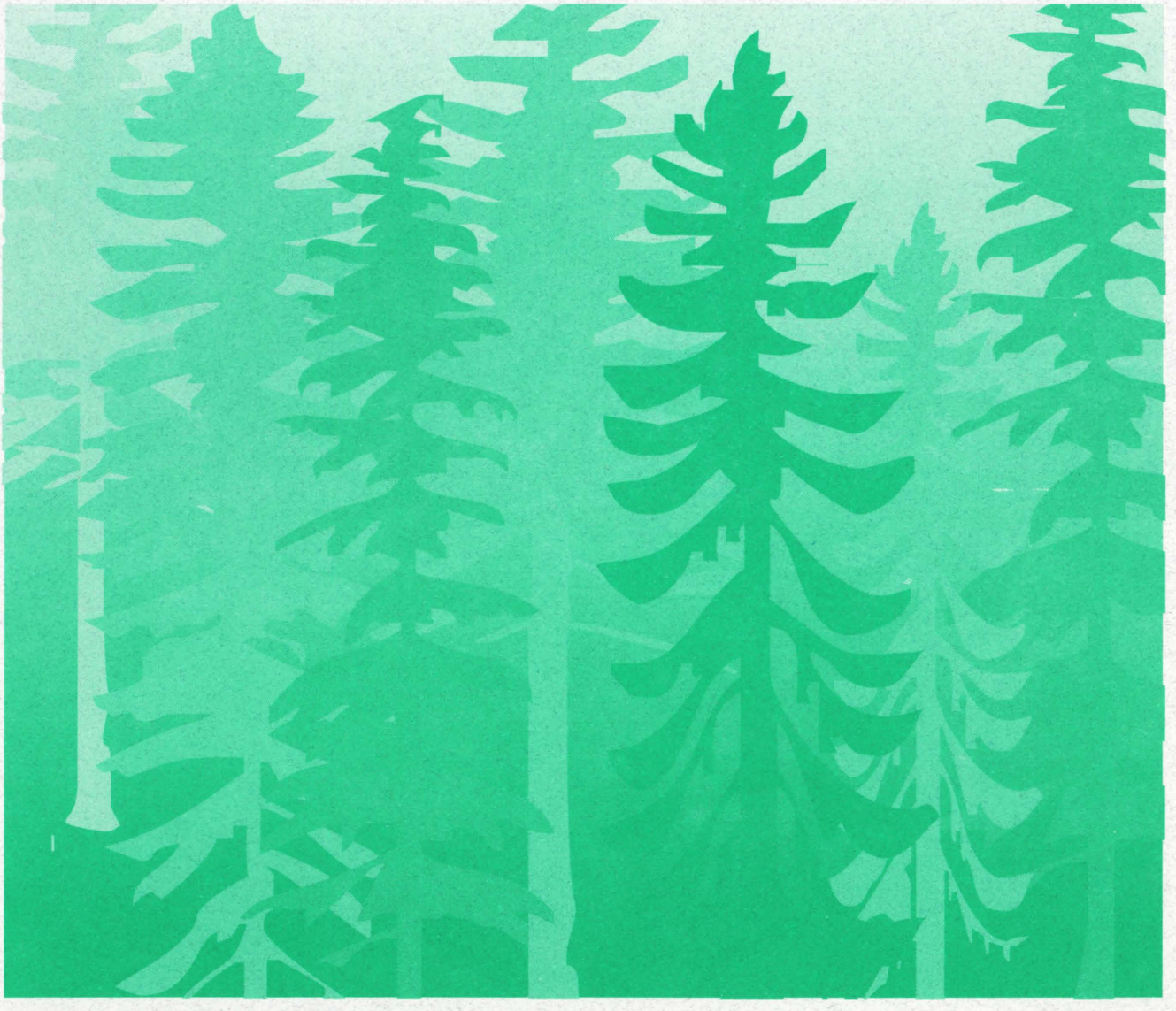
Forestry Canada - Pacific and Yukon Region

Strategic Plan 1991 - 1995



Forestry Canada Forêts Canada

Canada

FORESTRY CANADA

OUR MANDATE

Canada is a forestry nation. We are trustees to 10% of the world's forests and are purveyors of 20% of the world's trade in forest products. One in every 15 jobs is forestry-related. Over 350 communities throughout Canada are economically dependent on forestry for their livelihood. Our national treasure is our forests and our people who work them.

Canada is a trading nation. We are operating in a world of burgeoning population growth with experts predicting a doubling of the world population by the year 2020. The demand for forest products is expanding in step with population growth, however, our ability to supply is declining at the same speed for many of the same reasons. Balancing supply and demand through the next century is a real and current challenge for forest managers.

We are operating in a world of increasing environmental consciousness, where people talk about the linkage between forests and climate change and a healthy global environment. People are demanding the assurance, as consumers, that the forest products they buy are manufactured in an environmentally-friendly manner. They want proof that these products stem from forest management practices that help and not hurt the environment; that forest managers adhere to principles of sustainable development.

We are operating in a world of satellites and global communication where it's technically possible to know what's going on from one niche to another and where public consciousness and curiosity about subjects within areas can be satisfied.

Canada has a structure of government appropriate to the times. The Canadian Council of Forest Ministers provides strong national, provincial and regional linkages to the forestry issues of the day, an increasingly important contribution in this increasingly transparent world.

Forestry Canada is the main focus for forestry matters in the federal government. We provide leadership for forestry and related matters in both international national arenas. We develop, coordinate and implement policies and programs to enhance long-term economic, social and environmental benefits to Canadians from the forest sector. We are challenged to do this in the world just described.

Forestry Canada is a decentralized organization with six regional forestry centres, two national research institutes and seven regional sub-offices located across Canada. Headquarters is located in the National Capital Region, Ottawa/Hull.

OUR MISSION

The 1989 Act of Parliament creating Forestry Canada confirmed the importance that the federal government attaches to this national resource. The Act establishes a solid foundation upon which Forest Canada can achieve its mission:

"To promote the sustainable development and competitiveness of Canada's forest sector for the well-being of present and future generations of Canadians."

Moving toward the 21st century the Canadian forest sector will be increasingly impacted by three major factors: growing international competition; a changing resource base; and, escalating consumer and public demand for environmentally-friendly forestry products and practices.

Forestry Canada was established with a mandate to coordinate the development and implementation of federal forestry policies and programs required to assist the sector meet these challenges.

In helping respond to these challenges, Forestry Canada will be guided by the principle of sustainable development.

Sustainable development is a way of looking at the world taking a long-term perspective with both environmental and economic points of view. It requires managing the impact of human activities to avoid prejudicing the forest's ecological diversity, productivity and renewal capacity. The concept of sustainable forest development encompasses the notion of sustained timber yield, but is broader to include the flow of other values such as wildlife and fisheries habitats, watersheds and hydrological cycles, and species diversity with stable jobs and revenues.

In fulfilling its mandate Forestry Canada will focus its attention on the following four strategic areas:

(1) Science and Technology: A strong well-focused research and development program is fundamental to the Canadian forest sector's ability to compete internationally and to practice sustainable forest development.

(2) International and National Leadership: Canadians look to the federal government to provide national and international leadership in addressing the economic, social and environmental issues facing the forest sector.

(3) Forest Sector Development: Forestry is a rural-based industry and therefore an effective channel to stimulate regional economic development.

(4) Forest Environmental Quality: Action is needed to protect our forest heritage both at home and abroad from environmentally-threatening practices and influences.

FOREWORD

I am pleased to present this five-year Strategic Plan on behalf of Forestry Canada's Pacific and Yukon Region.

Every effort has been made to ensure our regional strategic plan reflects what we have heard from regional cooperators and Forestry Canada's national direction. Eight strategic areas are identified in this regional plan.

To address the corporate missions of sustainability of forest resources and the competitiveness of the forestry business internationally, our regional program is developed around two broad themes of (1) Research and (2) Industry, Trade and Development.

A recent extensive client survey and subsequent reorganization have moved us toward becoming a higher profile, excellence-oriented, client-driven organization, confident we can deliver the mandate and expectations of Forestry Canada in the Pacific and Yukon Region.

We recognize the need to speak out on the issues of the '90's in a manner that is objective and respected by provincial and federal colleagues, by industry cooperators and credible in the eyes of the public. We also recognize the need to work in a collaborative manner, communicating with partners the aspirations of Forestry Canada and the Government of Canada. Our deliberations to date have determined that we must be more focused, more flexible, more client-oriented and more able to respond positively to change. We trust that you will find this Strategic Plan reflects these goals.

Comments and discussion on this Strategic Plan are encouraged and may be directed to my attention or to the attention of any of the regional staff listed on pages 26 and 27 .

T. John Drew
Regional Director General

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INTRODUCTION

British Columbia contains some of the most productive forest lands in Canada. Almost 85 % (80.7 million hectares) of the province's total area is designated Crown or provincial forests. About half of these lands are productive forests and roughly half again, or one in four hectares, is currently available and suitable for harvesting and growing commercial forests on a sustained-yield basis.

The remaining lands, although not considered able to support productive forests, do contain micro-systems that are equally valuable to supporting such things as ecological reserves, parks and wilderness areas.

The diverse and highly productive forests of the Pacific and Yukon Region occupy a remarkable array of mountain, coastal and continental landscapes.

They contain 40 % of Canada's wood volume. Spread over 12 degrees of latitude, these forests harbour some of the world's most prized genetic resources. Eight of the 16 forest regions of Canada occur within the boundaries of British Columbia – each with its own biological diversity.

The forest industry is the province's principal economic generator. It contributes $13 billion annually to the provincial economy and more than $600 million in annual revenues to the provincial government. The forests of British Columbia produce 60 % of Canada's lumber and provide 39 % of the world's total exports of softwood lumber. They provide 90,000 direct jobs and an estimated 180,000 indirect jobs for British Columbians. The forests also contribute significantly, in an indirect manner, to the province's economy through tourism, hunting, and fishing.

Public questions about how the forests of British Columbia are managed exist at the international, national and regional levels. The preservation of forestry landscapes, often couched in terms of environmental stability and biodiversity, is topical. Increasing environmental concerns and population pressures place growing demands on the use of the forest land base for activities which exclude the harvesting of timber. These include such set asides as parks and wildlife reserves. At the same time projections suggest that the demand for wood products will continue to grow.

Public pressures are calling for changes in the ways in which the forests of B.C. are managed, particularly in the area of harvesting practices, i.e. alternatives to clearcutting. There is increasing demand from the public to consider wider forest management objectives than sustained timber, including visual quality after harvest, maintenance of complex ecosystem structures, stand tending requirements, maintenance of water quality and quantity in community watersheds, habitat values, and long-term soil productivity and function. This same debate cycles back to us from global consumers in the form of requests for "green" labels.

As a result of enhanced reforestation programs in British Columbia, second-growth stands are emerging as the forest resource of the future. Although reforestation is a priority in the province, much needs to be researched about the second-growth forest.

More intensive forest management is required to maintain fibre availability from a smaller landbase. At the same time there is increased pressure for the development of more value-added products to maximize public returns from British Columbia's forests. We must become more competitive in the global market place to ensure B.C. forest products continue to be innovative and unique.

Many challenges face the present and future managers of the forests of British Columbia – challenges that Forestry Canada's Pacific and Yukon Region are prepared to help meet in full collaborative partnerships with others such as the Province, who have responsibility for forest land and resource management, and industry, who create national wealth as they move products into world markets.

OPERATING PRINCIPLES

Sustainable development of forest resources is the hub of all Forestry Canada programs, nationally and regionally. Provision of new information to resource managers, special interest groups, and the Canadian public is critical to managing our forests in a sustainable manner. A focus on provision of information is common to all of our regional programs.

Our research programs center on the delivery of new technologies for forest resource management and on environmentally-friendly solutions for forestry problems. Understanding the forest environment and its interaction with forestry, links the strategic thrusts of our research.

Our Industry, Trade and Development initiatives focus on linking resources to products and finally to markets. Resource development agreements provide opportunities to integrate new information into operational resource planning and management.

Forestry Canada's Pacific and Yukon Region will continue to play the lead role in federal forestry research and forest development in British Columbia and Yukon.

To do so effectively the following operating principles have been adopted to direct our research and development programs. We are committed to:

- ensuring our research and development programs are focussed on sustainable development of forests and forestry in British Columbia;

- solving forest management problems with leading edge science;

- seeking partnerships with other federal departments, provincial government agencies, industry and special interest groups to mutually enhance our research and development programs;

- marshalling resources and expertise to foster the financial health and growth of the forestry business;

- enhancing both internal and external communications to accelerate the adoption of new technologies resulting from our research programs;

- offering enough flexibility in our programs that we can respond to shifts that may occur during our planning cycle;

- delivering the regional components of the department's Green Plan initiatives;

- delivering a program of forest research and development through federal/provincial/territorial agreements with emphasis on forest management practices to ensure the sustainable development of the resource.

EXECUTIVE SUMMARY

STRATEGIC AREAS

Forestry Canada's Pacific and Yukon Region will:

1. Ensure our research is fully responsive to client needs.

2 Foster sustainable forestry development and the competitiveness of Canada's forest sector.

3. Determine how ecological processes and biodiversity enable forests to provide social, economic and environmental benefits, and how these roles may be affected by changes in the forest and atmospheric environments.

4. Determine the effects of non-traditional harvesting systems on regeneration and of current forestry practices on forest productivity, watershed hydrology and soil erosion.

5. Develop and assist in implementing integrated pest management systems, with an emphasis on biological and silvicultural pest control methods, including decision support systems.

6. Provide clients with decision aids for wildfire management and the use of prescribed fire in reforestation programs.

7. Position itself as a leader in the forest sector by demonstrating its achievements and publicizing its programs and activities.

8. Instill organizational values and provide our staff with the skills they need to help deliver these strategic directions.

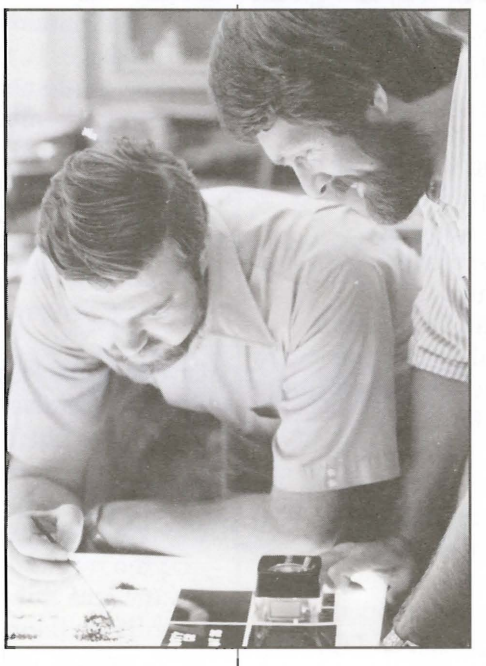
STRATEGIC AREA I: RESEARCH MARKETING AND SERVICES

Departmental Strategy: Strengthen technology transfer and related public awareness activities to improve the use and understanding of Forestry Canada's science and technology program.

Regional Issue: Insistent and conflicting demands upon the forest land base in this region make it necessary for emerging science and technology to be responsive to regional issues and be incorporated promptly into forest management. Clients require efficient diagnostics, certification and prescriptive services and regular assessments of environmental influences on the health of the forests.

Regional Strategy: Forestry Canada's Pacific and Yukon Region will work to ensure that our research is fully responsive to client needs. Efforts will be taken to work cooperatively with our partners to deliver needed products and services, and through extension and technology transfer activities, promote Forestry Canada science and technology in this region.

Forestry Canada's Pacific and Yukon Region has taken a bold approach to the challenges for forestry in the '90's. By establishing the Research Marketing and Services Division, the Region is creating opportunities for linking the research programs of Forestry Canada to its clients, expanding its ability to forge working and funding partnerships and providing one-stop opportunities for national programs, external services and access to Pacific and Yukon Region research.



This is an innovative Division which will provide opportunities for action on both the environmental issues of today and tomorrow, as well as provide for the forest industry's urgent needs for scientific information upon which they can base forest management decisions.

Extension, Technology Transfer and Client Relations

Forestry Canada's Pacific and Yukon Region is committed to ensuring that research results, developed not only in this region, but also by our colleagues at sister regions and institutes, are rapidly and effectively transferred to our many client groups.

During the next five years, extension and technology transfer activitivies will be expanded to strengthen client relations and knowledge availability. We will work closely with scientists during the intensive research phase to examine options for further development and transfer. In addition, we will expand our role in the intellectual property management area so that research that can be commercially developed.

In an effort to expand technology transfer activities, staff will develop a program of conferences and trade shows to facilitate the interaction of scientists, users and state-of-the-art technologies and knowledge developed by regional scientists. A major effort in promoting field trials and demonstrations, in cooperation with scientists and clients, will be undertaken.

Forestry Canada's Pacific and Yukon Region initiated, and will continue to support, the development of a Continuing Studies Network in Forestry in cooperation with the Ministry of Forests, universities and colleges in B.C. Staff will work closely with the Silvicultural Institute of B.C. and the curriculum committees of universities and colleges to assist in the implementation of new research methodologies in the training of students.

Expanding research efforts in northern B.C.

Forestry Canada's Pacific and Yukon Region will establish a program of applied research for northern

British Columbia centred in Prince George. This team of scientists, forestry officers and technicians will work in close cooperation with client groups throughout northern B.C. in the areas of regeneration, soil nutrition and physics, growth and yield, and integrated resource management. A principal component of this effort will involve forming partnerships with client groups and seeking collaborative programming and funding. This funding will provide key linkages with Pacific and Yukon Region's science programs and ensure the development and transfer of scientific research results and knowledge throughout northern B.C.

External Services

As part of Forestry Canada's Pacific and Yukon Region's commitment to clients, support will be provided in the areas of forest regeneration and seed and nursery production by providing two specialized services: (1) Forest Nursery Pest Diagnosis, and (2) Forest Tree Seed Export Permit Certification. Dialogue will be ongoing with clients to review their needs and seek funding partnerships for the future.

Forest Insect and Disease Survey

The threats to Canada's forests from domestic and imported insects, disease, atmospheric pollutants and climate change are enormous. Pacific and Yukon Region's Forest Insect and Disease Survey (FIDS) program will continue to conduct a roll-up of regional pest conditions throughout B.C. and Yukon in order to identify major threats.

During the next five years, FIDS will devote increasing attention to quarantine and trade-related pests such as the Asian gypsy moth and the pinewood nematode, and to emerging regeneration problems such as root rots and the balsam woolly adelgid. Our FIDS research capability to deal with these new problems will be enhanced and our utilization of new GIS-based technology will expand our prediction capabilities.

Research Collaboration and Funding Programs

Forestry Canada has several major programs for scientific excellence and collaborative partnerships with clients. These include the Canada-B.C. Forest Resource Development Agreement (FRDA II), the Green Plan, ENergy from the FORest (ENFOR) program, Forestry Canada Science and Technology fund, Biotechnology Fund, NSERC Forestry Programs and Graduate Student supplements. The linkages to these regional and national programs will be implemented. In addition, Pacific and Yukon Region will enhance its linkages to client groups by supporting the B.C. Forest Research Advisory Council, as well as the Yukon Forest Advisory Council and the research component of the South Moresby Forest Replacement Account. Support will be continued to the collaborative organic chemistry research program.

Environmental Impact Assessment and Environment Program Coordination

The Government of Canada has undertaken several major initiatives related to the environment, including the Environmental Assessment Review Process, the Green Plan, the pesticide review process and the registration of products of biotechnology. Pacific and Yukon Region will enhance its ability to coordinate these programs with clients, other federal departments and provincial ministries. In particular, we will work to help establish the Green Plan's Model Forests program in the major forest regions of British Columbia and to strengthen research linkages to them.

Regional staff will work closely with the federal departments of Environment and Fisheries and Oceans to ensure that the forestry sector is both understood and represented in federal issues and programs and that we are cooperating fully in the implementation of federal regional Green Plan programs.

STRATEGIC AREA II: INDUSTRY, TRADE AND DEVELOPMENT

Departmental Direction: Forestry Canada will seek to obtain long-term resources for cooperative sustainable forest development initiatives with the provinces and territories, industry, Indian bands and private woodlot owners.

Forestry Canada will promote better wood utilization through improved processing, value-added production and product innovation, and will promote market development and diversification.

Regional Issue: Pressures of increasing concern for the environment, reductions in land base for forestry, reduced employment in traditional forest industries and changing patterns of supply and demand create both problems and opportunities for British Columbia's primary forest sector. Investments and effort must be planned, based upon the most complete and timely information. New innovations and markets must be developed.

Regional Strategy: Forestry Canada's Pacific and Yukon Region will analyze, negotiate and implement new cooperative forestry agreements with British Columbia and Yukon, enabling industry and government to capitalize on regional, national and international opportunities. Efforts will focus on promoting better wood utilization and developing value-added production and product innovation as well as market development and diversification.

Industry and Trade

British Columbia's economic performance and international competitive position is driven in large measure by export sales of forest products. Industry and governments must be kept informed of the entry of new competitors and products. New and existing products from B.C. must be aggressively marketed. The B.C. forest sector must retain the ability to respond, adapt and capitalize on regional and global changes and opportunities.

Projections show an increased demand for value-added forest products. This trend represents an opportunity for B.C. to increase the number of jobs per cubic metre of fibre harvested and retain the extra value in the province.

Industry and Trade will concentrate on three major components:

a) market and industry intelligence;
b) product and technology development; and,
c) the link between resource supply, products produced, and their suitability to the markets.

We will provide regional input to national policy and programs on industry, markets, and international trade and respond to B.C. needs for opportunities to improve the sustainable economic contributions of forestry. This will include the development of environmentally-friendly products and practices; increased value-added manufacturing; and, the assessment of international export opportunities. We will assist in the development of the secondary and tertiary forestry business through the identification, assessment and demonstration of innovative products and technologies.

Specific projects will assess the impacts of changing international markets on the B.C. forest industry. Examples include examining the expanding sources of supply such as Chile and New Zealand; changes in the international trading blocks such as Sweden's entry into the European Community; and the impact of environmental quality requirement on chlorine discharge levels and recycling. Market opportunities in the Asian Pacific countries of Japan, Korea and Taiwan will be identified and developed in co-operation with industry.

Development

Implementation consistency is needed in managing the Canada-British Columbia Partnership Agreement on Forest Resource Development (FRDA II), the South Moresby Forest Replacement Account, and the Canada-Yukon Cooperative Forestry Development Agreement. The development and implementation of these cooperative agreements must incorporate the Department's principles on sustainable development.

These agreements are broad, enabling Forestry Canada's Pacific and Yukon Region to participate in a wide range of integrated resource and forestry issues and work with other government departments, industry and a large number of other participants.

Staff will provide financial assistance, as well as develop and implement forestry programs to provide advice to private woodland owners, native Indian bands, municipalities and other federal departments. This includes sponsoring workshops, seminars and other courses to foster a forest management ethic and the principles of sustainable development.

Economics

In the often conflicting atmosphere of concerns for the environment and pressures for competitive pricing in the forest sector, a clear picture of the economic effects of changing policies and forest management practices is essential.

For example, in B.C. there is increasing concern about the economic sustainability of the current level of forest industry activity. As a result there is an emerging interest in defining the economic timber supply available to the regional industry, especially in the face of increasing questions about declining stocks of old-growth timber, increased harvesting costs, second-growth management issues, and competing non-timber demands on the land base.

In response to these emerging questions, research will focus on the issue of economic timber supply, especially with regard to the analysis of the impact of silvicultural operations and forest management strategies at the forest level on the economics of timber supply, the impact of harvesting technology and costs on the availability of timber, and on resource utilization trends.

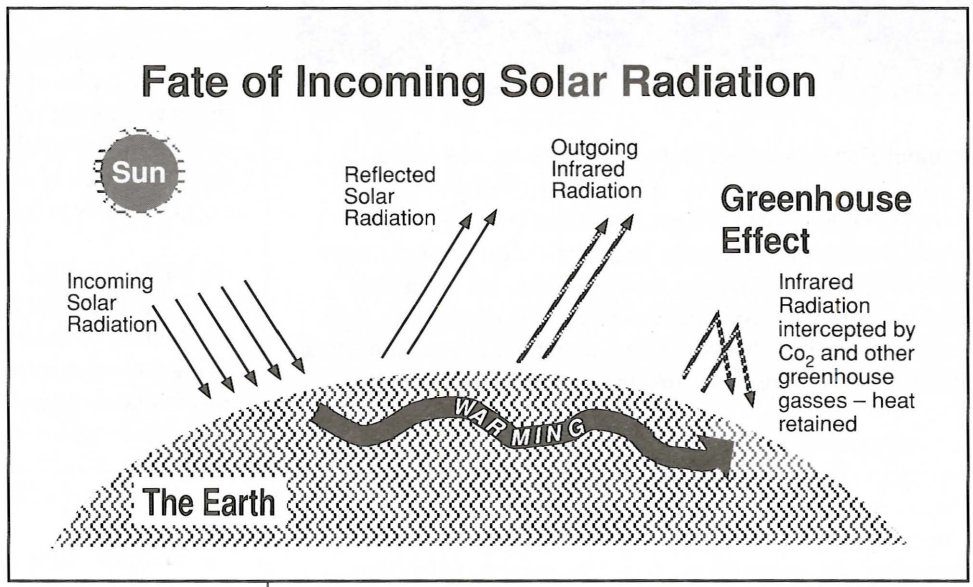
STRATEGIC AREA III: IMPACTS OF FOREST USE

Departmental Direction: Increase Forestry Canada's capability to predict and prepare for the consequences of human and natural disturbances, such as the effects of climate change on forest ecosystems, and to better recognize the early warning signals of environmental stress.

Regional Issue: The diverse and highly productive forests of the Pacific and Yukon Region are being increasingly perceived as significant elements of the global biosphere. This perception, as well as local concerns, is driving serious opposition to the harvesting of old-growth forests, which continue to be the mainstay of the forest industry in the region.

Regional Strategy: Forestry Canada's Pacific and Yukon Region will determine how ecological processes and biodiversity enable forests to provide social, economic and environmental benefits, and how these roles may be affected by changes in the forest and atmospheric environments.

The forests of British Columbia contain 40 % of Canada's wood volume, and an equivalent proportion of the living carbon reservoir. The forest carbon cycle of the region is emerging as a major element of Canada's carbon budget. Thus the region's forests not only stand to be affected by climate change, they also enter into the process effecting this change.



A remarkable array of mountain, coastal and continental landscapes harbour some of the world's most valued genetic resources in woody species; south central B.C. is Canada's "hotspot" for diversity of conifer species. The principles underlying such prolific diversity remain unexplored, however, leaving it vulnerable to the vagaries of exploitation. This vulnerability is now recognized both within and outside the region, and has led to pressures on the forest sector to reduce or curtail its activities.

An understanding of the ecological roles of forests, and of how they are affected by forestry practices, has become a necessity for rational decisions about land use.

Forestry Canada's Pacific and Yukon Region will endeavour to develop a clearer understanding of the way in which forests function as biological systems. The maintenance of biodiversity and carbon and nutrient pools will be studied, particularly with regard to disturbances in the natural order.

Maintaining Biodiversity

Biodiversity is highly topical, controversial and rapidly escalating on scientific, public and political agendas. Regional research staff will maintain a flexible position to respond to emerging needs and opportunities.

Research staff will examine how the diversity of fauna and flora is affected by forestry practices. We will investigate how such impacts are manifested in the essential ecological processes supporting the forest ecosystem, and shall expand the often limited taxonomic base of biodiversity, particularly among lesser known groups that are highly significant in self-perpetuating ecosystems.

The changes wrought by the conversion of old growth to second growth form a sharp focus for public concern. It is

generally assumed that biological diversity of a forest diminishes through this practice. Less readily acknowledged is its restoration as trees become re-established, as productivity becomes diffused among more elements of the ecosystem, and as habitat for organisms becomes more diversified. Research will proceed through comparative analyses of developmental phases of important coastal forest types, from regeneration to old growth.

By networking with regional agencies managing forest resources, regional staff will provide Forestry Canada's Petawawa National Forestry Institute with essential information on existing genetic resources and conservation measures. In-house research will be conducted into the preservation of western genetic resources. A special project has been launched to support the sustainable development of western yew, source of the anti-cancer agent taxol.

We shall explore methods for acquiring, managing and assessing information on biodiversity to aid decision-making in forestry. As well, we shall support programs that aim directly at the *in situ* and *ex situ* conservation of genetic resources. Pacific and Yukon Region will co-ordinate the national Green Plan Program to enhance the netwok of ecological reserves in Canada.

Atmospheric Change

The forest sector must address the issue of climate change because forest resources will be impacted according to some scenarios for the 21st century, and because, in their role as carbon reservoirs, forests are perceived to affect carbon dioxide levels in the atmosphere.

Significant prospects for effective collaboration lie in a recently proposed impact study of climate change in the Mackenzie drainage area. A geographic information system (GIS) will be the focal point as a tool for integration and analysis for the evaluation of the impacts of different climate change scenarios on the various components of the forest sector.

Pacific and Yukon scientists have collaborated with Forestry Canada's Northern Forestry Centre in Edmonton in the development of a carbon budget for the forest sector at the national level. The model has confirmed the very significant role of accumulation and decomposition of organic matter in forests.

Pacific and Yukon regional staff will continue to provide scientific expertise in the advanced phases of the project by conducting research into the dynamics of detrital and living carbon reservoirs in coastal forests at different successional stages. The Centre has installed Forestry Canada's first Nuclear Magnetic Resonance (NMR) instrument for the analysis of complexes of dissolved organic matter in forest soils.

The potential for impacts from atmospheric change in the region is very large. Opportunities where Forestry Canada resources can combine with those of other agencies must be sought and utilized. Care will be taken to ensure that developments are in step with those elsewhere in the Department, and with the needs of clients in the Pacific and Yukon Region.

STRATEGIC AREA IV: SUSTAINING FOREST PRODUCTIVITY

Departmental Direction: Strengthen science and technology programs in biotechnology for improved tree growth and pest and disease control, as well as in forest ecosystems dynamics and forest management systems for improved management practices.

Regional Issue: Conflicts over land use and resource management in the Pacific and Yukon Region have increased dramatically over the past decade. This is largely due to a growing expectation that forest management must consider wider objectives than sustained timber yield, and a widespread concern that current practices are not sustainable even for timber production. There is an urgent need to develop tools to effectively monitor and predict the impacts of current management systems on both timber and non-timber forest values.

Regional Strategy: Forestry Canada's Pacific and Yukon Region will determine the effects of non-traditional harvesting systems on regeneration, and of current forestry practices on forest productivity, watershed hydrology and soil erosion. We will also develop remote sensing and computer-based systems to help resource managers monitor and develop strategies for managing forest resources.

Forest management in Canada has improved dramatically in the past two decades or so, but the emphasis until now has been on growing wood and fibre to sustain the forest industry. There can be no doubt that this remains an important objective, but the public is now demanding that forests be managed to provide a wide range of resources and benefits. Forest resource managers are responding to this demand, but they need new knowledge, new tools, and perfected new forest management systems. Forestry Canada's Pacific and Yukon Region has reorganized its research to include three programs aimed at providing the knowledge, tools and systems needed to balance and sustain the productivity of forest resources and benefits.

Silviculture Systems Program

This program addresses the need to develop harvesting and regeneration systems that provide alternatives to clearcutting, and it examines the impacts on site productivity and other environmental aspects of both current and new harvesting systems and silvicultural practices.

The term "silviculture system" refers to the overall plan for management of a forest stand to control its composition and structure through time in order to achieve the land owner's objectives. There is increasing demand from the public land owner for silviculturists to consider wider forest management objectives than sustained timber yield. The choice of silviculture system must now consider the long-term sustainablilty of many forest values.

The most commonly applied silviculture systems in the Pacific and Yukon Region have included clearcutting at harvest. There is widespread and increasing concern for the impacts of clearcut-based systems on other forest values. We have studied impacts on water quality and quantity, important fisheries, long-term soil productivity, erosion, and vegetation communities. Such information is critically important to both land owners and managers as silviculture options are evaluated.

There is a widespread perception that partial cutting systems will achieve all objectives without detrimental impact on timber production or environmental quality. Very little research has been directed to examining this perception, or to developing establishment and tending prescriptions for partial cutting systems. In anticipation of expanded application of systems involving partial cutting at harvest, a comprehensive research effort examining partial cutting systems must be fast-tracked to quickly provide some of the basic answers foresters will need to choose the best options for the diverse forest types within the region.

Forestry Canada's Pacific and Yukon Region will play a key role in cooperative and multi-disciplinary studies to evaluate, develop and improve silvicultural systems based on partial harvesting.

Timber Production Program

Forestry Canada's Pacific and Yukon Region established a formal program in this field in 1986 focussed on developing a better understanding of the factors affecting tree and stand growth in order to improve growth projection systems, and on acquiring new research data for these purposes. We will maintain this focus in the future

and will complete a tree and stand growth model for western hemlock designed for use in inventory updates, AAC calculations and management planning.

The development of improved growth models depends on improving our understanding of how growth is affected by environmental and man-made factors, including silvicultural treatments. Investigations of this nature will continue.

We will provide assistance to other regional programs in which growth and yield expertise is required, including cooperating with the B.C. Productivity Councils and the B.C. Ministry of Forests.

Advanced Forest Technologies Program

All forested areas represent, to a greater or lesser extent, a mosaic of sites, stands, species, health conditions, slopes, and other aspects. Nowhere is this more true than in British Columbia and Yukon where mountainous terrain leads to marked biogeoclimatic variations and forest type changes over short distances. These spatial variations add a great deal of complexity to forest resource management, and they magnify the need for tools for determining forest condition and systems to aid decision-making. Remote sensing can provide timely information concerning the distribution of forest species, the extent and location of harvesting, the extent and location of forest damage, and variations in forest volumes and yield over time.

Forestry Canada's Pacific and Yukon Region will conduct research to investigate the potential forestry resource management applications of remote sensing, and to develop appropriate technology to facilitate forestry applications. This research will address fundamentals and physics of remote sensing, sensor development, image processing, forestry applications development, and technology transfer.

Remote sensing has close links to Geographic Information Systems (GIS), and these will play a major role in the technology transfer. Remote sensing and GIS are important components of decision support systems. Their use and integration with other decision support tools such as computer simulation models will be guided by expert systems developed by the Advanced Forest Technologies program. Expert systems and computer simulation models will also be developed to facilitate forest management decisions on topics not related to remote sensing and GIS.

STRATEGIC AREA V: INTEGRATED PEST MANAGEMENT

Departmental Direction: Develop and encourage the use of effective, environmentally acceptable, and economically viable pest and disease control strategies.

Strengthen science and technology programs in biotechnology for controlling pest and disease and improving tree growth. Strengthen technology transfer and related public awareness.

Regional Issue: Pests (insects, diseases and weeds) are recognized as major obstacles to effective forest resource management, and impediments to reforestation programs and the export of wood products.

Regional Strategy: Forestry Canada's Pacific and Yukon Region will develop and assist in implementing integrated pest management systems, with an emphasis on biological and silvicultural pest control methods, including decision support systems.

Losses to pests have been equivalent to one-third to one-half of the annual harvest over the last decade. In addition, pests impact on reforestation programs limit silvicultural investment options, disrupt resource management planning and interfere with international trade in forest products. Forestry Canada has traditionally been the lead research agency in the region on integrated forest pest management and our clients look to us for continued leadership.

Interactions with client agencies have been strong traditionally, but will be further emphasized to meet client needs. Whenever possible, projects will be carried out in close collaboration with clients. Networking with other Forestry Canada establishments will also be strengthened.

Our regional integrated pest management research focuses on three major topics:

Biorational Control of Weeds

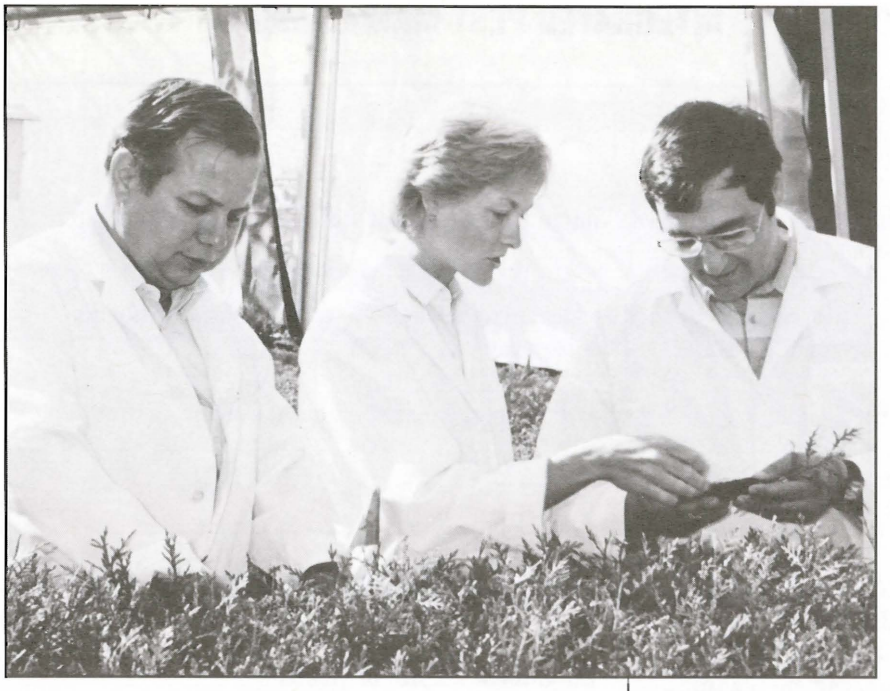
Public concerns over the use of herbicides for vegetation management in forests are growing. Few herbicides are currently registered for forestry use and the potential for future use is questionable. Yet competing vegetation severely limits the success of reforestation programs unless some form of vegetation management occurs. The challenge to reduce chemical herbicide use in forest management and increase the options available for controlling competing vegetation requires innovative research.

This region has pioneered forestry research in this field and has revealed several plant pathogens with potential as either "biologicals" or as a source of "biorational herbicides". The objectives of this program are to define candidate pathogens (in particular fungi), to collaborate in their commercial development, and to develop effective application techniques.

Integrated Disease Management

Forest pathogens are increasingly becoming a serious problem in forest management causing mortality and growth loss throughout a rotation. Root and stem diseases are estimated to cause the depletion of 5.3 million cubic metres annually in B.C. Diseases can limit silvicultual investment options and upset reforestation plans on infected sites. Their impacts will increase as the use of silvicultural systems other than clearcutting becomes more prevalent.

In forest nurseries, diseases (especially root rots and grey mould) can reduce seedling production by up to 10% and nursery managers continue to be, often of necessity, overly



reliant on fungicides and the effectiveness of these is often limited. Use of these materials is a concern to nursery workers and tree planters who subsequently handle treated stock.

Research thrusts include:
- development of silvicultural and biological management strategies;
- determining the interactions between silvicultural systems and the impact of diseases, particularly root and stem diseases;
- development of disease resistant trees, notably western white pine;
- identifying cultural practices that contribute to the spread of disease; and,
- developing cultural and biological control options in nurseries.

Diseases pose an increasing threat as forest management intensifies. As needs arise, integrated disease management will receive increased attention.

Integrated Insect Management

Insect pests reduce forest yield by increasing tree mortality, by reducing growth rates and by affecting timber quality. Periodic outbreaks of insect pests often result in catastrophic losses and related socioeconomic and management problems. The impacts of many pest groups, such as insects attacking young plantations, have not been adequately quantified.

Research thrusts include:
- development of biological and silvicultural control options for bark beetles, terminal weevils and defoliators;
- evaluating the potential of pheromones and naturally-occuring insect diseases as pest management tools;
- quantifying the impacts of insect damage; and,
- developing decision aids to predict timber losses and evaluate management options.

STRATEGIC AREA VI: FIRE MANAGEMENT

Departmental Direction: Increase its capability to predict and prepare for the consequences of human and natural disturbances.

Strengthen technology transfer and related public awareness activities to improve the use and understanding of Forestry Canada's S&T program.

Regional Issue: Clients have clearly identified a need for further development of decision support systems for both wildfire control and use of prescribed fire as a component of fire management systems.

Regional Strategy: Forestry Canada's Pacific and Yukon Region will provide clients with decision aids relating to wildfire management and to the use of prescribed fire in reforestation programs.

Regional staff have been involved in forest fire research for over 30 years, contributing to such significant national and regional developments as the Canadian Forest Fire Danger Rating System, the first Canadian decision aids for silvicultural prescribed fire use, and the first North American aerial ignition system. Research in the region has also been instrumental in the development of the nation's first quantitative fire behaviour prediction system. Forestry Canada's fire management research program underpins the operational wildfire control programs of client agencies and the use of prescribed fire in the region. As a result, strong linkages between our research and client operations, particularly those of provincial/territorial governments, are in place.

Protecting the region's remaining old growth forests and new, intensively managed forests are key elements in ensuring the sustainability of forest resources and values. Wildfire control programs also protect human life and property values. The B.C. Ministry of Forests currently spends $80 million annually to control wildfires. At the same time, continued use of prescribed fire in forest regeneration programs, wildlife habitat and range management, and in wilderness ecosystem maintenance requires new knowledge of fire's environmental impacts.

Research thrusts include:

- fire occurence and behaviour models for benchmark fuel types and for mountainous terrain; and,
- smoke emission models.

STRATEGIC AREA VII: COMMUNICATIONS

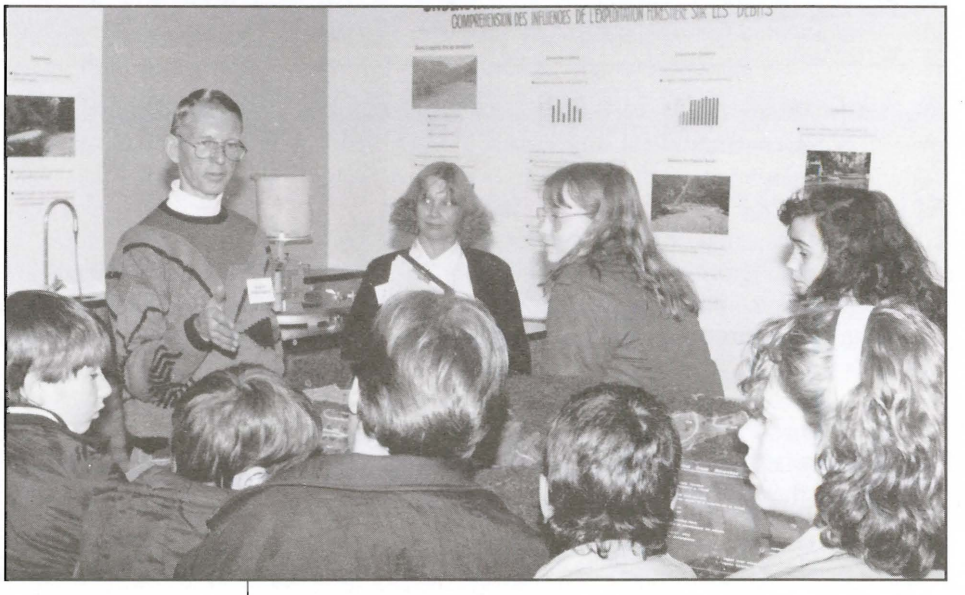
Departmental Direction: To undertake an ongoing program of public information to increase awareness of forestry and forestry-related issues.

Regional Issue: Public awareness and appreciation of the contribution of the forest resource to the social and economic well-being of British Columbians, and Forestry Canada's role in contributing to the enhancement of the resource through research and development programs, is not well understood.

Regional Strategy: To position Forestry Canada's Pacific and Yukon Region as a leader in the forest sector by demonstrating achievements and publicizing programs and activities.

Regional communications initiatives will complement departmental themes and messages as well as deliver region-specific messages about our research and development programs.

New initiatives such as the Green Plan, the Canada-British Columbia Partnership Agreement on Forest Resource Development (FRDA II), the South Moresby Forest Replacement Account, the Canada-Yukon Agreement on Forestry Development, and the First Nations Woodlands Program have provided additional opportunities to enhance and expand the areas of opportunity for public information programs.



The communications activities of Forestry Canada's Pacific and Yukon Region will endeavour to achieve the following:

- foster greater public awareness of the significant of the forest sector to this region;

- increase public awareness and appreciation of the level of federal commitment to the sustainable development of the forest sector through its research and development activities and its increased levels of funding directed to the resource through new initiatives such as those listed above; and

- increase public awareness of the presence of activities of Forestry Canada in the region.

The primary messages to be conveyed through the regional communications program include:

- Forestry Canada's leadership in the sustainable development of the forestry sector, promoting dialogue and providing technical and financial support for a wide variety of programs and activities;

- Forestry Canada's role in the federal government's Green Plan;

- Forestry Canada, through the Canada-British Columbia Partnership Agreement on Forest Resource Development (FRDA II), is in full partnership with the province of British Columbia to provide resources and programs to enhance all facets of the sector including non-timber values; and,

- Forestry Canada's involvement in state-of-the-art research and technology development activities that address areas of public concern, sector problems and opportunities, and its continuing successes in these endeavours.

STRATEGIC AREA VIII: HUMAN RESOURCES

Departmental Direction: Foster an organizational culture and human resource commitment which will enable Forestry Canada to be a leading institution in meeting the challenges of the next decade.

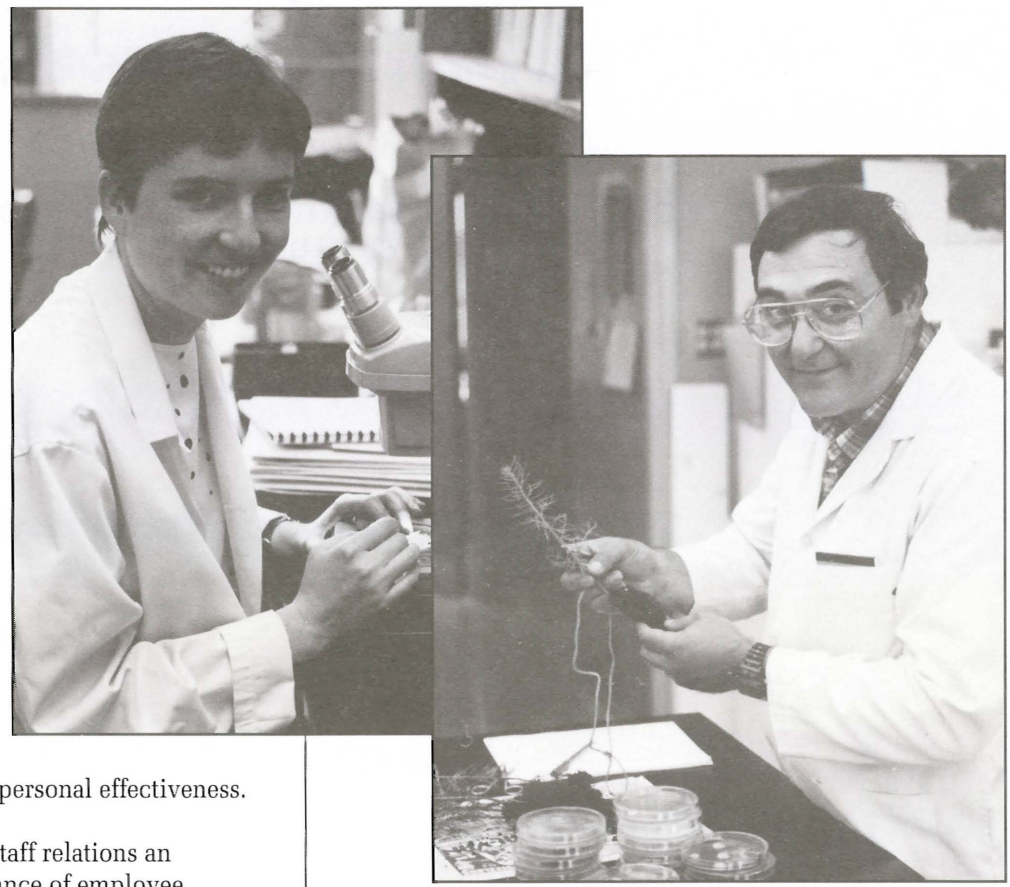
Regional Issue: Forestry Canada's Pacific and Yukon Region is proud of its highly skilled and experienced population of researchers and technicians. However, it is also true that within this five-year period 20 to 25% of our researchers and 15 to 20% of our technical support staff will be eligible to retire. Our recent redefinition of major research areas and teams has also created opportunities for supplemental training to enhance and better focus their contribution to these new program goals.

Regional Strategy: The recruiting of the next generation of research and development staff at Forestry Canada's Pacific and Yukon Region is a critical factor in pursuing and meeting our strategic objectives.

We will prepare a human resources forecast which will project our expected staffing requirements over the next five years and beyond, based on our existing staff profile and the expected needs of the organization.

A future-oriented plan will be put in place to rejuvenate our research program by recruiting young research and technical graduates. This will impact positively on our productivity and ensure our currency with new leading edge technology and research methodologies.

We are committed to the training and professional development of incumbent staff to ensure they are able to keep abreast of new technical skills, issues, priorities and opportunities to increase their personal effectiveness.



We will reflect in our staffing and staff relations an increasing emphasis on the importance of employee training, employment equity, performance review and career planning.

Our human resource planning process is committed to the principles of: providing a pleasant and dynamic work environment; allocating resources based on our commitment to doing every job well; ensuring every staff member knows their contribution to the achievement of our strategic objectives; encouraging and rewarding excellence; and ensuring every staff member understands that they are an "ambassador" of Forestry Canada in the Pacific and Yukon Region.

COOPERATIVE FORESTRY PROGRAMS

CANADA-BRITISH COLUMBIA PARTNERSHIP AGREEMENT
ON FOREST RESOURCE DEVELOPMENT (FRDA II)

•

FRDA II FIRST NATIONS FORESTRY PROGRAM

•

CANADA-YUKON COOPERATIVE AGREEMENT ON FORESTRY
DEVELOPMENT

•

THE GREEN PLAN

•

SOUTH MORESBY FOREST REPLACEMENT ACCOUNT

CANADA-BRITISH COLUMBIA PARTNERSHIP AGREEMENT ON FOREST RESOURCE DEVELOPMENT (FRDA II)

Departmental Direction: Complete the negotiation of new forestry agreements with all the provinces and territories.

Regional Issue: A strategic shift is required from maximizing the quantity of fibre produced and creating short-term bridging employment to improving forest quality. New solutions are required to realize fully the potential of forests and forest products through environmentally sound treatments, integrated resource management and long-term planning.

Regional Strategy: Forestry Canada's Pacific and Yukon Region signed a four-year, $200 million, cost-shared agreement with the Province of British Columbia in April 1991, known as the Canada-British Columbia Partnership Agreement on Forest Resource Development (FRDA II).

Forestry Canada's Pacific and Yukon Region will implement, with the B.C. Ministry of Forests, the seven sub-programs of the agreement.

FRDA II builds on the successes of its predecessor agreement FRDA I (1985-1990). The final evaluation of FRDA I concluded that its goals were met, including reducing the backlog of NSR by nearly 40%, planting 170 million seedlings over 140,000 hectares, creating more than double the number of jobs anticipated (1,044) and an additional 31,000 short-term jobs in silviculture. The negotiations of FRDA II have ensured that the province will continue to maintain those plantations and will reduce the remaining NSR by the year 2000.

FRDA II moves beyond backlog plantations and short-term employment into areas which promote sustainable development.

The first area of opportunity recognized by FRDA II is the improvement of the value, quality and health of young stands through stand tending. This will provide increased direct employment to silvicultural workers and improve the long-term supply of wood to manufacturing facilities. The overall competitiveness and stability of the forest industry will be strengthened.

The second area of opportunity is the improvement of current forest management practices on federal, provincial and private forest lands. This will be achieved by increasing forest research, enhancing public knowledge and extending research results to forest practitioners. Improved forest management practices will not only protect and enhance the forest resources, but will also increase social and economic benefits.

This agreement further recognizes the opportunity for the identification of new or value-added products and markets. By conducting investigations in this area, and by disseminating the information gained to the forestry community and the general public, this agreement will increase the flow of benefits that may be derived from the forest resources.

Enhancing the integrated management of British Columbia's wide range of forest resources is also a major opportunity for FRDA II. Analysis of the environmental, social and economic implications of management options will be carried out, and operational guidelines will be developed to help ensure the long-term sustainability of both timber and non-timber resources.

FRDA II FIRST NATIONS WOODLANDS PROGRAM

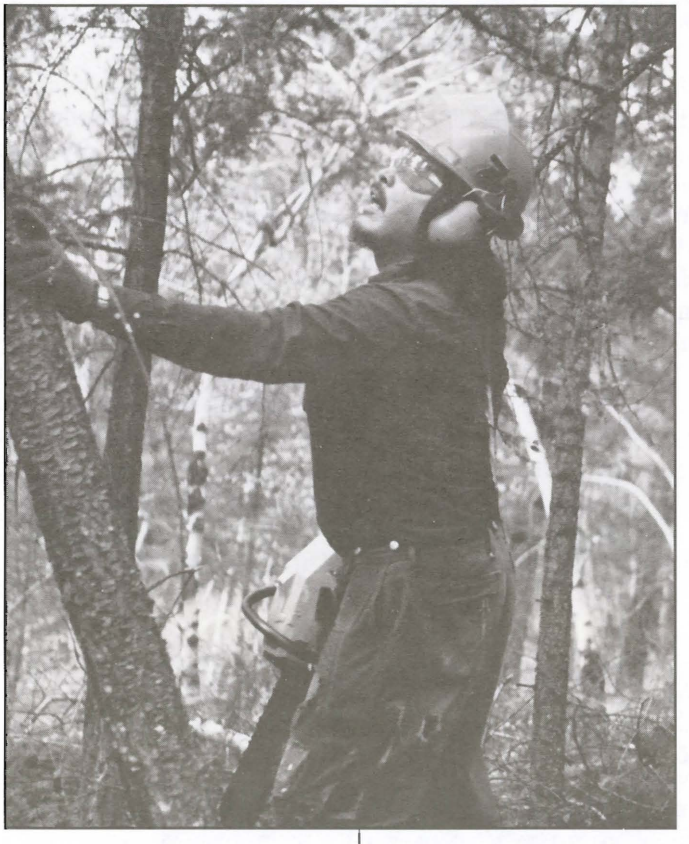
Departmental Direction: In cooperation with Indian bands, Forestry Canada will strengthen its forest management programs on lands designated for aboriginal peoples.

Regional Issues: The Government of Canada's relationship with First Nations is evolving. A Royal Commission on Native Issues has been established. The Department of Indian Affairs is devolving its responsibilities to First Nations, land claims are being expedited, and self-government is being promoted.

Regional Strategy: Forestry Canada's Pacific and Yukon Region has established a federal native program known as the First Nations Woodlands Program. It is funded by the Canada-British Columbia Partnership Agreement on Forest Resource Development (FRDA II), but operated independently from the agreement through a federal-native management committee.

Forestry Canada is a relatively new participant in native forestry. Through FRDA I, it became involved by providing financial assistance to bands to improve their forest resources and create forestry jobs. The program was tremendously successful, involving close to 70% of B.C. bands.

The First Nations Woodlands Program is established as a subprogram under FRDA II. Under the agreement, all programs report through working groups to a federal-provincial management committee, except the First Nations Woodland Program, which reports only to the federal committee.



The federal government, through Forestry Canada, and the native community, through its representatives, are joint partners in the First Nations Woodlands Program. The program will be delivered by Forestry Canada under the direction of a Native Management Committee.

Forestry Canada will work with native bands to encourage the use of sound forestry practices as a contribution to sustainable development The program will recognize non-timber values such as forage production, recreation, wildlife, landscape aesthetics through a comprehensive integrated resource management philosophy, and appropriate management plans.

The objectives of the First Nations Woodlands Program are to:

- increase an awareness amongst native people of the importance of forestry;
- increase provincial wood supply by providing technical advice and financial support to native bands;
- address the needs of other resource users; and,
- create jobs.

CANADA-YUKON COOPERATIVE AGREEMENT ON FORESTRY DEVELOPMENT

Departmental Direction: Forestry Canada will complete the negotiation of new forestry agreements with all the provinces and territories.

Regional Issues: The forest resource in Yukon has traditionally been exploited without much attention to forest management. The governments have recognized the need for wise planning of future resource development and and have made the development of renewable resources, including forestry, a high priority.

Regional Strategy: Forestry Canada's Pacific and Yukon Region has negotiated the Canada-Yukon Cooperative Agreement on Forestry Development. It is the first agreement to introduce intensive forest management into Yukon and address nonsatisfactorily restocked lands. It will serve to increase awareness of the forest sector and develop a local silvicultural industry.

The Canada-Yukon Cooperative Agreement on Forestry Development (CAFD), will promote sustainable development.

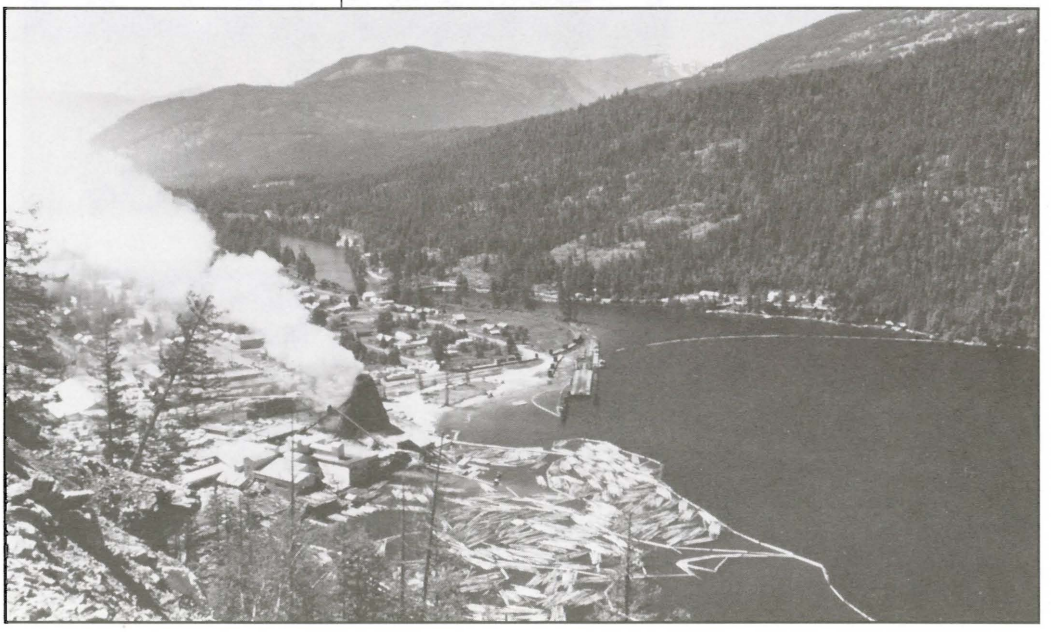
The forest resources of Yukon are an important part of the Yukon's environmental, social and economic fabric. In the future, the diverse role of the forest resources and their importance will continue to grow and evolve. This agreement will be an important step towards sustainable forest resource development through improved research, technology transfer, reforestation, integrated resource management, and human resource development.

Yukon covers 48.35 million hectares, of which approximately 7.56 million hectares have been defined as productive forest lands supporting an estimated 459 million cubic metres of timber suitable for sawlogs and pulp wood.

Yukon has sites capable of supporting timber suitable for large sawlogs. However, the availability and accessibility of high quality timber is diminishing. The quality of timber growth and the value of forests for other resource uses can be improved with intensive forest management.

Forest resources in Yukon represent opportunities for creating social and local employment diversity, promoting a more stable economy, enhancing integrated resource management, investments in long-term, sustainable development of a wide range of environmental values for future generations.

The Yukon forest, treated as a renewable resource under sound forest management, can yield good quality products and a broad range of consumable and non-consumable values. Through this agreement, essential ecological processes and values will be enhanced and the genetic diversity of plants and animal habitat will be preserved through forest management strategies and comprehensive management development. Emphasis will be placed on developing local human resources for forestry, the assimilation of knowledge from other areas and the application of research to operational forestry.



THE GREEN PLAN

Departmental Direction: In late 1990 the federal government announced a comprehensive $3 billion, six-year, environmental action plan for Canada, known as the Green Plan. This plan commits Canada to making sustainable development a reality. Forestry Canada is helping meet this challenge with a $200 million two-program initiative: (1) Partners in Sustainable Development of Forests and (2) Tree Plan Canada.

Regional Issue: Given the increasing demands on British Columbia's land base, the Forestry Canada components of the Green Plan will allow it to address some of the concerns facing the sector and the public.

Regional Strategy: New partnerships will be formed to implement both the Partners in Sustainable Development - Model Forests and the Tree Plan Canada programs in British Columbia.

Partners in Sustainable Development

As part of the federal government's Green Plan, Forestry Canada is establishing a network of "model forests", complemented by a program of enhanced research and information. This program will focus on shifting the management of Canada's forests from sustained yield to managing for sustainable development through:

. enhanced scientific research;
. expanded data and knowledge; and,
. development of a network of model forests.

These initiatives will help forest managers implement ecologically and scientifically sound management practices that simultaneously ensure the economic, social and environmental benefits of our forests for present and future generations.

Forestry Canada has allotted $100 million nationally over six years to this program. The budget will be divided among the three components listed above, with the largest share going towards building the network of about eight models of sustainable forest development. These model forests will function as living laboratories for the most advanced scientific methods, techniques and forestry practices.

Forestry Canada's Pacific and Yukon Region will work with British Columbia landowners, local governments, native groups, the provincial government, environmental non-government organizations, etc. to facilitate the submission of proposals from this region. Once a model forest site has been chosen in this region, staff will work with the "partners" to ensure all the objectives of this initiative are realized over the six years.

Tree Plan Canada

Tree Plan Canada is the second Forestry Canada $75 million six-year initiative. It encourages organizations and individuals to plant trees in urban and rural settings, and subsequently to provide for their ongoing care. Tree Plan Canada is an invitation to all Canadians to make a personal contribution towards beautifying their communities and improving our global and national environment.

Forestry Canada's Pacific and Yukon Region will make available to British Columbia and Yukon partners any technical advice needed in developing proposals, determining site suitability, tree species selection, planting and care for planted trees. Partners may also receive funds to assist with tree purchase, site preparation and tree planting. Partners in turn may be asked to contribute labour, materials, services or share in the project's financial cost and will arrange for the ongoing care of planted trees.

Those projects eligible for assistance under Tree Plan Canada include urban and rural projects that are not aimed at establishing trees for commercial or industrial purposes. Rather all projects must provide aesthetic, recreational or environmental benefits to the community for years to come.

SOUTH MORESBY FOREST REPLACEMENT ACCOUNT

Departmental Direction: Following the agreement to establish the South Moresby National Park in 1988, the South Moresby Forest Replacement Account (SMFRA), was created to offset economic and employment losses in coastal British Columbia.

Regional Issue: An estimated 147,000 hectares of land was withdrawn from commercial forest production as a result of establishing the national park in the South Moresby Region of the Queen Charlotte Islands.

Regional Strategy: SMFRA was created under the authority of the Memorandum of Agreement between the Government of Canada and the Government of the Province of British Columbia for the establishment of South Moresby National Park and National Marine Park, Queen Charlotte Island, B.C., July 12, 1988.

The main goal of this agreement is to enhance timber production and improve forest yields, thereby creating jobs. Forestry Canada: Pacific and Yukon Region will participate with the B.C. Ministry of Forests in the management and implementation of the SMFRA.

Activities carried out under the agreement include the following:

- inventory
- surveys, prescriptions, layout
- seeds and seedlings
- site preparation/rehabilitation
- tree planting
- brushing
- public demonstration
- juvenile spacing
- fertilization
- pest management
- implementation
- research, extension
- communications and information

Projects may be undertaken on any productive forest land which are committed to long-term forest management, including provincial Timber Supply Areas, Tree Farm Licenses, and in the the Queen Charlottes, private lands, Indian Reserves, lands held by municipalities, and federal holdings. Priority will be given to projects and treatments which provide the best combination of increased timber production and employment. All work undertaken through the SMFRA will supplement, rather than replace, ongoing forestry programs.

The enhanced forest management practices will include a high level of protection for the environment. Project prescriptions will be available to the public and projects will be referred to specialists in the Ministry of Environment, or other provincial or federal agencies.

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