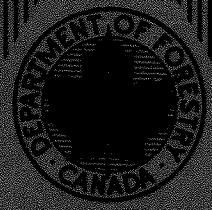

ADMINISTRATION OF CROWN FORESTS IN CANADA

INFORMATION AND TECHNICAL
SERVICES DIVISION

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INTRODUCTION

Significance of the Forests

Canada is often referred to as a "Forest Nation". Of her gross forest land acreage of 1,714,000 square miles, more than 960,000 square miles are productive forest land. Canadian forest industries employ more people and pay out more in salaries and wages than does any other group of industries dependent on a single natural resource. Forest products consistently account for some 27 per cent of the total value of all Canada's exports.

Constitutional Division of Authority

Under the provisions of the "British North America Act, 1867", the administration and management of the forests were clearly defined as Provincial responsibilities. This situation has continued up to the present with the Federal Government's responsibilities in forest administration being limited to the Yukon and Northwest Territories and such other federal lands as National Parks, Indian Reserves, certain military areas, and forest experiment stations.

Also, there is a strong tradition favouring public or "Crown" ownership of the forests in Canada. Thus, of the total productive forest area, 82 per cent is Provincial Crown land, 9 per cent is held by the Federal Crown, and a like 9 per cent is privately owned. However, whether or not the great bulk of the forest land is disposed of to private owners is a decision for each Province to make. In fact, the ownership patterns vary greatly between the individual Provinces across Canada. For example, in Prince Edward Island, almost all the productive forest land is privately owned; in Nova Scotia and New Brunswick, 79 and 53 per cent respectively is privately held. In Ontario and Quebec, where some 63 per cent of Canada's total population is concentrated, private forest ownership runs at 10 per cent and 9 per cent respectively. In the far Western Provinces of Alberta and British Columbia, private forest land amounts to 3 per cent and 7 per cent respectively.

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To varying degrees throughout Canada, there is a general movement by the Provinces towards the establishment of sustained-yield forest management systems. The actual mechanics of these systems are designed to meet the individual needs of the specific provinces concerned, and in this sense they differ widely. The common goal, however, is to manage the forests in such a way as to ensure their continuous productivity in perpetuity--in essence, to manage in the interests of the common good.

FEDERAL RESPONSIBILITIES

In spite of the fact that the responsibility for the management of the forests of Canada lies overwhelmingly with the ten Provinces, it has been recognized since early in this century that certain forestry functions can best be performed by a central, nationally-oriented authority. Specifically, such matters as basic forest research, forest products research, forest entomology and pathology research and survey are felt best dealt with at a national level for the following reasons:- (1) the natural factors influencing the distribution and productivity of forest land are not related to man-made boundaries; (2) substantial funds are required to maintain competent research staffs with the necessary modern research facilities; (3) the research results and benefits co-ordinated by a central agency are readily available to all parts of the country; (4) international exchanges of scientific information can best be co-ordinated through a single agency.

Department of Forestry of Canada

The forest policy of the Federal Government is to a large extent set forth in the Department of Forestry Act of 1960. This Act incorporates all the powers of the Canada Forestry Act of 1949, which it replaced, and gives the Department of Forestry the responsibility for conducting all federal forestry research previously carried out by two government departments -- Northern Affairs and National Resources, and Agriculture. In addition, the new Act provides for federal participation in forestry publicity and public education programs.

In April 1963, responsibility for the administration of the Agricultural Rehabilitation and Development Act, the Maritime Marshlands Rehabilitation Act, and the Feed Grain Assistance Policy were placed under the jurisdiction of the Forestry Portfolio.

Broadly stated, the objectives of the forestry elements of the Department are the improved management and protection of the forest resource, the fuller utilization of forest products, and the improvement of the competitive position of Canada's forest industries through research; plus the provision of special financial assistance to the Provinces for approved forestry programs under the terms of the Federal

Provincial Forestry Agreement.

More specifically, "the duties, powers and functions of the Minister extend to and include all matters over which the Parliament of Canada has jurisdiction relating to the forest resources of Canada. The Minister

(a) shall provide for the conduct of research relating to the protection, management and utilization of the forest resources of Canada and the better utilization of forest products, and may establish and maintain laboratories and other necessary facilities for such purposes;

(b) may undertake, promote or recommend measures for the encouragement of public co-operation in the protection and wise use of the forest resources of Canada;

(c) with the approval of the Governor-in-Council, may enter into agreements with the government of any province or with any person for forest protection and management or forest utilization, for the conduct of research related thereto, or for forestry publicity or education;

(d) may provide for the making of forestry surveys and provide advice relating to the protection and management of forests on land administered by any department or agency of the Government of Canada or belonging to Her Majesty in right of Canada; and

(e) at the request of any department or agency of the Government of Canada, may assume responsibility for the protection and management, including the disposal of timber and other forest products, of any forest on lands administered by such department or agency.

"In carrying out his duties and functions under this Act, the Minister may consult with and inaugurate conferences of provincial or municipal authorities, universities, representatives of industry or other interested persons."

In this connection, the first national conference of Canada's forest ministers was held in Ottawa, October 21-22, 1963, with all ten Provincial Ministers present and the Federal Minister of Forestry as Chairman. A second National Forestry Conference of broader scope is scheduled for February 21-24, 1966, at the Seigniory Club, Montebello, Quebec.

In order to more effectively meet its responsibilities for research leadership in the country's forest community, the Department of Forestry of Canada began the implementation of a large-scale re-organization in

the Spring of 1965. Essentially the new organization of the forestry element of the Department is designed to provide improved cohesion in national research program direction along with maximum regional flexibility to serve the varying needs across the country.

Seven regional organizations have been created under Regional Directors located at St. John's, Newfoundland; Fredericton, New Brunswick; St. Foy, Quebec; Sault Ste. Marie, Ontario; Winnipeg, Manitoba; Calgary, Alberta, and Victoria, British Columbia. Each Director is supported by a wide range of research discipline specialists working as a team. The regions contain two inter-related elements - an Investigative Group concerned with the actual research studies in the area and a Liaison and Service Group providing the crucial two-way communication link between the Investigative Group and the working forest community they service. The Regional Directors report directly to the Assistant Deputy Minister (Forestry) who is supported by a Directorate of Program Co-ordination made up of senior scientists in the major discipline groups.

To provide a conceptual, planning and leadership facility, a group of four Senior Advisors to the Deputy Minister on such basics as economics, forest products, scientific matters and federal-provincial agreements exists in Ottawa.

Also, to carry out specific research studies in depth and to support the Regions, research Institutes in forest management, economics, forest fires and pest control operate in the general Ottawa area.

In addition, special forest products research laboratories in Vancouver and Ottawa are tied in directly to the Assistant Deputy Minister.

Somewhat broadly presented, the following are the areas of activity of the federal Department:-

Forest Management

The Department of Forestry is responsible for the protection and management of forests on certain military training areas on behalf of the Department of National Defence. The Department also acts as consultant to the Department of Northern Affairs and National Resources, the federal agency responsible for the administration, protection and management of the forests of the Yukon and Northwest Territories and National Parks, and to the Department of Citizenship and Immigration with respect to Indian Reserves. The Department also conducts forest surveys on lands in all the above categories.

Public Information

Through its Information and Technical Services Division at Ottawa and Information Offices in the Regions, the Department is responsible for the development and maintenance of a comprehensive public information program on forestry matters with special emphasis being placed on the research activities of the Department. In addition to initiating programs of its own, the Department seeks to assist the provincial forest agencies, the forest industries, and resource associations in their information activities.

Federal-Provincial Forestry Agreements

Although major emphasis is placed on the Department of Forestry's research role, approximately half of its total parliamentary appropriations is paid over to the provinces under the Federal-Provincial Forestry Agreements. For most classes of shared-cost projects, a dollar-for-dollar division of costs between the Federal Government and the Provinces is in effect.

The first agreements under the Canada Forestry Act of 1949 became operative in the fiscal year 1951-52, and provided federal financial contributions for the preparation of provincial forest inventories and for reforestation of unoccupied Crown Lands.

Under the inventory program, over the past fourteen years, seven of the provinces have completed provincial forest inventories totalling nearly 1,000,000 square miles. They are now engaged in maintaining them and have carried out surveys of a more detailed nature on one quarter of this area. The inventory information thus made available has resulted in the opening up of forest industries in hitherto undeveloped areas, and has resulted in the curtailment of cutting in some areas which were being over-exploited.

A total of nearly 266,000,000 trees have been planted, 38,000 acres seeded, and 16 new forest nurseries have been established, under the federally-supported reforestation programs.

In 1957, agreements were entered into with all provinces providing federal contributions towards provincial capital expenditures required for forest fire protection purposes. In addition, the costs of hiring aircraft, vessels, communications systems and the employment of seasonal personnel for fire protection purposes are sharable. Large quantities of protection equipment have been bought and there has been marked improvement in facilities for detecting and reporting forest fires. The greatly intensified use of aircraft in recent years, especially for water bombing, has been financed to a substantial degree under the federal-provincial agreements.

Financial assistance for the construction of forest access roads, which are of prime importance in a wide range of forest management applications, was first offered to the provinces in 1958. Since that year nearly $19 million has been contributed by the Federal Government towards the construction of forest roads, trails and airstrips, which has resulted in the clearing of 3,579 miles, the grading of 3,031 miles and the gravelling of 1803 miles of road. In addition, 28 airstrips have been constructed.

In 1961, an agreement consolidating the various areas of shared-cost forestry undertakings previously outlined, and including, in addition, stand-improvement projects, was offered to and accepted by all the provinces.

Since 1951 the Federal Government has contributed $48.1 million to the provinces under these general forestry agreements, and an additional $6.2 million under special agreements, notably for aerial spraying against the spruce budworm in New Brunswick. The period covered by the agreements is one in which the most rapid advances towards intensive management of Canada's forest resources have been made.

Forest Research

Forest research in this context refers primarily to studies carried out in silviculture, forest management, ecology, and related subjects. There are several Canadian agencies engaged in this work besides the Federal Department. For instance, professors at each of the four Forestry Schools carry out some investigations in connection with their teaching. Some of the provincial forest authorities have research divisions. Also, Provincial Research Foundations, as well as the National Research Council, provide financial assistance for special projects. The Woodlands Department of the Pulp and Paper Research Institute of Canada, located near Montreal, studies particular problems of harvesting and managing pulpwood forests that face the member companies. Several of the larger pulp and paper companies assign one or two officers to small research projects, though usually on a part-time basis.

The largest single organization responsible for this type of research is the Department of Forestry which carries on comprehensive studies in the fields of forest management and forest fire control from the seven Regional establishments and special Institutes.

Forest management research as undertaken by the Department has two objectives: Firstly, to gain an understanding of trees and forests according to their inherited characteristics in relation to their environments; and secondly, to develop and improve methods and techniques for measuring, manipulating, and controlling both forest and forest environment to efficiently serve man's need. Forest management research embraces four broad fields: silviculture, mensuration and surveys, tree

biology, and forest land. The four fields are interrelated through their practical objective of maximizing quality and quantity production for forests and forest land.

Research in silviculture and silvics deals with the response of forests and trees to cultural treatments designed to secure satisfactory regeneration and maximum productivity. Current research emphasizes regeneration silviculture, including artificial seeding, planting, natural regeneration, and harvest cutting methods. Treatments under investigation include: planting methods and equipment, species adaptability to site, planting site and seedbed preparation using mechanical equipment and fire, and various harvest cutting practices. The cultural effects of such treatments in terms of quality and quantity of seed, germination and survival of seedlings and vigour and survival of planted stock are being measured. These are related to environmental factors including soil moisture and lethal temperatures. Research is carried out on cultural practices to improve productivity, including: thinning and pruning in natural and planted stands, the use of chemicals to release desirable species, and the use of fire to control species composition. The results of these experiments are combined into recommendations for the practice of silviculture in each important forest ecosystem.

Research in forest mensuration and survey methods is designed to develop and test the best methods of conducting forest inventories, preparing tables of growth and yield, and determining the volume of individual trees and stands. Improved methods of measuring tree and stand volumes on both conventional and new types of air photos are investigated. Sampling designs suitable for the determination of forest inventories are developed from a combination of airphoto interpretation and ground sampling. Improved methods of constructing yield tables and volume tables are developed using regression functions calculated on digital computers. Methods of developing models of stand growth through regression analysis of individual tree growth patterns are tested. An extensive series of permanent and single examination sample plots is maintained in the main forest cover types to provide the data for growth analysis. The results of this research are employed by the wood-using industries to improve the inventory and regulation of their forest crops.

Study of the biology of important forest trees is a major field of research aimed at obtaining a better understanding of the genetic, physiologic and ecologic controls of growth and development. Tree improvement work is centred on the pines and spruces, and a search is being made to find outstanding trees and to breed from them superior strains adapted to the Canadian environment. Physiological research is primarily focused on the flowering and cone production of spruce and Douglas fir, and there are encouraging signs that methods for inducing seed formation in "seed orchards" of young "plus" trees will soon be perfected. Environmental studies in both field and laboratory are

exploring the relationships between tree growth and the factors of light, temperature, moisture and nutrients, both in the crown layer of the air and the root layer of the soil. The identification and classification of seedlings and trees, as well as of minor forest plants, is a continuing aid to the other research activities.

The geographic study of forests and forest sites has to do with problems of forest land inventory, classification of soils and forest vegetation types, climatology and hydrology. The land base on which forests grow is receiving greater attention as provincial planting programs grow and information is needed on the soil, its suitabilities and productive capacity, and its response to fertilizers. Closely tied to studies of the land are investigations of the natural forest cover which indicates present and potential uses. Climatological studies, particularly on open lands, are assisting the identification of areas where frost, high temperatures and atmospheric drought constitute a hazard to reforestation. A program of watershed research has been started on the front ranges of the Rocky Mountains to study the factors of the forest land that regulate stream flow, and to determine how the quantity and quality of water for the Prairie Provinces can be maintained.

Fire is not only the most dramatic enemy of the forests but is also the most sudden and most devastating. In severe fires, and more particularly in areas repeatedly burned, not only may the timber be destroyed, but this soil may be consumed, rendering the areas useless for plant growth, game habitat, watershed protection and recreational use for hundreds and possibly thousands of years. During the decade ending in 1964, the average of the forest area burned annually in Canada was almost 2,550,000 acres.

In the field of forest fire research the Department of Forestry works in full co-operation with provincial and industrial forest protection organizations in solving many of the problems relating to the protection of forests against fire. Probably the most important contribution made by the Department in this field to date has been the development of a system of forest fire danger rating that is used in all provinces and territories of the country. Canada is unique amongst the larger nations in having such a unified system.

Research has been undertaken in nearly all phases of forest fire control with the exception of the development of heavy equipment for forest suppression. In recent years, increasing consideration has been given to problems concerned with fire control standards, fire control planning, prescribed burning for hazard reduction and silvicultural purposes, forest fire behaviour, logistics of fire suppression, chemicals in fire control, fire weather forecasting, and adequate methods for preparing and using forest fire loss statistics. Although a few of the provincial forest protection services maintain fire research staffs, their numbers are comparatively small. In recent years, they have made

outstanding advances in the use of aircraft, both fixed-wing and rotary-wing types, for fire control purposes. Development of radio communication systems is another particularly important and successful activity of the provinces.

Forest Entomology and Pathology Research

The three great natural enemies of the forests are harmful insects, tree diseases, and forest fires. In Canada it is conservatively estimated that losses from insects and diseases amount to some 700,000,000 cubic feet per year. Because of the very nature of the insect and disease attacks, they are of a national rather than provincial nature in that they are no respecters of man-made boundaries. Thus, this field of forest protection has historically been left with the federal authority.

The Department of Forestry carries out comprehensive programs of forest insect and disease research and surveys throughout Canada, and provides consultative and advisory services to federal, provincial, municipal, and industrial organizations, and to private citizens, in connection with direct control operations and other practical applications designed to prevent or reduce losses due to forest insects and diseases. The headquarters at Ottawa provides the broad direction and co-ordination for the programs and services, which are executed predominantly from the seven regional establishments. In addition, certain basic research requirements of the Department are provided by specialized research institutes as follows:-

Insect Pathology Research Institute, Sault Ste. Marie
Chemical Control Institute, Ottawa.

The Statistical Research Service, located at Ottawa, provides guidance and advice on the use of mathematical and statistical methods and procedures, and collaborates on research projects, especially those involving the use of electronic computers, with all research elements in the Department.

The forest insect and disease surveys, which are organized and conducted at the regional establishments, provide up-to-date information on infestations, pest population trends, and occurrence of damage. The surveys are essential to assessing insect and disease hazard to infested timberlands and in formulating recommendations for control operations. They also serve as an important guide in development of the research programs. Results of surveys are distributed regionally at periods during the field season, and are published annually for Canada as a whole.

The research program includes intensive studies on the biology of forest insects and disease-causing fungi, and on the numerous biotic and

abiotic factors influencing their distribution, abundance and destructiveness. Investigations are carried out on the growth habits, phenology and physiology of trees, insofar as these relate to tree susceptibility and vulnerability to insect and disease attack. Studies are conducted on the ecology of forest stands in relation to predisposition to epidemic attack, or to successional changes induced by severe insect or disease damage. Experimental control on a pilot-scale basis is undertaken with chemical and cultural control methods, preparatory to application on a commercial scale by the provincial forestry departments, industrial organizations, or private timberland or woodlot owners. The Department also undertakes biological control projects utilizing insect parasites, predators and pathogenic micro-organisms against native and introduced pest species, and to this end maintains extensive liaison with the Commonwealth Institute of Biological Control and similar agencies in foreign countries from which stocks of promising biological control agents are imported. Research findings are published in full in scientific and technical journals, and research notes in the "Bi-Monthly Progress Report".

Advisory and consultative services have assumed increasing importance as direct control operations, or other practical applications to reduce or prevent forest insect and disease damage, have been put into effect with increased frequency by the provinces and the industry, and by municipalities and private owners. Departmental officers assess hazard and provide advice and guidance in the organization and execution of large-scale control projects. Through intensive field studies, they also assess short- and long-term results of control operations in terms of pest population trends, health and vigour of treated stands, and abatement of hazard.

Forest Products Research

The Department undertakes research in the forest products field through laboratories located in Ottawa and Vancouver. This research provides the scientific and technical knowledge required for the development of new and better uses for wood products, improved manufacturing processes and a more complete utilization of the wood substance available from the forests. Close relationship with the provincial services, with industry, and with the users of timber is maintained so as to ensure that this research is of national benefit.

Research undertaken falls under the following broad classifications:-

TIMBER ENGINEERING - determination of the mechanical and physical properties of Canadian woods; calculation of basic working stresses; engineered use of wood products.

PLYWOOD - various factors affecting manufacture including peeling, drying and gluing; determination of mechanical properties; adhesives for the manufacture of plywood and glued-laminated timbers.

WOOD PRESERVATION - improvement of decay-resistant properties of wood with preservatives; studies of the mechanism of movement of liquids into wood; evaluation of preservatives; development of treating schedules.

LUMBER PRODUCTION ENGINEERING - studies on the engineering aspects of sawmill operation; effect of variables and modification of saw design on power requirements, kerf, and efficiency of sawing; research into the theory and techniques of lumber seasoning.

INDUSTRIAL UTILIZATION - studies on the harvesting and manufacture of timber; research into economic use of wood residue; conducting special courses on improved sawmill practice, log quality evaluation; seasoning of lumber; studies on improved utilization practices as related to the manufacture of forest products.

WOOD CHEMISTRY - determination of the chemical properties of Canadian woods; dimensional stabilization of wood; evaluation of mill residues for production of structural boards and other forms of utilization.

CONTAINERS - factors involved in the design and use of boxes, crates and other containers; improvements in standards of packing.

PAINTS AND COATINGS - investigations into the various factors affecting the painting of wood and the general performance of paints and natural finishes on wood under a variety of conditions.

FIRE RETARDANTS - improving the fire-retardant properties of wood through treatments and coatings.

WOOD PATHOLOGY - investigations of wood fungi, their effect on the properties of wood, and means of combating wood-destroying fungi.

WOOD ANATOMY - effect of anatomical structure on wood properties and behaviour, microscopic identification of wood and wood structure.

MICROBIOLOGY - possibilities of utilizing wood waste through the medium of microbial action.

TIMBER PHYSICS - applications of the principles and techniques of modern physics to forest products research; development of non-destructive methods of testing wood products; investigation of dielectric properties of wood and glues; the application of dielectric heating to the wood-working industries.

The Department's forest products research results are available to industry through publications, technical courses, and technical assistance associated with the use of wood.

Specially qualified members of the Liaison and Service Group in the Regions assist industry by making plant visits for consultation and for supplying information related to technical problems. This service is a useful aid in disseminating the results of forest products research. In addition, this close relationship with industry assists in determining laboratory research programs which will take specific regional and industrial problems into account.

Forest Economics

The Department maintains an Economics Institute responsible for advising on the economic implications of policies and developments in forestry and the forest industries. The Institute reviews the economic position of Canada's forest industries and keeps in touch with international developments in the forestry field. Statistical reports are prepared for the Food and Agriculture Organization of the United Nations, The Economic Commission for Europe, and the Organization for Economic Co-operation and Development on a regular basis, and for other organizations as required. The Institute compiles the National Forest Inventory annually from information supplied by provincial and federal government departments. Economic research and economic studies are carried out on a number of aspects of forestry and the forest industries.

Eastern Rockies Forest Conservation Board

This joint Board, whose members are appointed by the Federal and Alberta Governments, is responsible for policies relating to the maintenance of stream flow on certain parts of the eastern slopes of the Rocky Mountains. Federal participation in this project is based on the fact that the Saskatchewan River has its headwaters in the Rocky Mountains and flows through the Provinces of Saskatchewan and Manitoba, as well as Alberta.

Federal funds have been provided to finance construction of roads and other improvements needed in the protection program, but forestry operations in the area are carried out by the staff of the Alberta Department of Lands and Forests.

Pulp and Paper Research Institute of Canada

The Department also supports research in the fields of pulp and paper through the provision of the building and some technical equipment for the laboratories of the Pulp and Paper Research Institute of Canada, located at Pointe Claire, Quebec. Departmental representatives sit on the Institute's Board of Directors. The operating costs of the Institute are borne by the pulp and paper industry. McGill University participates in the work of the Institute through the provision of post-graduate studies.

PROVINCIAL ADMINISTRATION

Because 82 per cent of the productive forests of Canada is under the jurisdiction of the provinces, provincial forest policies are of prime importance.

It is in recognition of the economic contributions of the forest resources that the provinces, in their role as forest administrators, continue to have as their objective the realization of sustained yield from Crown forests. As a means of attaining their objective, provincial forest authorities have continued to emphasize, as a matter of policy, the protection of forests against fire, insects and diseases, silviculturally-desirable cutting methods, closer utilization, reforestation, the development of areas supporting mature stands, more detailed inventories, and the execution or promotion of forest research. In addition, more and more attention is being given to the development of enlightened policies relating to the multiple-use of the forest for recreational and other compatible purposes.

Although systems of Crown timber disposal vary among the different provinces, the policy remains generally either to grant licences to cut timber on a specified area for a varying number of years or to sell timber by public auction while retaining ownership of the land. All provinces set charges for timber cut on a unit-volume basis and some levy additional charges on an area basis or on a total standing timber volume basis. Consistent with the provinces' objective of sustaining yield on Crown forests, licencees are required to adhere to a management plan that regulates cutting and which is prepared either by the licencees subject to provincial approval, or by the province itself. Further directives concerned with fire protection, cutting methods to encourage natural regeneration, reforestation in the absence of such regeneration, and utilization standards are often embodied in the licence contract.

The responsibility for forest administration in each province is centred in a department of government headed by a Minister, who is an elected member of the legislature and a member of the Provincial Cabinet. The permanent head of the department, the Deputy Minister, is responsible for the execution of approved policies and for departmental administration. The name given the forestry department varies with the province; also, there are considerable differences in organization and in the titles and duties of the principal officers. The similarities, however, are of greater importance than the differences, and the functions performed by each forest administration are virtually the same. The Provincial departments responsible for forest administration and titles of their principal forest officers, are as follows:-

PROVINCE	PRINCIPAL FOREST OFFICERS	DEPARTMENT	ADDRESS
British Columbia	Deputy Minister of Forests Chief Forester	Lands, Forests and Water Resources	Victoria, B.C.
Alberta	Deputy Minister Director of Forestry	Lands and Forests	Edmonton, Alta.
Saskatchewan	Deputy Minister Chief, Resource Programs Director of Forestry	Natural Resources	Regina, Sask. Prince Albert, Sask.
Manitoba	Deputy Minister Provincial Forester	Mines and Natural Resources	Winnipeg, Man.
Ontario	Deputy Minister	Lands and Forests	Toronto, Ont.
Quebec	Deputy Minister Director of Forest Service	Lands and Forests	Quebec, P.Q.
New Brunswick	Deputy Minister	Lands and Mines	Fredericton, N.B.
Nova Scotia	Deputy Minister Director of Forestry and Provincial Forester	Lands and Forests	Halifax, N.S.
Prince Edward Island	Deputy Minister Director of Forestry	Agriculture	Charlottetown, P.E.I.
Newfoundland	Deputy Minister of Resources Chief Forester	Mines, Agriculture and Resources	St. John's, Newfoundland

In each province, the department responsible for forest administration usually performs other duties in connection with lands, mines or other natural resources. In addition to departmental headquarters located at the provincial capital, forest services maintain administrative districts with a district officer in charge of each. Large districts may be further divided into sub-districts, each in charge of a field officer or forest ranger.

Senior staffs of the forest services are made up largely of those who have received university degrees in forestry, generally from one of the four Canadian Universities with forestry faculties i.e. - University of New Brunswick, University of Laval, University of Toronto or the University of British Columbia. These services also employ a large number of men who have received technical forestry training at special schools located at Fredericton, New Brunswick; Duchesnay, Quebec; Dorset, Ontario; Port Arthur, Ontario; Prince Albert, Saskatchewan; Hinton, Alberta; and New Westminster, British Columbia.

Newfoundland

The forest policy of Newfoundland is directed towards placing all existing unalienated Crown lands under forest management, and developing those areas supporting mature stands which are not being utilized. Thirty-five forest management units comprising more than 2,000,000 acres have been proclaimed forest management areas.

Everything possible is being done to encourage establishment of new forest industries in the province and recently a study was carried out by the government to ascertain the possibilities of establishing a third pulp and paper mill.

Significant changes in policy require separate mill licences for sawing Crown and private timber, and provide for legislation to restrict forest travel in Newfoundland and Labrador. A special program of forest inventory and land capability studies covering the entire island of Newfoundland and some 70,000 square miles of the southern part of Labrador is being undertaken. Reconnaissance surveys will be made of the remaining 40,000 square miles in the northern part of Labrador. Forest inventory will provide a basis for expansion of the forest industry while the land capability study will facilitate development and utilization of the forest, wildlife and recreational resources.

Prince Edward Island

Almost all the forest lands in the province are privately owned. The Forestry Division of the Department of Agriculture is responsible for carrying out programs for forest nursery development, planting, extension forestry, and control of all forest fires. Recently the province announced plans to accelerate assistance to private woodlot

management; to create greater opportunities for rural youth to study forestry, and to promote vigorously the organization of 4-H forestry clubs. The government also announced its intention to carry out a survey of vacant farms to determine their number, quality, value and suitability for farming or forestry.

Prince Edward Island is one of three provinces having legislation permitting governmental control over cutting on private land. The legislation provides that all persons intending to cut or clear more than two acres of land must obtain a permit from the Minister.

Nova Scotia

Forest policy in Nova Scotia differs from that in most other Provinces in that government control is exercised over cutting on private lands. About 79 per cent of the productive forest land is privately owned and this area produces about 90 per cent of the annual forest crop. The Small Tree Conservation Act was repealed and replaced by the Forest Improvement Act in 1965.

Crown land comprises about three million acres of which about two million acres is productive forest land. Approximately one half of all Crown land is presently held under lease, or is earmarked for lease, to three pulp companies. The remainder is managed by the Lands and Forests staff. Timber on this unalienated Crown land is disposed of in small quantities through supervised cutting, timber licences and contracts.

New Brunswick

The general policy of the provincial government is to make available to industry as much raw material as possible from the Crown forests. The availability of raw material is governed directly by a sustained-yield management program and by any future developments that will increase the yields through better operating methods and closer utilization of forest products.

The New Brunswick Forest Development Commission of 1955 published a report which embodied many recommendations for the better administration of Crown lands. As a result of the Commission's report, significant changes in legislation provided for the designation of all vacant Crown lands and unrenewed timber licences as forest reserves, and for a revision in the method of assessing the "mileage" charge on licences from one based on area to one based on standing softwood volume per square mile.

Quebec

The Government of Quebec has as a general objective the improvement of its forests under sustained-yield management and continues its policy of requiring from limit holders a general management plan which must be revised every ten years by the preparation of a special management plan. Cutting regulations provide for complete utilization. The province's forest service was expanded in 1960 to include a Bureau of Forest Restoration with the responsibility of promoting reforestation and silviculture on Crown lands. This Government is also encouraging a greater production of pulpwood by private forest owners. In 1958, the first petition for the formation of a Pulpwood Producers Board for the joint marketing of pulpwood was sanctioned. To date, several such Boards have been approved and the scope of some has been broadened to include forest products other than pulpwood.

Ontario

Some 90 per cent of the total productive forest lands of Ontario are Crown lands administered by the Department of Lands and Forests according to the principles of modern sustained-yield, multi-purpose management. As an aid to regulation, the accessible portion of the Crown forests is divided into 71 Company and 81 Crown Management Units. For each of these units specific forest management and operating plans are prepared as guides for private industry and administered by the Timber Branch of the Department. These plans provide the framework within which harvesting and other cultural operations are performed. The principal legislation concerning the harvesting and management of the forests are The Crown Timber Act, The Forestry Act, and The Trees Act.

Manitoba

Manitoba manages its forests on a sustained-yield basis and management plans are either completed or under way for the principal accessible forests in the Province. In 1965, a new system of allocating cutting rights was introduced. Under this system existing operators are given a quota in a Management unit. This quota is a percentage of the annual allowable cut and is calculated on the basis of the operator's previous three years' cutting production. People who want to get into the forest business in Manitoba must either obtain cutting rights from others who have them or apply to the Minister for unallocated cutting rights where they exist. Timber dues are now set on an appraisal system rather than by competitive bidding. Large forest products users can negotiate timber dues with the government. There is a continual expansion and improvement of forest fire-fighting facilities, recreation opportunity is being further developed in many provincial forests, and park facilities are constantly being expanded.

Saskatchewan

Forest policy is now directed toward more intensive utilization of the resource. This change in emphasis has resulted in forest management agreements with several large wood-using industries and including the establishment at Hudson Bay, Saskatchewan, of a plant for the production of some 50,000,000 board feet of studs, with chips as a by-product, and the construction of a 650-ton per day pulp mill near the city of Prince Albert.

Disposition of Crown timber in Saskatchewan is by management licence, term-cutting agreement, timber-sale by public competition, permits to individuals and by permits to the Saskatchewan Forest Products Corporation.

Recently the role of this Crown Corporation has changed in that it no longer has sole right to the production of white spruce saw timber, pulpwood and other forest products in the Province, but is continuing as a marketing agency for its contractors.

Alberta

The Alberta Forests Act 1961, sets forth measures to implement a sustained-yield policy and a planned forest economy. This Act and regulations written under its authority empower the Government to grant timber licences, specify allowable cut quotas for licencees and set rates of dues for timber and other wood products industries on Crown land. The licence holder is required to adhere to other utilization, conservation and fire protection standards as set out by Act and Regulation. Increased appropriation for fire protection and regeneration planning has resulted from recommendations made as a result of Government surveys, detailed inventories and statistical analyses.

British Columbia

This province, with some 93 per cent of its forests publicly owned, has developed possibly the most sophisticated of all sustained-yield systems in Canada up to the present time. Although some timber is still disposed of by public auction unconnected with the over-all management plan, 70,000,000 acres of productive forest land are now under sustained-yield control of one kind or another. The two major vehicles are the Public Sustained-Yield Unit, administered and controlled by the Crown, with the timber being disposed of by auction, and the Tree Farm Licence, a 21-year conditionally renewable lease to private industry who are required to adhere to a general cutting budget and management plan approved by the Provincial Forest Service. The newest legislative vehicle for sustained yield is the Pulpwood Harvesting Area which is designed to be "superimposed" on an existing Public Sustained-Yield Unit for the sole purpose of utilizing the smaller species and waste materials thereon suitable for pulp production. The total 1964 timber harvest was 1,515,000,000 cubic feet or roughly 50 per cent of the potential annual sustained-yield cut under present utilization standards.

(NOTE: Specific information on Provincial forest administration policies, as shown above for Quebec and Newfoundland is based on the "Progress Report 1956-60, prepared for the 8th British Commonwealth Forestry Conference, 1962".)

Forest Protection

Protection so far as this section is concerned and as it relates to provincial administration, is essentially protection against forest fires.

Although administratively the provinces are, in most cases, responsible for protection against outbreaks of harmful diseases and insects, the federal forest authority has, historically, accepted the responsibility for research, survey, and consultative services. In practice, however, the federal and provincial forest authorities generally work co-operatively in the planning and implementation of control programs although the provinces remain completely responsible for program execution in the field. In the case of very severe outbreaks, program costs are often shared by the two levels of government and, on special occasions, have been shared by industry as well.

The major problems of fire control in Canada's forests stem from a lack of ready access in many regions and the occurrence of hazardous climatic conditions during the fire season, which generally extends from early April until mid-October.

Although many improvements in fire control organization and methods have been effected over the past 30 to 40 years, fire remains a serious problem in forest management with some 2,550,000 acres being burned over annually. The fire problem is particularly pressing when considered along with the developing sustained-yield programs in most provinces. An average of just over 6,000 fires are reported each year and about 4,500 of these are known to be caused by human agencies of one kind or another. They are, therefore, preventable. With an ever-growing use of the forests for recreational purposes, the hazards from human carelessness are high.

Forest fire control in Canada is organized on a provincial basis. In Quebec and Newfoundland, forest protective associations have been formed to administer fire control on the very extensive lands held under licence by the forest industry.

Fire control operations in the provinces are usually controlled from a number of forest district headquarters. These districts in turn, are frequently subdivided into ranger districts, each being in the charge of a chief ranger. The numbers of fire control personnel vary greatly from district to district, and also within subdivisions, but an attempt is made to have sufficient men available to quickly attack any fires that are reported.

If catastrophically large fires are to be avoided, early detection and quick initial attack on fires that do start are of paramount importance. Some provinces have hundreds of lookouts strategically located throughout their forested areas;when observations from two or more lookouts are obtained on a fire, often referred to as a "smoke", its location can be quickly pin-pointed by triangulation. In some regions, aircraft patrol is the primary means of fire detection, but more frequently aircraft are used to supplement a fixed lookout system. Despite this extensive detection system, a large number of fires in Canada are first reported by tourists, residents, crews of commercial airlines and other members of the general public.

In several provinces, specially-trained fire suppression crews, often referred to as "standby crews" or "shock troops", are kept in constant readiness throughout the fire season for first attack on fires as they are reported. All fire control services utilize modern fire-fighting equipment suitable to their own conditions. Many specialized types of hand tools and light-weight items of power equipment are supplemented by heavy machinery such as tankers, ploughs and bulldozers. Aircraft, both fixed-wing and helicopters, are used to an ever-increasing extent in forest fire control. Apart from their detection role, aircraft are used to transport men and equipment to the fire line, to drop water and fire retardants on the fire itself and as an observation point from where suppression of large fires can be directed.

Through the federal Department of Forestry Act, the provinces can be assisted in fire control through the provision of financial aid and by a well developed forest fire research institute and staff. During times of emergency, personnel and equipment of the Armed Forces may be placed at the disposal of provincial authorities to assist in fire suppression.

Prevention of fires is an important function of all forest fire control services; public education is considered the most effective method. All media of communication, including posters, television, radio and newspapers are utilized but the personal influence of local rangers and other forest officers at forest access points and recreation areas is probably the most effective way of educating the forest traveller in fire prevention. Education is supported by legislation; restriction or prohibition of travel in forest areas during periods of serious fire danger is common practice. In most regions, permits are required before a fire may be set during the fire season and such permits may be cancelled if the danger of fire becomes at all serious.

FORESTRY INFORMATION TO THE PUBLIC

Because of the immense value of the forests and the forest industries to the welfare of all Canadians, and because the vast majority of the resource is publicly owned, programs of public education have been an integral part of the Canadian forest community for many years.

Both the Provincial and Federal Governments, independent forestry associations, and industry sustain programs to encourage a better understanding amongst the public of the value of the forest resource. Much of the emphasis has been on public responsibility in the prevention of forest fires. There has been a slight change in recent years, however, designed to familiarize the public with the need for sustained-yield management programs, multiple use of the forests for recreational and other non-vocational purposes, and the role of research in achieving optimum management of the resource and to better the competitive position of the forest industries. Generally speaking, however, the major emphasis is still on the fire prevention aspect.

A wide variety of communication media are utilized--press, television, radio, the provincial departments of education, and youth organizations.