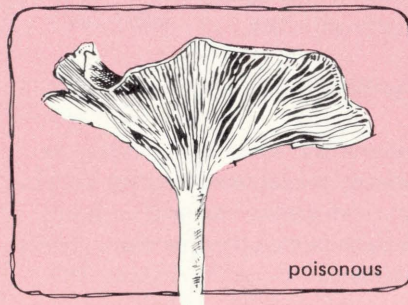
absorbing water and minerals for the tree. The tree is greatly benefitted by this relationship, but the fungus also "takes its pound of flesh", using up to 10% of the tree's photosynthate to produce its crop of mushroom fruits.

In a few cases, mushrooms have turned to a parasitic existence and cause root rot and decay of living trees. The "Shoestring Mushroom" (*Armillaria*) is one of these, usually attacking weakened trees and then spreading out by means of black, stringlike rhizomorphs to neighboring trees.

The bonus of gastronomic value for human consumption is also being realized, as the Chanterelle and Pine mushrooms are gathered commercially. The casual collector is warned, however, that mushrooms are not to be taken for granted and that, without accurate identification, there could be "death in the pot".



symbiotic relationship

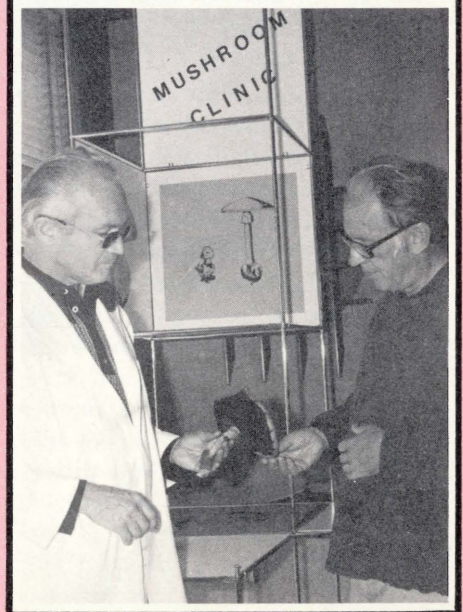


Sweat-producing clitocybe

### About the Author

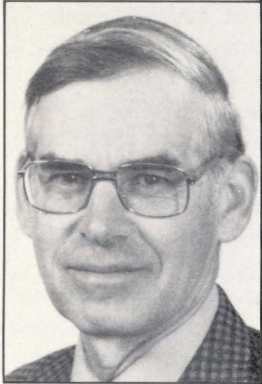
Alvin Funk is a forest mycologist who has served 25 years with the Pacific Forest Research Centre, specializing in stem diseases of native western trees. He became interested in the microfungi while employed with the National Research Council, Saskatoon and subsequently entered the graduate school of the University of Toronto where he received a Ph.D. in mycology and plant pathology. His latest publication "Parasitic Microfungi of Western Trees", published earlier this year, describes all known microfungi associated with stem diseases of western trees and is fully illustrated by drawings and photographs. Copies are available on request by referring to publication BC-X-222.

Dr. Funk (left) conducts annual mushroom clinics throughout the province, advising amateur mushroom pickers on their finds. He has also been called upon by hospitals to advise on antidotes for those who do not heed his warning—"If in doubt, don't eat it".



## New Appointments

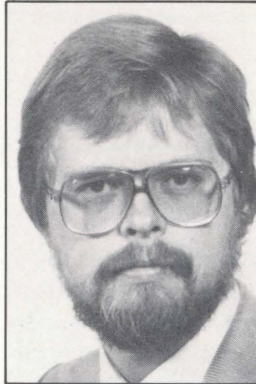
D. Ross Macdonald, Director, Pacific Forest Research Centre, announces the appointment of the following people:



Charlie Van Wagner



Mike Hulme



Terry Shore

Mr. C.E. "Charlie" Van Wagner, fire research scientist, began a six-month work transfer at PFRC, until February 1983. He is permanently stationed at Petawawa National Forestry Institute, Chalk River, Ontario, but will be working with the fire group at PFRC and on joint studies involving the British Columbia Ministry of Forests while here.

Dr. M.A. "Mike" Hulme, a senior research scientist who recently transferred to PFRC from Canadian Forestry Service Headquarters, is to be the leader of a new project on biological control at PFRC. Future issues of "Information Forestry" will contain more details on this new project.

Dr. T.L. "Terry" Shore has been appointed Pest Surveys Sampling Officer with the Forest Insect and Disease Survey (FIDS) group. He will be responsible for developing, testing, and supervising the application of statistically sound and efficient procedures for sampling forest insect and disease levels and their subsequent damage on a regional basis. ●

## CANADA~USA SIGN COOPERATIVE FORESTRY AGREEMENT

An umbrella agreement in the form of a Memorandum of Understanding on cooperation in the field of forestry was signed in Washington recently by Environment Minister **John Roberts** and **John R. Block**, United States Secretary of Agriculture.

The purpose of the agreement is to document and improve technical cooperation and coordination of forestry related programs undertaken in the two countries, avoid duplication, and ensure compatible data collection.

Mr. Roberts said much has been accomplished in the long history of cooperation in forestry between Canada and the United States. The two countries have traditionally worked together in the area of forest protection, exchanging equipment and information during forest fire seasons and carrying out a joint research program on the Spruce Budworm.

"I am confident that the cooperative nature of our relationship with the United States in the field of forestry will be enhanced through an agreement such as this one which provides formal channels for carrying out work in areas of mutual interest between our two countries", Mr. Roberts said.

The umbrella agreement allows the leading forestry agencies of the two countries, the Canadian Forestry Service of Environment Canada and the United States Forest Service, to enter into supplementary agreements on specific forestry activities.

### Mountain Pine Beetle Agreement

A subsidiary agreement relating to research, development, and control programs for the mountain pine beetle was signed six weeks after the umbrella agreement.

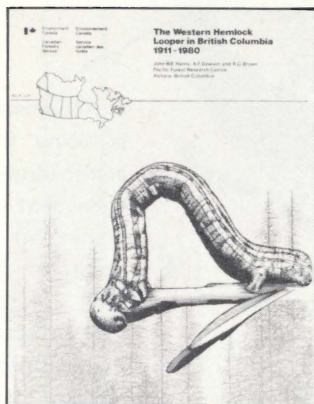
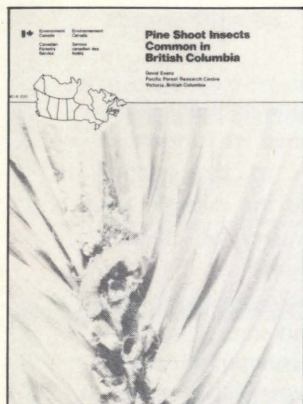
The mountain pine beetle is currently the most damaging insect in western Canada, with infestations continuing to spread and intensify, mainly in the lodgepole pine forests of British Columbia and Alberta. The total area of heavy tree mortality has increased to more than 230 000 ha. The volume of timber killed over the past five years is estimated at almost 26 million cubic metres, or nearly four times the annual harvest in Alberta.

The Canadian Forestry Service, using results from its continuing research program, is advising the provincial governments and other federal departments on methods for managing this serious forest pest.

Realizing that movements of the mountain pine beetle are not restricted by international boundaries, Environment Canada has negotiated this agreement whose major objective is the

# New Publications

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



## ● A FRAMEWORK FOR FOREST RENEWAL

On September 2, 1982, Environment Minister John Roberts announced the framework for a long-term, comprehensive program of forest revitalization in Canada. The program reaffirms the need for a concerted attack on forest renewal in order to meet the wood supply goal of an increase in production of at least 40% by the year 2000. This target was adopted by the federal government and the 10 provinces two years ago. The details of this policy statement have been published in an 8-page bilingual brochure.

## ● PROGRAM REVIEW—1981/82—PACIFIC FOREST RESEARCH CENTRE

This report on forest research and operations at the Pacific Forest Research Centre reflects the progress made during the fiscal year 1981/82 in achieving program objectives in British Columbia and the Yukon.

BC-X-235

## ● CANADA'S FORESTS 1981

Statistical information on world forestry data, wood volume by province and territory and species, primary forest production by product and by product and territory, exports, etc., are presented in this brochure.



development of a common technology for more efficient management of the beetle. The agreement, which is for a five-year period, will include cooperative work on management of beetle-infested or vulnerable stands and on potential insect control methods.

The Pacific Forest Research Centre (PFRC) in Victoria will be responsible for carrying out the terms of the agreement in Canada. Various facets of the program will be carried out by PFRC's research facilities, with the cooperation of the governments of B.C. and Alberta. Northern Forest Research Centre, Edmonton will be responsible for implementing some aspects of the agreement in their own area. In the United States, the states of Oregon, Washington, Idaho, and Montana are cooperating with the Pacific Northwest Station of the USDA Forest Service. In both countries, the university community is acting in a consulting and contractual role. ●

## ● PINE SHOOT INSECTS COMMON IN BRITISH COLUMBIA

David Evans

This publication is designed to aid nursery, plantation, and forestry workers in the identification of shoot insects on native pines, particularly those insects of economic significance.

BC-X-233

## ● THE WESTERN HEMLOCK LOOPER IN BRITISH COLUMBIA—1911-1980

John W.E. Harris, A.F. Dawson, and R.G. Brown

This report describes the history of western hemlock looper outbreaks in B.C., summarizing tree damage since 1911 and larval populations since 1949.

BC-X-234

# More Staff Added to Implement New Forest Renewal Program

On September 3, 1982, federal responsibility for the Canada/British Columbia Subsidiary Agreement on Intensive Forest Management was officially transferred to the Canadian Forestry Service from the Department of Regional Economic Expansion (DREE).

The agreement, which was signed in May 1979, called for \$50 million to be spent jointly by Canada and British Columbia on intensive forest management over five years to supplement ongoing programs in the province. Specifically, it was designed to intensify the job-creating potential of the forest resource and increase the wood yield beyond that secured by the Ministry of Forests' normal forest regeneration program.

As a means of strengthening the federal government's commitment to a long-term, comprehensive program of forest revitalization, Environment Minister John Roberts, responsible for the Canadian Forestry Service, recently announced a new policy to be known as "The Framework for Forest Renewal"\*. This framework will form the basis for new development agreements and for broader responsibilities for the Canadian Forestry Service in the region in relation to its clients and to other federal departments. It reaffirms the need for a concerted attack on forest renewal in Canada in order to meet the wood supply goal of an increase in production of at least 40% by the year 2000—a target adopted by the federal government and the 10 provinces two years ago.

These new responsibilities have resulted in a strengthening of the Canadian Forestry Service at the regional level. At the Pacific Forest Research Centre, a forestry



development and relations group is being formed to undertake administration of the existing agreement and the recently implemented forestry job creation programs, as well as the planning and development of new agreements and improving communications and relations with forestry sector clients in the region.

The new forestry development and relations group will be headed by a senior manager reporting directly to the Regional Director,

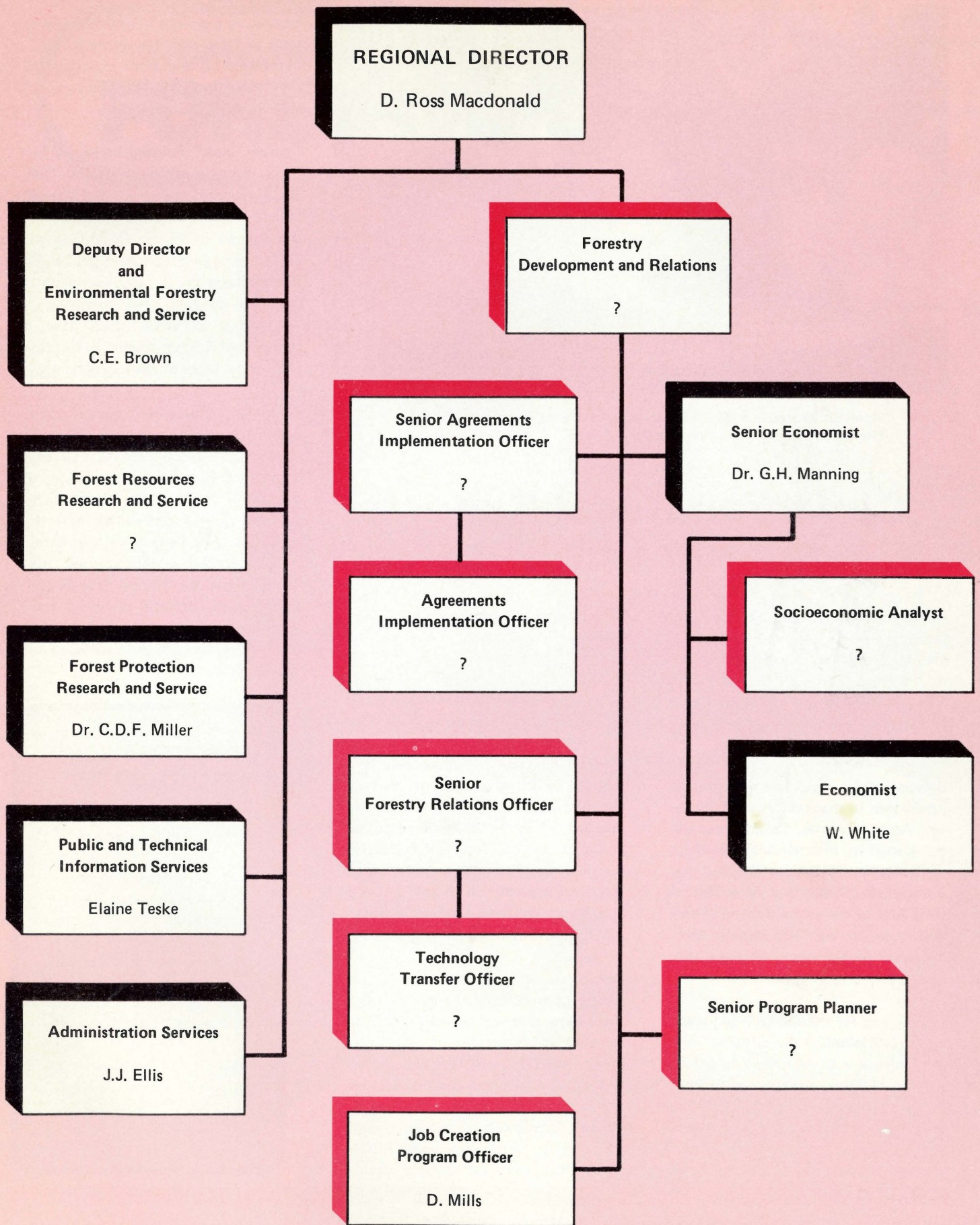
Ross Macdonald, who will be supported by six new professional staff, as well as the existing forest economics and job creation project staff already on strength (see organization chart on opposite page). An additional three positions are being added to the Administration Section to provide the necessary support.

Some of these positions will be filled by staff transferring from DREE. However, Ross Macdonald stated he expected most of the professional positions to be filled by foresters who will be coming into the Public Service from other sectors.

"We will be looking for candidates who have demonstrated their commitment to forest renewal and are eager to work in a dynamic program in cooperation with colleagues in the provincial forest service, industry, and our own scientists to meet the challenges of ensuring the long-term viability of B.C.'s forests," said Mr. Macdonald.

It is expected the new program will be fully operational early in 1983, once staffing has been completed. ●

\* "Framework for Forest Renewal" is available by checking off the appropriate box on the return publications reply card.





Slavoj Eis (glasses) and George Edwards (right) provide advice to "Jack" and "Nolle" during their three-month training at PFRC.

## Canadian Seed Experts Assist Thai Government

Dr. Slavoj Eis, an ecologist at the Pacific Forest Research Centre (PFRC), and Mr. Al Hedlin, an entomologist who recently retired from PFRC, are two of four Canadian forestry experts chosen to assist in the establishment of a Forest Tree Seed Centre in Thailand.

Because of the importance of tropical hardwoods to the economies of South-east Asian countries, Canada, lead by the Canadian International Development Agency (CIDA), is assisting the Association of Southeast Asian Nations (ASEAN) in the establishment of this Centre which will also benefit the countries of Indonesia, Malaysia, the Philippines, and Singapore.

Dr. Eis and Mr. Hedlin will be joined by Dr. K. Hellum, a silviculturist from the University of Alberta, Edmonton, and Dr. N. Dhir, a genetist with the Alberta Forest Service, Pine Ridge, on one-year assignments to assist in the development of this program at the research centre which is located in the

Sara Buri district approximately 100 miles north of Bangkok.

The purpose of the Centre will be to serve as a resource for training in forest tree seed and silviculture research. The Canadians will also assist in the development of forest tree seed orchards in ASEAN countries in order to provide adequate supplies of quality seeds of selected species used in afforestation and reforestation. They will also be responsible for strengthening ASEAN technical competence in tree nursery and forest plantation research and development through training programs.

Part of Canada's contribution to the Centre consists of the provision of short-term, practical training of ASEAN foresters at various Canadian forestry establishments in British Columbia, Alberta, Ontario, and New Brunswick. Fourteen of these foresters arrived in Canada in mid-August to commence this training which consisted of 100 hours of instruction, lectures, and

laboratory exercises in subjects such as seed biology and management, tree improvement, and plant propagation. Practical courses included 40 hours of tree climbing techniques.

Papran "Jack" Pukitayakamee, a forestry technical officer with the Thai Royal Forest Department, and Manolito "Nolie" Ragud, a Filipino employed at the Bureau of Forest Development, are spending two months at the Pacific Forest Research Centre, under the direction of tree seed specialist, Dr. George Edwards. Both have Bachelor of Science degrees in forestry and several years of work experience.

Under Dr. Edward's guidance, they have been gaining hundreds of hours of hands-on work experience in a seed laboratory. They are also assisting he and his technician, Doug Taylor, with a research project and will be able to apply this experience when they return to work in their native countries. CIDA is equipping the Forest Tree Seed Centre with Canadian scientific and laboratory equipment so they should be totally familiar with the newly-acquired equipment.

### INFORMATION FORESTRY

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