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OF THE

FOREST INSECT AND DISEASE SURVEY

DIVISION OF FOREST BIOLOGY
SCIENCE SERVICE

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FOREWORD

Until 1951, surveys of Canadian forests by Science Service were carried out solely for the detection of insect pests. As part of the unification of work pertaining to forests under the Division of Forest Biology, however, it has been possible to reorganize survey work to include forest diseases. The first attempt in this direction was made in 1951 and the results were included in the report for that year. As time goes on, it is expected that this policy will provide more comprehensive information on the status of both insects and diseases in Canadian forests. The field staff of the Forest Insect and Disease Survey has been given formal instruction in the recognition, assessment, and collection of tree diseases since the publication of the 1951 report. The resultant increases in the quality and quantity of disease samples contributed significantly to the information contained in these pages.

A number of recent developments have increased the scope of the Forest Insect and Disease Survey. Closer contact has been established with the Province of Quebec following the formation of a divisional laboratory in Quebec City. In addition, the nucleus of a survey organization is now working in Newfoundland and improved laboratory space has become available in a number of regions.

Furthermore, new equipment has been obtained. One of the most outstanding developments in this connection has been the installation of punch-card business machines at five laboratories: Fredericton, Sault Ste. Marie, Winnipeg, Calgary, and Victoria. Suitable codes and forms have been prepared to allow the rapid accumulation of data in the form of punched cards which are amenable to machine sorting and counting. By these means, analytical techniques will be greatly facilitated and will keep abreast of the development of improved and more precise collection techniques.

A review of the regional contributions in this report emphasizes the great varieties of insects and diseases which are influencing Canadian forests. Although a review of all noteworthy conditions will be found in succeeding pages, a few of the highlights are worthy of note. The forest tent caterpillar has been reported in infestation proportions in all regions of Canada, with the most severe outbreaks in Manitoba, Ontario, and Quebec. Spruce budworm populations caused further severe damage in New Brunswick, Quebec, northwestern Ontario, and at a number of points in Alberta and British Columbia. The larch sawfly continued to be abundant in the central regions of Canada and various bark beetles continued their depredations in Alberta and British Columbia.

As always, regional officers are prepared to supply detailed information on insect and disease conditions in specific localities. Comments and constructive suggestions pertaining to the Forest Insect and Disease Survey will be gratefully received.

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MARITIME PROVINCES

FOREST INSECT SURVEY

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INTRODUCTION

The Forest Insect Survey generally records the number of collections received each year as one measure of its accomplishment. By this standard, 1952 was a record year for the Maritime region as 3,055 collections were taken. The distribution of these by provinces was as follows: New Brunswick, 1,468; Nova Scotia, 812, Newfoundland, 768, and Prince Edward Island, 7. These figures, however, do not show the full scope of the Forest Insect Survey, such as recording insect abundance and the degree of defoliation and damage on permanent plots, or sampling intensively for major pests. Such work was intensified in 1952 to obtain a better knowledge of the present spruce budworm situation and the probable development of the outbreak in 1953. Aerial surveys were also an important part of the work.

The number of insect collections by principal tree species were as follows:

Coniferous hosts	Collections	Deciduous hosts	Collections
Spruce	1,135	Birch	183
Balsam fir	891	Aspen	104
Larch	119	Beech	35
Pine	79	Maple	35
Cedar	7	Elm	38
Hemlock	12	Oak	33
Mixed hosts	114	Others	270
Total	2,357	Total	698

Grand Total—3,055

The assistance of the New Brunswick Forest Service and the Newfoundland Forest Protection Association in aerial surveys of insect outbreaks is gratefully acknowledged. Many of the pulp and paper companies helped in various ways. Thanks also are expressed to the many contributors whose names appear in the accompanying list, and particularly to W. J. Johnson, of the New Brunswick International Paper Company, and M. D. Russell, of the Bathurst Power and Paper Company, for their assistance in budworm surveys.

IMPORTANT INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.).—The accompanying map shows four classes of infestation. Each class possesses one or more of the characteristics noted below.

Severe: Browning of foliage distinct from the air at 2,000 feet; larval population, over 30 "larvae per 'tree sample' "*; loss of new foliage of balsam fir exceeding 70 per cent; tips of balsam fir crowns generally bare.

Moderate: Browning of foliage barely perceptible from the air; larval population, 11 to 30 per 'tree sample'; loss of new foliage of balsam fir from 30 to 60 per cent.

Light: Larval populations, 3 to 10 per 'tree sample'; loss of new foliage from trace to 20 per cent.

Very light: Larval population, 1 or 2 per 'tree sample'; defoliation not perceptible.

* "Larvae per 'tree sample' " is defined as the number of larvae taken from one tree by beating the foliage with a 10-foot pole over a 7- by 9-foot mat.

NOTEWORTHY TREE DISEASES IDENTIFIED IN 1952—*Continued*

(Q.C.I. = Queen Charlotte Islands; V.I. = Vancouver Island)

Host	Causal Organism	Locality	Remarks
Fir, grand (*Abies grandis*)	*Milesia laeviuscula* (D. & H.) Faull.	Saanich, V.I.	First record of occurrence in B.C. and first record of occurrence on balsam fir.
Gale, sweet (*Myrica gale*)	*Cronartium comptoniae* Arth.	Lake Cowichan, V.I.	Directly under pine at lake shore. The pine appears free of infection by this rust.
Hemlock, western (*Tsuga heterophylla*)	*Caeoma dubium* C. A. Ludwig	Lake Cowichan, V.I.	A willow rust causing needle cast of hemlock. Alternate host proven by inoculations to be *Salix* sp.
	Dimerosporium tsugae Dearn.	Arrowhead	An ascomycete causing needle cast.
	Hericium n. sp.	Cameron, V.I.	Causing a white pitted rot. An undescribed species of *Hericium*.
	Hypomyces aurantius (Pers.) Tul.	Hope and Revelstoke	Causing orange wheft on hymenium of *Polyporus resinosus* (Schrad.) Fr. and *Pomes pinicola* (Swartz) Cooke. A hyperparasite.
Juniper, dwarf (*J. communis*)	*Gymnosporangium clavariaeforme* (Jacq. ex Pers.) DC.	Hope and Ocean Park	This cosmopolitan rust may attack hawthorn, saskatoon, and cultivated pears in its alternate stage. A new record of occurrence in B.C.
Juniper, Rocky mountain (*J. scopulorum*)	*Stigmatea juniperi* (Desm.) Wint.	Fort Steele	
Larch, western (*Lariz occidentalis*)	*Hypodermella laricis* Tub.	South Interior of B.C.	This needle blight fungus occurred throughout the range of larch in 1952, but no serious damage has resulted yet.
	Lachnella hahniana Seaver	Needles	Lower, dead branches of mistletoe-infected tree.
Maple, broadleaf (*Acer macrophyllum*)	*Pleurotus sapidus* Kalchbr.	Goldstream, V.I.	Growing from heartwood of mature, living tree.
Pine, lodgepole (*Pinus contorta*)	*Atropellis piniphila* (Weir) Lohman & Cash.	Kelowna, Clinton, Bednesti, etc.	Causing locally serious canker outbreaks on trunks of lodgepole pine.
	Coleosporium solidaginis Thūm.	South Gate	Rust causing needle cast of hard pines.
Pine, western white (*P. monticola*)	*Cucurbidothis pithyophila* (Fr.) Petrak.	Shawnigan Lake and Duncan, V.I.	Girdling main stems and branches of seedlings and saplings.
	Dasyscypha agassizii (B. & C.) Sacc.	Silverton	
	Dasyscypha fuscosanguinea Rehm.	Mount Revelstoke	On fusiform cankers.
	Erinella rhapidospora (Pat.) Seav.	Revelstoke, B.C.	Lower branches of dead tree.
Polypody (*Polypodium* sp.)	*Milesia laeviuscula* Faull forma *glycyrrhiza* Faull.	Saanich, V.I. Gillatt Arm, Q.C.I.	Needle cast fungus; a rust on balsam fir and polypody. Found on Q.C.I., although no balsam fir is known to occur on these islands!
Pyrola, one-flowered (*Moneses uniflora*)	*Chrysomyxa* n. sp.	Falkland, Hope, Kelsey Bay, V.I.; Massett, Queen Charlotte City, Skidegate Village, Q.C.I.	A newly discovered species of rust the alternate stage of which is, most likely, the rust which destroys the seeds of Sitka spruce.
Rattle, yellow (*Rhinanthus* sp.)	*Cronartium coleosporioides* Arth., probably var. *stalactiforme* Arth.	Falkland	First record of this rust's occurrence on *Rhinanthus* in B.C. Associated with pines diseased with the same rust.
Rhododendron (*Rhododendron californicum*)	*Chrysomyxa piperiana* (Arth.) Sacc. & Trott.	Hope, headwaters of the Skagit.	A needle rust of Sitka spruce. First record of occurrence in B.C.
Saskatoon (*Amelanchier* spp.)	*G. inconspicuum* Kern	Clinton, Savona	Causing leaf blight of Rocky Mountain juniper.

NOTEWORTHY TREE DISEASES IDENTIFIED IN 1952—*Concluded*

(Q.C.I. = Queen Charlotte Islands; V.I. = Vancouver Island)

Host	Causal Organism	Locality	Remarks
Spruce, Sitka (*P. sitchensis*)	*Chrysomyxa ledicola* Lagerh.....	Tlell, Q.C.I.....	One hundred per cent infection in peat bog between Tlell and Port Clements. A needle cast.
	Peridermium n. sp.....	Massett, Q.C.I.....	A cone rust which destroys seeds of Sitka spruce. A recently discovered and still undescribed tree rust which is most likely the alternate stage of *Chrysomyxa* n. sp., a recently discovered and still undescribed rust also.
	Tryblidiopsis pinastri (Fr.) Karst.	Terrace.....	On twigs of living tree.
Spruce, western white (*P. glauca*) var. *albertiana*.	*Trechispora brinkmanni* (Bres.) Bourd. & Galz.	Crescent Spur.....	Believed to be first record for B.C. Determined by culture.
Toad flax, bastard (*Comandra livida* and *C. pallida*)	*Cronartium comandrae* Peck.....	Princeton, Manning Park.	A blister rust of hard pines. Growing near lodgepole pine.
Willow (*Salix* spp.)	*Marssonia kriegeriana* (Bres.) Magn.	Powell River.....	Blight and small cankers of weeping willows.
	Melampsora n. sp.....	Alberni, Cameron, Campbell River, V.I.	Proven to be the alternate stage of *Cacoma dubium*, a needle rust of hemlock.
Willow herb, or fire weed (*Epilobium* spp.)	*Pucciniastrum pustulatum* (Pers.) Diet.	Gillatt Arm, Q.C.I..	A yellow needle rust of balsam firs. However, no balsam firs are known to occur on the Q.C.I.'s (!).
Yew, European (*Taxus baccata* var. *fastigiata*)	*Phomopsis* sp.....	Vancouver.....	An interception from Holland.

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