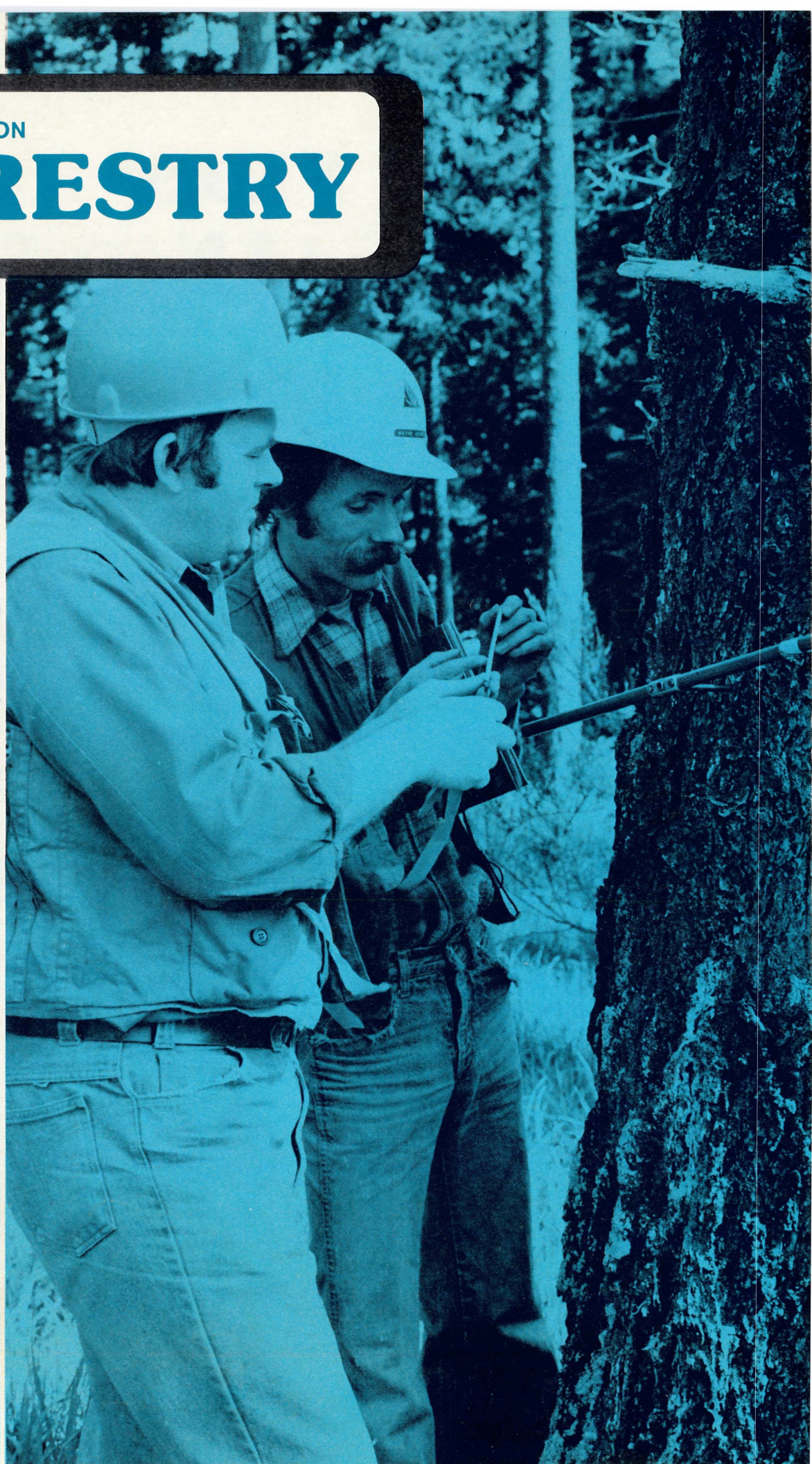


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FIDS

Forest Insect & Disease Survey

In the coming years as the forest land base is reduced and forest management becomes more intense, and as the level of new investment rises and old growth timber supplies become scarce, the impact of insects and diseases and the consequent demand for information for forest management purposes will grow.

The responsibility of supplying much of this information rests with the Forest Insect and Disease Survey group, or FIDS as they are more commonly called. This group is the national network within the Canadian Forestry Service (CFS), who carry out forest insect and disease detection, monitoring, and appraisal of damage as an aid to forest management.

FIDS had its origin in the federal Department of Agriculture and began formally when the Forest Insect Survey was established in 1936 to deal with the European spruce sawfly outbreak then concerning eastern Canada.

The early functions of FIDS were to catalogue and identify the insects and diseases in the forests and to gather biological data useful in explaining their life history and habits. More recently FIDS has moved from this very broad, biological survey approach to devoting much of its attention to insects and diseases which are important or potentially important economically.

Annual assessments of important pests, their movements and effects on the forest are carried out, and the information is used by CFS managers to develop and conduct federal programs in forest research. The information is passed to the provinces and industry to assist them in improving and carrying out forest management and protection practices.

There are 24 positions within the FIDS organization at the Pacific Forest Research Centre (PFRC), headed by forest pathologist **Dr. Allan Van Sickle**. There are 11 pest survey technicians and one supervising technician who conduct the annual assessments (see story on page), three people in



FIDS Head Allan Van Sickle (left) and Chief Survey Technician Lew Fiddick

the data base management and remote sensing group, three in damage appraisal, three in the Insectary and two in the Herbarium.

It is vital that the monitoring and survey work provided by the pest survey technicians is backed up by the diagnostic and taxonomic services of the Herbarium and Insectary staff as the effectiveness of other functions rests on prompt and accurate identification. (See story in *Information Forestry*, Vol. 7 No. 1, Winter 1979/80.)

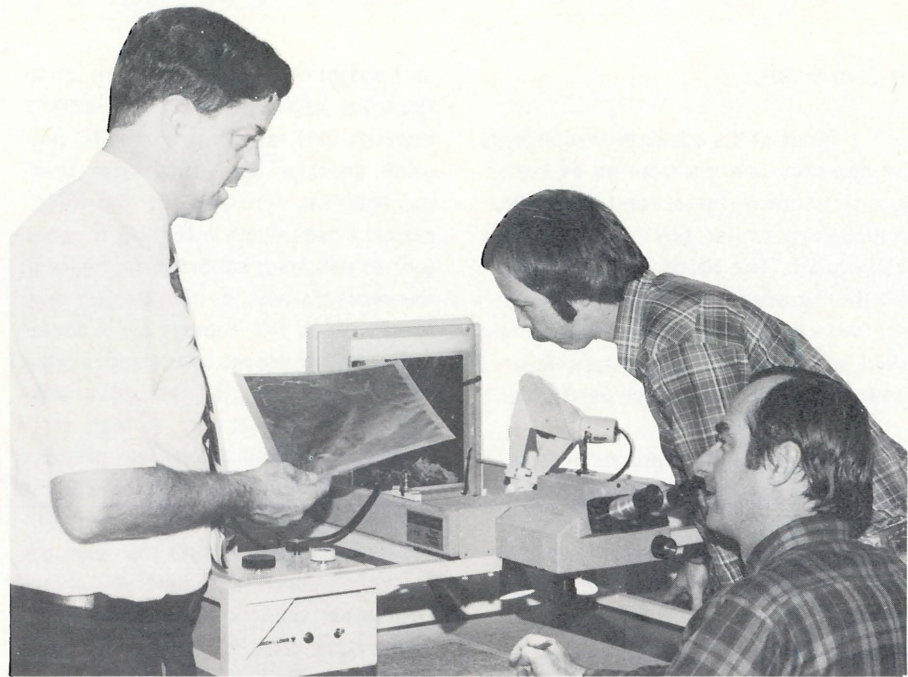
DAMAGE APPRAISAL

Equally vital is the work of the PFRC damage appraisal group, the only one of its kind in the Canadian Forestry Service. Its function is to develop methods for the measurement of pest outbreaks and determine their effect on the forest in terms of reduced tree growth and quality.

"For years we have been providing foresters with information on which insects and diseases are occurring where, and the general nature of their damage," says Dr. Van Sickle. "But what we also need to start telling them is what is the significance of this damage? What is likely to happen several years down the road as a result of this damage? Based on present and historical data is it likely to occur again? If so, when, where and how much will it affect trees and forest stands? It is this information which will provide foresters with the tools to plan and implement forest management strategies."

AERIAL RECONNAISSANCE

For several years PFRC has been experimenting with the use of remote sensing techniques, including satellite photography, to gather information on some pest and disease damage. However, it has been determined that satellites cannot provide detailed enough information for most pest survey needs, al-



John Harris (left), Al Dawson and George Brown of the remote sensing study group using a zoom transfer scope which transfers photo data onto maps.

though various scales of color and color infrared photography are useful in locating and delineating pest damage.

Dr. John Harris, who heads the remote sensing study within FIDS, is now looking at the application of large-scale photography and its use in combination with other sampling techniques, such as sketch-mapping, to measure extent of damage.

"The satellite images we were getting were just not accurate enough for our purposes," says Dr. Harris. "For example, we discovered that stands of Douglas-fir damaged by tussock moth tended to look like healthy stands of lodgepole pine in the satellite photographs. Satellites, capable of greater resolution, planned for the near future, look promising and these will be investigated."

All methods of aerial reconnaissance have limitations; usually only the more conspicuous pests and diseases can be mapped and identified. Dead trees can be recorded from the air but groundtruthing is the only definite way of identifying which of the several species of bark beetles, root rots or

other agents caused the damage. Trees killed by bark beetles may remain green for up to one year after being attacked and can only be verified by sampling on the ground, usually during the fall cruises conducted by FIDS technicians.

"With ever-increasing constraints on time and budgets, it is important to develop reliable new sampling techniques but so far, aerial sketch mapping by experienced observers remains the most efficient means of obtaining broad, annual assessments of some of the major pest problems," says Dr. Van Sickle.

QUARANTINE ACTIVITIES

Members of FIDS work closely with provincial and federal plant protection personnel who are familiar with the quarantine requirements for agricultural pests but rely on forestry experts for advice concerning forest insects and diseases.

"Some of our most devastating pests such as white pine blister rust and the gypsy moth have been ones which were introduced to this country," says

Dr. Van Sickle.

Most of the advice given concerns the detection and monitoring of introduced insects or diseases and the ability to recognize similar, but native pests is a prerequisite. The balsam wooly aphid and the European pine shoot moth are just two examples of forest insects identified and placed under quarantine or movement of host material restricted.

Surveys are sometimes necessary once a pest has become established to determine and recommend the setting of quarantine boundaries, or the placing of restrictions on the movement of host material.

LETTING OTHERS KNOW

Communicating the findings of their work to the operational levels of forest management agencies is an impor-

tant aspect of FIDS work which involves close association with the current research and results from PFRC and other agencies concerned with pest management. Throughout the field season a technician may find it necessary to issue pest reports alerting local managers to new or threatening outbreaks. Each fall, reports are prepared outlining the forest insect and disease conditions in British Columbia and the Yukon for that year. As well, more detailed individual reports are prepared for each Region and historical summaries and map records maintained. All collections made during the year are recorded, coded and entered, along with other records from the Region, in the data bank in Ottawa. In addition, each Region contributes to the national overview of forest pest conditions in Canada published in an annual report.

A great deal of FIDS work involves liaison with provincial govern-

ments, especially the B.C. Ministry of Forests and Yukon Lands and Forests, as well as industry and other federal departments and agencies. FIDS staff members sit on various action committees, including the B.C. Forest Pest Review Committee, an inter-disciplinary group charged with providing an accurate overall picture of the forest pest problems and providing recommendations for action.

Provincial and industry spokesmen have frequently stated that the FIDS operation has contributed greatly to the awareness of the insect and disease problems facing forest managers in British Columbia and the Yukon. With intensive forest management on the minds of everyone, their role will become increasingly important. ●

New Appointments at PFRC

Dr. T. G. (Terry) Honer, R.P.F., A/Director of PFRC is pleased to announce the following two appointments:



Dr. Imre Otvos



Brad Hawkes

DR. IMRE OTVOS

Dr. Otvos, who has been appointed Pest Manager, Biological Control, received his B.Sc.F. in 1961 from U.B.C., his M.Sc. in 1964 and his Ph.D. in 1969 from the University of California.

Dr. Otvos has been employed since his graduation at the CFS research centre in St. John's, Nfld., where he conducted research on the use of biologicals in the battle against forest insect defoliators, especially the eastern spruce budworm.

In his new position Dr. Otvos will continue this research concentrating on the use of biological agents, mainly parasitoids and predators, as control measures of forest defoliators.

BRAD HAWKES

Brad Hawkes, who was recently appointed Fire Research Officer, received his B.Sc. in Forestry in 1976 and his M.Sc. in Forest Science (fire ecology and management) from the University of Alberta in 1979.

In his new position Mr. Hawkes will be responsible for research into the ecological role and effects of forest fires in various ecosystems. Priority will be given to a study to determine the impact of large wildfires in northern B.C. on regeneration and growth of commercial forests, wildlife, etc. Another priority program will involve working with Parks Canada to formulate fire management plans for national parks. ●



Survey technician Dick Andrews (right) returns from examining coastal sampling stations not accessible by land.

PEST SURVEY TECHNICIANS

FIDS in the Field

Lew Fiddick, Supervisor of the FIDS pest survey technicians, has seen a lot of changes during his 35-year forestry career - not so much with the insects and diseases collected, as with the method of detection and assessment.

When he started out as a federal forestry ranger back in 1945 his territory was the coastal area from Vancouver to the Alaska border. Each spring they loaded a 60-foot Packer-type vessel with equipment, a skipper, engineer and cook and headed north, sometimes not to return to homebase for three months at a time.

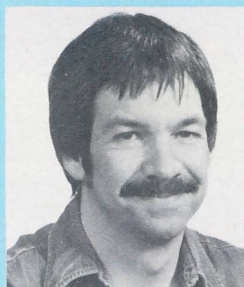
The large vessel, whose average speed was 8-10 knots per hour, carried a small dinghy for foraging ashore. Equipped with a compass, a good set of hiking boots and sampling gear, the rangers set off walking from 10 to 12 miles into the forest, ever on the lookout for grizzly bears and other wildlife.

"Today, of course, thanks to the use of aircraft we cover the same territory in a few hours of flying time," says Mr. Fiddick. Some 20 to 40 hours of flying time are now devoted to aerial sampling and reconnaissance in each of the regions.

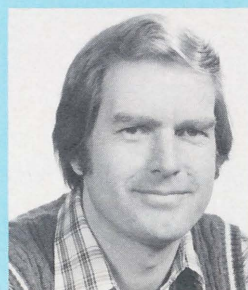
Lew Fiddick moved out of field work in the mid 1950's when he assumed the position of Supervisor. Today he still makes it a practice to get into the field as much as possible to acquaint himself with the problems facing his staff as well as to monitor the FIDS activities in the field.

Like any manager or supervisor much of his work now involves administrative tasks. Twice during the summer he compiles a summary of pest conditions based on the weekly and monthly reports filed by the 11 technicians or pest rangers in the six Regions. During

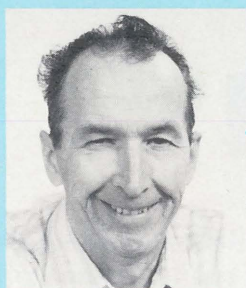
1980 FIDS FIELD ASSIGNMENTS



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Smithers



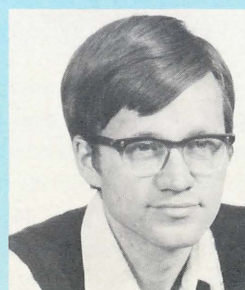
PETER KOOT
Terrace



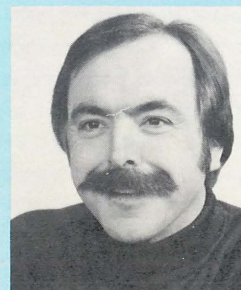
ROLY WOOD
Victoria



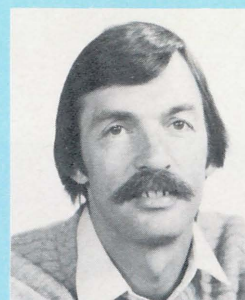
ERNIE MORRIS
Agassiz



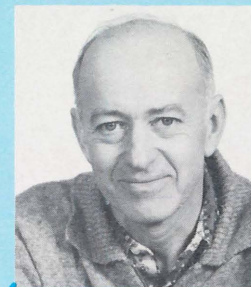
BOB ERICKSON
New Denver



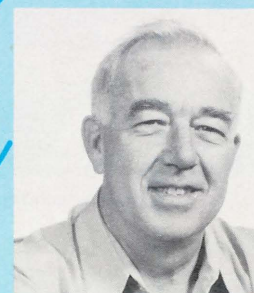
COLIN WOOD
Wasa Lake



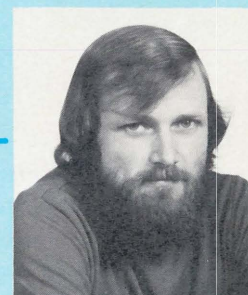
JACK MONTS
Prince George



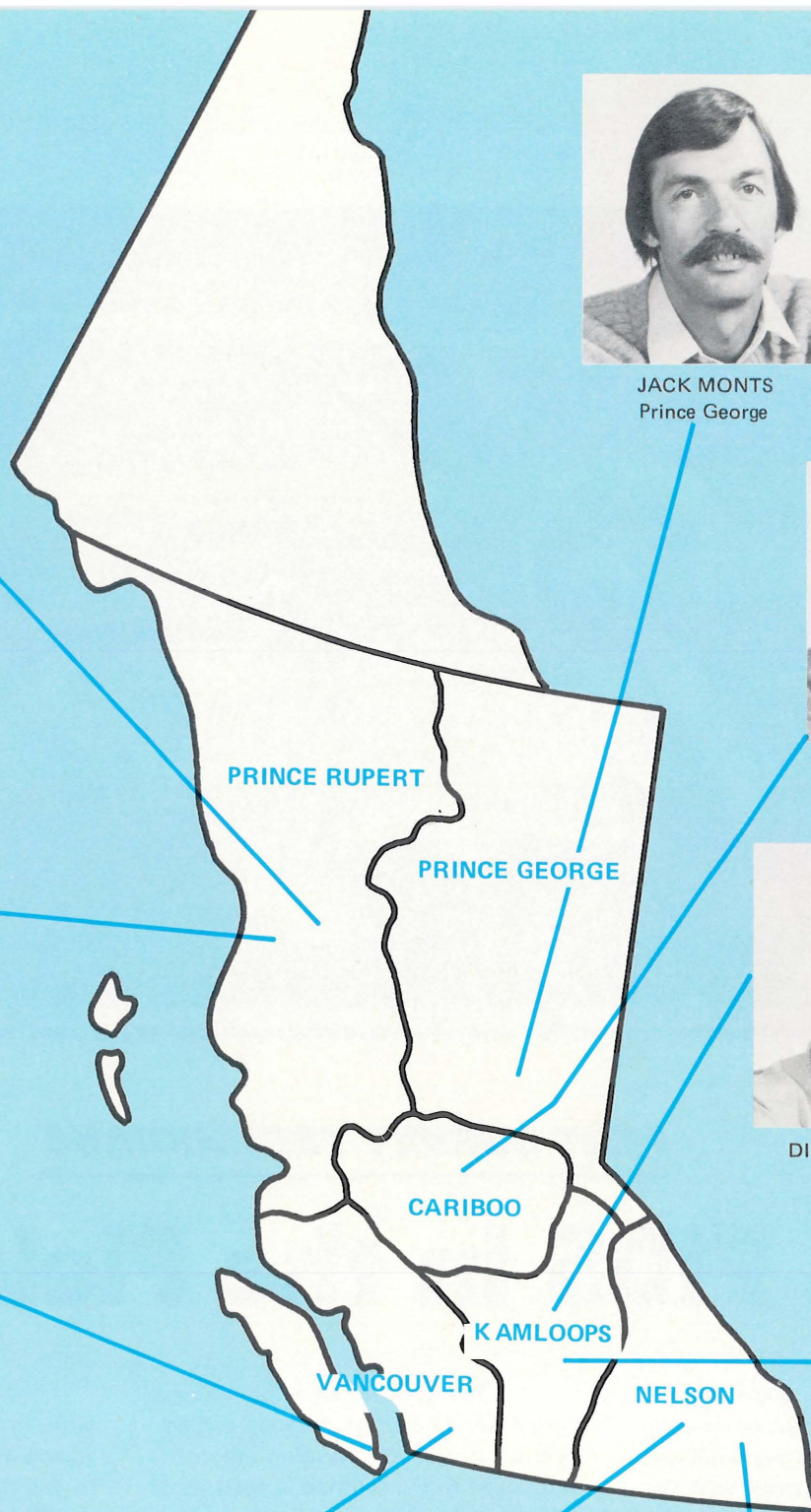
STAN ALLEN
Williams Lake



DICK ANDREWS
Kamloops



LEO UNGER
Armstrong



the winter months he cooperates in the preparation of regional reports and summaries, and arranges for courses and lectures to keep staff aware of current forestry research and techniques.

Thanks to advances in technology the PFRC pest survey technicians today no longer have to rely on hiking miles to carry out their surveys and monitoring programs. While modern conveniences like four-wheel drive vehicles and helicopters have made their jobs easier than say 20 years ago, they must keep pace with the ever increasing demand and importance placed on the information they collect.

The majority of staff move their families to their field locations from May to September and most liken these temporary quarters to "summer homes". Most are cabin-like, some are trailers; all usually have to undergo repairs and cleaning up each May, thanks to the work of local vandals or winter weathering.

Once settled they head off to let local provincial forestry and industry personnel know they are in residence. FIDS staff are usually the best known of CFS personnel in the Regions as others from PFRC conducting field research are often there for short periods. Because of frequent turnover among industry and other government personnel one of the first activities of the pest ranger is to meet with new staff and acquaint them with pest and disease conditions.

Before leaving home base in Victoria the survey technicians prepare a weekly itinerary of activity to be followed in the field. They set out with all good intentions of sticking to this itinerary but unexpected pest outbreaks, numerous extension calls and requests to carry out special surveys sometimes waylay the best of plans. There are also the weekly and monthly activity reports to be forwarded to Supervisor Lew Fiddick in Victoria.

Each forest region has from 100 to 150 permanent sampling stations which must be attended to annually. At these three trees of the same species are selected and the lower branches are beaten down for defoliating insects. These are collected, and while they can usually be identified by the technician, they are sent to the Insectary at PFRC for verification or rearing to the adult stage. Timing is critical as samplings must be done during the larval stage - usually between June and mid-July. The information collected is sent to PFRC, processed, and forwarded to a historical data bank in Ottawa and is used as a catalogue of insects and diseases and as a means of predicting rises or changes in insect populations.

Once this work is completed the technicians head back to their other activities which include such things as checking plots previously set up for experimental purposes and requiring annual monitoring.

With knowledge gained during the summer the technicians must plan and conduct aerial surveys to delineate pest outbreaks and classify damage. Timing of aerial surveys is critical and good weather essential for best results.

The FIDS staff do their best to accommodate requests from scientists at PFRC and other CFS labs for special activities which may range from collection of certain insects and diseases to population and damage assessments. Their expertise is often called upon by industry or provincial government forest managers who usually support them with manpower and finances for these additional studies.

The month of September is generally spent critically appraising and assessing the infestations which have been spotted during the summer and determining their impact on forest stands. The insects are close to their wintering stage and assessment at this time usually gives good indication of the



FIDS staff examining mountain pine beetle infested logs.

population and damage to be expected the following year.

Communication is a big part of a technician's job. During the field season, if a situation warrants it, pest reports are issued to government and industry alerting them to a potential problem. As well, from October to December, once they have returned to PFRC, they spend numerous hours translating their findings into detailed survey reports.

Late winter and early spring are spent maintaining historical files and maps and upgrading their skills as well as catching up on research and techniques they may be called upon to use during the summer months.

It takes a special kind of person to be a pest survey technician. One who has a lot of initiative, who can cope with unexpected situations as they arise, and most of all who can handle long hours and hard work. But it has its rewards. It must. The average length of service of PFRC FIDS survey technicians is 17½ years!



Recent Publications

Management of Lodgepole Pine to Reduce Losses from the Mountain Pine Beetle

L. Safranyik, D. M. Shrimpton and H. S. Whitney

This popular publication has been reprinted for the benefit of those concerned with management of the mountain pine beetle. It covers all aspects of problems associated with the insect including procedures and guidelines for coping with it. Biological interactions that occur when bark beetles attack trees are also described.

Forestry Technical Report 1, March, 1980

Ecotour of the Trans-Canada Highway, Victoria-Hope

R. G. McMinn

The latest in a Canadian Forestry Service series of ecologically interpretive booklets designed to assist travellers in enjoying the landscape through which they are travelling. Human as well as natural history is featured in this low-key education effort in environmental awareness. Copies are available in French and English.

Operational Field Trials Against the Douglas-fir Tussock Moth With Chemical and Biological Insecticides

R. F. Shepherd (Ed.), J. R. Carrow, S. Ilnytzky and V. G. Marshall

Publication describes the results of this international research and control program conducted in British Columbia in 1975-76.

BC-X-201, April 1980

Fertilization and Thinning Effects on a Douglas-fir Ecosystem at Shawnigan Lake - 6 Year Growth Response

T. H. Hall, R. V. Quenet, C. R. Layton and R. J. Robertson

Tree and stand growth response to thinning and nitrogen (urea) fertilization of a 24-year-old Douglas-fir stand near Shawnigan Lake, B.C., is examined.

BC-X-202, April 1980

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

A Ground Survey Method for Estimating Loss Caused by *Phellinus weirii* Root Rot 1. Development of Survey Design

W. J. Bloomberg, P. M. Cumberbirch and G. W. Wallis

This report describes the derivation and testing of a design for a ground-survey for estimating incidence, distribution and area of *P. weirii* infection centers, taking into account the complexities involved.

BC-R-3, March 1980

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