

INFORMATION

# FORESTRY

PACIFIC FOREST RESEARCH CENTRE

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Environment  
Canada

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Canadian  
Forestry  
Service

Service  
canadien des  
forêts



Tomorrow's Forest...  
Today's Challenge

National Forest Week May 6-12, 1984

# Final Testing Completed on Biomass Reduction System



**F**inal testing has just been completed on a biomass reduction system designed to process 100 green tonnes of wood wastes a day for use in standard hog-fuel boilers at a cost comparable to present disposal fees.

Known as the separator-shear, the modular unit is designed as a stationary, fully automatic processor. Consisting of an in-feed table, a hydraulic steel-bladed cutter and a disc separator, it reduces biomass to chunks up to 45 cm in length and screens out most wet or soiled material. Moreover, says project leader **Alex Sinclair** of the Forest Engineering Research Institute of Canada (FERIC), the system's in-

stalled cost is about \$350,000, less than one-third the expense of adding a full-scale reduction unit to an existing plant.

The one-year, \$200 000 ENFOR (ENergy from the FORest - a federal government program to develop renewable energy sources) project, awarded to FERIC in April 1983, builds upon earlier ENFOR work in which the separator-shear was first developed. According to scientific authority **Dr. Glen Manning** of the Pacific Forest Research Centre (PFRC) the first test unit was "an assembly of components constructed around a Nicholson shear mounted on a hiboy trailer."

Manufactured by Nicholson-Murdie of Victoria, the Nicholson shear is still an integral part of the system. Consisting of a heavy steel blade hydraulically driven through a 200 cm<sup>2</sup> opening, the shear severs feedstock with pressures up to 14 000 kPa. Waste wood, stumps and debris are lifted by a grapple loader onto the infeed table, are advanced mechanically into the shear, and are reduced to maximum 45-cm-long fragments.

A conveyor moves the shorn material to the disc-separator, built by Burnaby Machine & Mill Equipment of Burnaby, B.C. A series of eight 76-cm revolving discs separate out material less than

2.5 cm in length, and in doing so, remove a large proportion of moisture and foreign material. Processed biomass is reduced 8% by volume and 20% in moisture, rendering it good intake stock for the crushers of hog-fuel operations.

"The first installations (of the separator-shear) will be in the large sort-yards," says Sinclair. "There are large volumes of wood wastes being trucked to land-fill sites right now. A starting point for this system would be to exhaust the waste material now in the sort-yards."

Although the separator-shear has been used to only 62% of its capacity in tests so far, it has, agree Sinclair and Manning, fulfilled expectations to produce a cleaner, more homogeneous feedstock without requiring expensive modifications to existing facilities. An eight-week testing period ended in February.

"We are extremely pleased with this equipment, which has handled as much as 250 tonnes per shift," says Glen Manning. Demonstrations were held in December and January attended by senior forest industry executives from B.C. and the USA. Companies looking over the equipment included MacMillan Bloedel, British Columbia Forest Products, Pacific Forest Products, Louisiana-Pacific, Weyerhaeuser and Champion.

Closely related to development of the separator-shear is a second project, also contracted to FERIC. The one-year, \$90 000 comparative assessment of various recovery and transportation systems will help foresters get wood wastes from logging sites to sort-yard processing units in the most efficient way.

According to Sinclair, three methods are under study: transport by self-loading chunk truck following logging; loading of wood wastes onto demolition trailers during logging; and the use of refuse containers and a tractor during logging.

The first two methods, says Sinclair are labour intensive and awkward. Most efficient is collection of wood wastes in large garbage bins, which can then be serviced by a single tractor.

## Lodgepole pine symposium scheduled for May, 1984

Over 40 speakers from Canada, the United States, Sweden and the United Kingdom will present papers on lodgepole pine management and utilization at a symposium to be held May 8-10, 1984 at Spokane, Washington and May 14-16, 1984 at the University of British Columbia.

The symposium is being held twice to facilitate those who may have difficulties receiving travel authorization between Canada and the United States.

In the last decade there has been an increased emphasis on lodgepole pine management in North America. Large areas of unmanaged, small diameter stands now have commercial value. Lodgepole pine presently ranks third in economic importance in British Columbia, second in Alberta, and continues to increase in importance in the Western United States.

The importance of this species is not confined to North America. It is widely planted in Scandinavia (over 225 000 ha in Sweden), where interest in cultivating lodgepole pine was prompted by its rapid growth rate and suitability for both sawing and wood fibre production. Lodgepole pine is also an important species in the United Kingdom.

Because of the importance of this species the Alberta Forest Service, British Columbia Forest Service, Canadian Forestry Service, Forest Research Council of British Columbia, United States Forest Service, University of British Columbia and Washington State University, have agreed to sponsor the Symposium.

Topics which will be discussed include: the resource; physiology and genetics; site classification; growth and yield; factors influencing production; stand regeneration and management; stocking guides and stockability; management for game, range and watershed; harvesting and utilization; and, management perspectives.



The container system, Manning adds, "reduces fire hazards, makes a logged-over area more suitable for reforestation and can net profits in chipper feedstock and shingle-grade cedar. If enough saleable material is collected, the energy component to be fed into the hog-fuel mill gets a free ride."

Testing on all three mechanisms is complete and a written report will be

available shortly.

For more information on the System write:

Alex Sinclair,  
Forest Engineering Research Institute  
of Canada,  
Suite 102-2112 West Broadway,  
Vancouver, B.C. V6K 2C8.

## MICRO-LOGGER SYSTEMS VALUABLE AID TO RESEARCH

In an effort to cash in on the myriad of advantages the micro-computer offers, researchers at the Pacific Forest Research Centre (PFRC), are making extensive use of automatic data logging equipment, thereby moving the computer closer to the research collection site — often hundreds of miles from the Centre.

**Dick Silversides**, a researcher in meteorology at PFRC, calls this system "the leading edge of technology" for climate data collection and likens it to a

micro-computer based data acquisition system.

The Centre has just recently acquired its 14th system and Dr. Silversides, assisted by **Ross Benton**, have held three workshops to acquaint PFRC staff as well as provincial government personnel, with how to make the best use of the equipment.

Almost all of the data logging systems at PFRC are used to gather climatological data in support of various research projects such as the bark beetle project, inland spruce cone rust, fire, silviculture, hydrological research, etc. Sensors are set up in the field location and automatically measure such things as temperature, humidity, rainfall, wind velocity, etc. Digital data is stored on audio cassette tapes at the site and staff visit the stations periodically to change the tapes and retrieve the full ones. These in turn are brought back to the Centre where data is taken off, and edited before placing on the main computer for use by individual research scientists.

The series of accompanying photographs illustrate staff becoming acquainted with the equipment.



Gerry Aubertin, Jack Sutherland and Al Mitchell take time to familiarize themselves with the uses of the system.



Staff are shown here examining a typical installation.

## PFRC GROWS TOP TREE



Technicians (left to right) Graeme Goodmanson, Mell Hughes and Don Barwise are proud recipients of the first Chief Forester's Award, to be presented annually to the nursery that grows the best quality seedling entered in a competition. The award was made at the September annual meeting of the B.C. Forest Nurserymen's Association held in Prince George. Some of the award winning white spruce appear in the foreground.

Next year's species will be Interior Douglas-fir and, although our present greenhouse and nursery areas have disappeared under the new building construction program, we still intend to enter the competition, grow top-quality seedlings, and see if we can hold onto the trophy.

## ASSISTANT DEPUTY MINISTER RESIGNS

**F.L.C. (Les) Reed**, Assistant Deputy Minister with the Canadian Forestry Service, has submitted his resignation effective on 1 December 1983.

In announcing the resignation, **Jacques Gérin**, Deputy Minister of the Environment, noted that when Mr. Reed joined the department in 1980, he was given a mandate to "provide the government with a new strategy of intervention in the forest sector and to make the Canadian Forestry Service an instrument for implementing these changes."

The list of Mr. Reed's achievements during the three years in which he served as Assistant Deputy Minister is impressive:

- a renewed and strengthened mandate from Cabinet
- a federal forest strategy
- a forest renewal policy
- a strengthened research program
- support for university forestry faculties
- responsibility for forest renewal agreements with the provinces
- job creation programs
- strengthened leadership within the CFS

No successor has been named to Mr. Reed's position as yet, but **Richard J. Herring**, Director-General, Forestry Relations and Economic Development, has assumed responsibility for the duties of Assistant Deputy Minister until an appointment is made.

**T**he theme of the 1984 National Forest Week, to be held May 6-12, is "Tomorrow's Forests...Today's Challenge" — a reminder that our forests need increasing attention and investment in forest management now.

What we now know as "National Forest Week" was not always so named. The evolution of the name provides an interesting insight into changing emphasis and attitudes in the development of public support for forest conservation.

Beginning in the 1920's, Forest Fire Prevention Week mainly emphasized prevention of wildfires which were a major concern to those who lived and worked on the fringe of the agriculture zone across the country.

In the '30's, Save the Forest Week still emphasized forest protection but asked for public help for more than forest fire prevention alone.

In the 1950's, National Forest Conservation Week extended the message to include wise use and management of the forests. This was the time when massive inventories were made of forest land across the country to give more information on the nature and extent of the resource. From this stock-taking, long-range plans were developed for forest use and development.

# NATIONAL FOREST WEEK

## MAY 6-12 1984



### TOMORROW'S FORESTS ... TODAY'S CHALLENGE

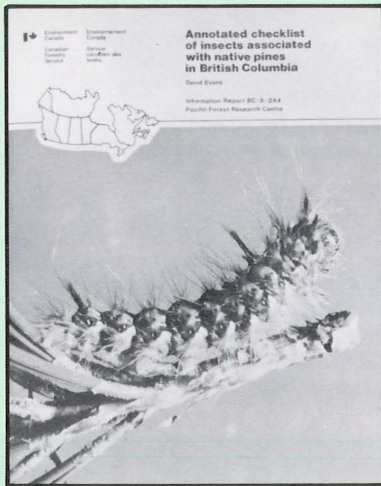
National Forest Week, as it is known today, is broad enough in scope to encourage widespread participation. It provides a focus for individuals, groups and forest managers to undertake some special forestry activity. It encourages events such as tree planting, forestry tours or special publicity. Its primary objective is to focus attention on the importance of managing Canada's forests wisely for present as well as future needs.

The observance takes place each year during the first full week in May (beginning with a Sunday).

National Forest Week is sponsored across Canada by the Canadian Forestry Association (CFA) and regionally by its member Provincial Forestry Associations in co-operation with many other individuals and agencies.

The Canadian Forestry Service (CFS), supports National Forest Week and this year Environment Minister **Charles Caccia**, who is responsible for the CFS, has asked his staff from coast to coast to make special efforts to promote this important event. Staff in the Pacific and Yukon region are developing posters, decals, buttons and other support material to be distributed throughout the Region. Mall displays, special events and public speaking engagements will also be conducted during this week.

# NEW PUBLICATIONS



## Annotated checklist of insects associated with native pines in British Columbia

David Evans

Derived from Forest Insect and Disease Survey data, this checklist contains approximately 1230 insect species associated with native pines in B.C., as recorded from 1949-1982. They are catalogued alphabetically by genus under family and order, and an index is provided.

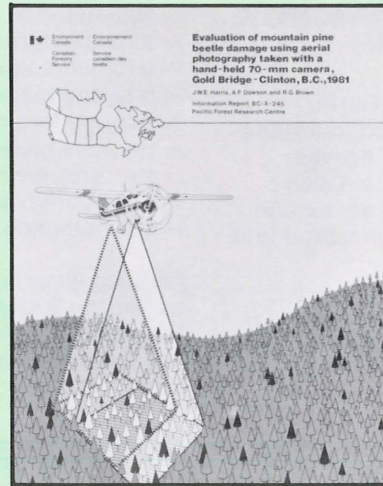
BC-X-244

## Evaluation of mountain pine beetle damage using aerial photography taken with a hand-held 70-mm camera, Gold Bridge-Clinton, B.C., 1981

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

A simplified multistage sampling procedure using large-scale color aerial photography taken with a hand-held 70-mm camera was developed to assess mortality of lodgepole pine stands attacked by mountain pine beetle.

BC-X-245



## Forest insect and disease conditions: British Columbia & Yukon, 1983

C.S. Wood, G.A. Van Sickle and T.L. Shore

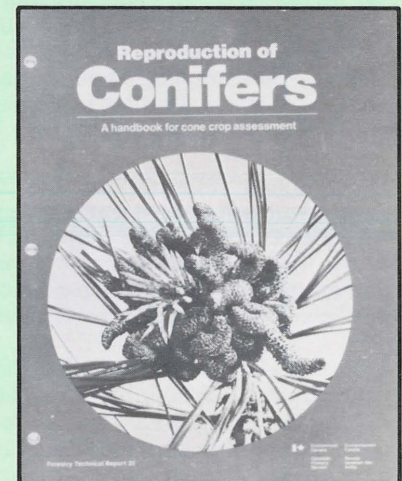
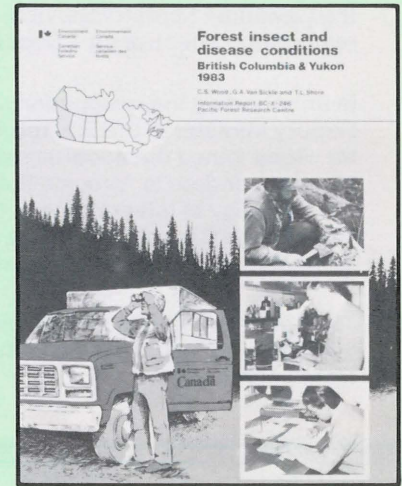
This summary of forest pest conditions in British Columbia and Yukon in 1983 was compiled from records and field reports of 11 Forest Insect and Disease survey technicians. Emphasis is on damaging pests that are, or may become, major management problems.

BC-X-246

## Reproduction of Conifers — a handbook for cone crop assessment — Part III

Reproductive process of conifers is briefly described and published in loose-leaf format which can be added to as material becomes available. Part III includes information on: Western Red Cedar, Sitka Spruce, Mountain Hemlock, Western White Pine, Red Spruce, Balsam Fir.

Forest Technical Report 31  
(formerly BC-X-219)

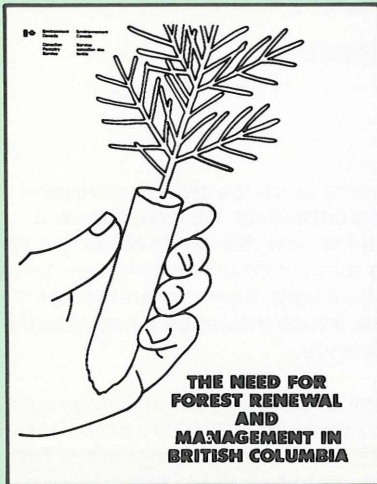


## Fire history and ecology of forest ecosystems in Kluane National Park: Fire Management Implications

Brad C. Hawkes

To aid in the development of a fire management plan for Kluane National Park, a study of the fire history and ecology of the park's forest ecosystems was undertaken to determine the ecological role of fire in vegetation renewal and succession.

## Environment to benefit from new program



### The need for forest renewal and management in British Columbia

S.A. Fraser, W.A. White and G.H. Manning

This background paper was prepared for the Canada—British Columbia agreement on forest renewal and management and gives up-to-date statistics on the resource, the industry, markets, future prospects, social benefits and economics.

### Canada's Forests 1983

Statistical information on area classification, wood volume, primary forest production, forest industries, exports, etc., are presented in this brochure.

You may obtain copies of the publications listed by checking the appropriate boxes and returning this card to the Pacific Forest Research Centre.

**E**nvironment Minister **Charles Caccia** recently announced details of a federal government job creation and environmental program known as ENVIRONMENT 2000. Approximately \$35 million will be spent on the conservation program nationally (\$3.7 million in British Columbia).

The program offers new job opportunities, starting April 1, for men and women between the ages of 16 and 24, as well as workers over the age of 50, who will direct and train the youth.

A major portion of the jobs will be allocated to forest management and renewal for such fundamental activities as planting seedlings. At PFRC, **Dean Mills** and **Vic Ulrich**, have been canvassing the communities, service groups, universities, environmental groups, etc. for proposals to be considered under this program. Applications were to be in by February 15 with work to commence around April 1.

"We are extremely encouraged by the number of applications we have received for such varied activities as sanitation cutting and pruning, stand improvement, site preparation, tree surveys and inventories, etc.," said Vic Ulrich. "In subsequent issues of this newsletter we hope to have some stories to tell about the details of some of the activities approved under this program."

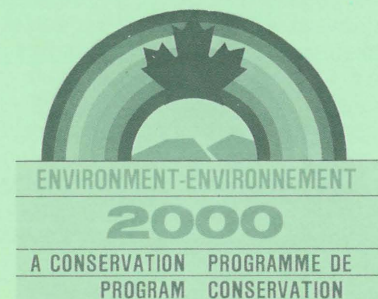
Other non-forestry related environmental projects include such activities as improving existing park facilities, establishing new facilities, expanding hiking trails, improving access to some wildlife areas, cleanup of rivers, lakes and streams, etc.

To unemployed young men and women, who will receive the minimum wage for their work, Environment 2000 will mean employment and the opportunity to acquire on the job experience in the outdoors. To local service and environment groups, it will mean support for their own community environmental efforts.

The Department hopes that by creating jobs for the unemployed and by positively changing the environment through local participation, ENVIRONMENT 2000 should make a noticeable difference in the community. In addition to employment, small groups who receive project funding can hopefully establish contacts and community visibility necessary to start projects which might be continued through other sponsors.

Community groups, businesses and other similar organizations, including education institutions and municipalities, were eligible to submit and sponsor projects under ENVIRONMENT 2000.

"I believe that ENVIRONMENT 2000 will have a positive impact on our environment, creating a greater sense of responsibility for the environment, and a confidence that we are capable of changing our environment for the better," said Mr. Caccia.



# Worldwide Interest in Alder Seed Collection

**A**nationwide collection of *Alnus* (alder) seed for research in Canada and abroad is being coordinated by researchers at the Canadian Forestry Service's Petawawa National Forestry Institute (PNFI) in Petawawa, Ontario under the sponsorship of the ENFOR program (Energy from the Forest — a federal government program to develop renewable energy sources).

The two-year \$42 000 program gathering seeds of five species from eight forest regions and every province, will also contribute to the International Energy Agency's worldwide *Alnus* seed collection initiative.

*Alnus* is one of the most promising fast-growing species for biomass production in temperate climates. One of the few forest trees exhibiting nitrogen-fixing and soil enrichment capabilities, it encourages the establishment of other species. *Alnus rubra* is one of the most important hardwoods in the B.C. furniture industry. Other species in the study include *Alnus crispa*, *Alnus rugosa*, *Alnus sinuata*, and *Alnus tenuifolia*.

Under intensive forest management "Alnus can be planted either as fast-growing high yield rotation energy plantations or as mixed wood stands with other species," says **Peter Janas** project leader at PNFI.

For the purposes of the study, subsections have been designated in each of the forest regions in which a species occurs. Collections are taken within each subsection from two sites with stands of not less than 60 trees. Trees chosen are "of above average form and vigor, free from insect or disease infestation" and far enough apart to minimize genetic relatedness, Janas says. Height and diameter is recorded. Cones from each tree are kept separate.

This year, due to light seed production in Manitoba, Northern Ontario, Newfoundland, Saskatchewan and parts of Quebec, collections were taken from B.C., Alberta, New Brunswick, PEI, parts of Nova Scotia and Eastern Ontario.



The collections in British Columbia were made by two companies — Reid, Collins Nurseries Limited of Aldergrove and Yellow Pt. Propagation of Lady-smith. Seed was collected at locations near Golden, Valemount, Dease Lake and Revelstoke.

## Mishaps

Though researchers have experienced such mishaps such as falling from the fragile trees, "collection is the easy part," says Janas. The cones are shipped to PNFI, air dried for several months to open them, and the seed is extracted, dried, cleaned, weighed and tested for moisture content. Following this, 400 separate germination tests on a total of 160 000 seeds will be performed. The seed will be stored in airtight containers and tested regularly for viability.

Researchers will use selected seed to develop fast-growing alder genotypes which provide more biomass per hectare

and possess greater nitrogen-fixing capability. As well, they will examine how the seeds of certain species react to environmental variables such as light, humidity and temperature, which influence germination and dormancy.

A similar seed collection is in progress in Europe and the USSR, under the direction of **Dr. V. Steenackers** of Belgium, on behalf of the International Energy Agency in Stockholm, Sweden. Research information and lists of available seed types will be exchanged between the two agencies.

The objective of the entire study, Janas says, is to provide "a base collection of well documented, properly handled, tested and stored *Alnus* seed."

Researchers requiring seed should contact: P.S. Janas, National Tree Seed Centre, Petawawa National Forestry Institute, Chalk River, Ontario (Canada), KOJ 1J0.

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