FOREST INSECT AND DISEASE SURVEYS NORTH BAY DISTRICT 1969

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FOREST RESEARCH LABORATORY
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CANADIAN FORESTRY SERVICE DEPARTMENT OF FISHERIES AND FORESTRY APRIL, 1970 The Forest Insect and Disease Survey Unit carried out their annual damage detection and censusing program in Ontario between May 1 and September 12, 1969. The results are reviewed in detail for the area shown in the title of each specific report. The following is a general summary of the more important insect and disease situations in the Province.

The spruce budworm was the dominant forest insect problem in 1969. In northeastern Ontario, new or enlarged infestations occurred in the forest districts of Chapleau, Kapuskasing, Cochrane, Sudbury, Swastika, and Sault Ste. Marie. In southeastern Ontario heavy infestations persisted in parts of Pembroke, Tweed and Kemptville districts, and in the western part of the Province two small areas of severe defoliation appeared in the Port Arthur District. Jack pine budworm population levels increased sharply; heavy infestations recurred in the Sault Ste. Marie and Pembroke districts and new areas of severe defoliation were recorded in the districts of Sudbury, North Bay, and Parry Sound.

Aerial spraying operations were carried out against the spruce budworm by the Ontario Department of Lands and Forests in the Port Arthur and Fort Frances districts and against the jack pine budworm and white pine weevil in the Sault Ste. Marie District. Jack pine budworm infestations on the Canadian Forces Base (Petawawa) and on the Petawawa Forest Experiment Station were sprayed by the Canadian Forestry Service. Field technicians were heavily involved in the delineation of areas to be treated, in the timing of spray applications, and in the assessment of populations before and after spraying. Separate reports of these operations are in preparation.

Disease surveys emphasized the evaluation of incidence, infection levels and degree of damage by various pathogens on infected stands. Although no extensive changes in the distribution of the Dutch elm disease occurred in 1969, the pathogen caused considerable mortality of elm, particularly in southern Ontario. Two important diseases of poplar were ink spot and Hypoxylon canker. Scleroderris canker of pine continued to be a major problem in pine plantations. Cankers of pines and hardwoods were evaluated in many stands and details on these and other problems are discussed in the following report.

On January 16, 1970 the Unit lost the valuable services of its Chief Field Technician, J.E. MacDonald, who retired after guiding the Survey Field Service in its various programs and in the compilation of annual district reports for the past 25 years.

The objectives and working principles of the Insect and Disease Survey are currently being thoroughly reviewed and re-evaluated, and it is now clear that fewer technicians will be involved in carrying out surveys of forest insect and disease conditions in Ontario in 1970. Future reports on the details of these surveys will probably cover five regions or sections of the Province.

> L. S. MacLeod Acting Chief Technician

April, 1970.

NORTH BAY DISTRICT

1969

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INTRODUCTION

A slight change in the format of the 1969 report includes the reporting of tree diseases on a district rather than a regional basis. Forest insect conditions are summarized as in past years.

Spruce budworm populations continued to increase but no major outbreak occurred. However, a heavy infestation of jack-pine budworm caused severe defoliation in the French River area and is expected to recur in 1970. Popular stands were severely defoliated at several locations by a complex of insects and larch sawfly population levels increased in the southern part of the district. Pine sawfly populations remained at relatively low levels in 1969.

Several important tree diseases continued to cause considerable mortality throughout the district. Of these the Dutch Elm Disease, White Pine Blister Rust and Hypoxylon Canker of Poplar were the most prevalent.

District survey work was curtailed because of prolonged involvement with jack-pine budworm projects in the Pembroke District and because the field season was terminated in early September. The assistance and co-operation of personnel of the Department of Lands and Forests was of great value and is hereby gratefully acknowledged.

L. S. MacLeod

Large Aspen Tortrix, Choristoneura conflictana Wlk.

Pockets of severe defoliation of aspen occurred on hilltops and ridges in the townships of Gillies Limit, Lorrain and South Lorrain and light infestations were common throughout the central and northern parts of the district in 1969. Larvae were found commonly in the remainder of the district.

Spruce Budworm, Choristoneura fumiferana (Clem.)

No major infestations of the spruce budworm occurred in the district in 1969. Compared with 1968, population levels increased slightly in the southeastern part of the district and light defoliation was observed at several points in Papineau and Calvin townships. Large white spruce trees were lightly defoliated in several small woodlots in Hugel and Badgerow townships and Fringe trees were heavily defoliated in a 50-acre stand of mature balsam-fir in Dunnet Township south of Warren.

Five plots were established at selected locations to monitor population levels annually. A summary of sampling results is shown in Table 1.

TABLE 1

Summary of Spruce Budworm Larval Counts Made at Five Locations in the North Bay District, 1969

Note: Based on the examination of two tray samples from each of ten trees at each point.

Location (township)	Host	Av. d.b.h. of sample trees in inches	Total no. of larvae	
Calvin	bF	4	22	
Sisk	bF	6	2	
French	wS	6	0	
Badgerow	wS	10	89	
Coleman	wS	8	12	

Sequential sampling in Badgerow and Dunnet townships showed one and 31 per cent defoliation of white spruce and balsam fir respectively. Population forecasts, based on the number of egg masses found in quantitative samples indicate that severe defoliation will occur at the sample location in Dunnet Township in 1970.

Jack-pine Budworm, Choristoneura pinus pinus Free.

A pronounced increase in population levels of the jack-pine budworm occurred in the southwestern part of the district in 1969, with severe defoliation of jack pine observed at many locations in the French and Little French River areas, particularly in Bertram and Latchford townships (see map). Light infestations were common throughout the northern parts of these townships and at many locations in Falconer, Martland, Haddo, Loudon, Casimir, Kirkpatrick, Ratter and Dunnet townships. Elsewhere in the district populations were low and little defoliation resulted. Unlike the spruce budworm where egg mass samples provide a reliable means of forecasting future defoliation, no reliable method of forecasting has been developed for the jack-pine budworm. However, in heavy infestations, high numbers of eggs present in the fall usually indicate that heavy infestation will recur the following year. Based on egg mass densities present in the French River area in the autumn of 1969 it is probable that high numbers of jack-pine budworm will be present in Bertram and Latchford townships in 1970.

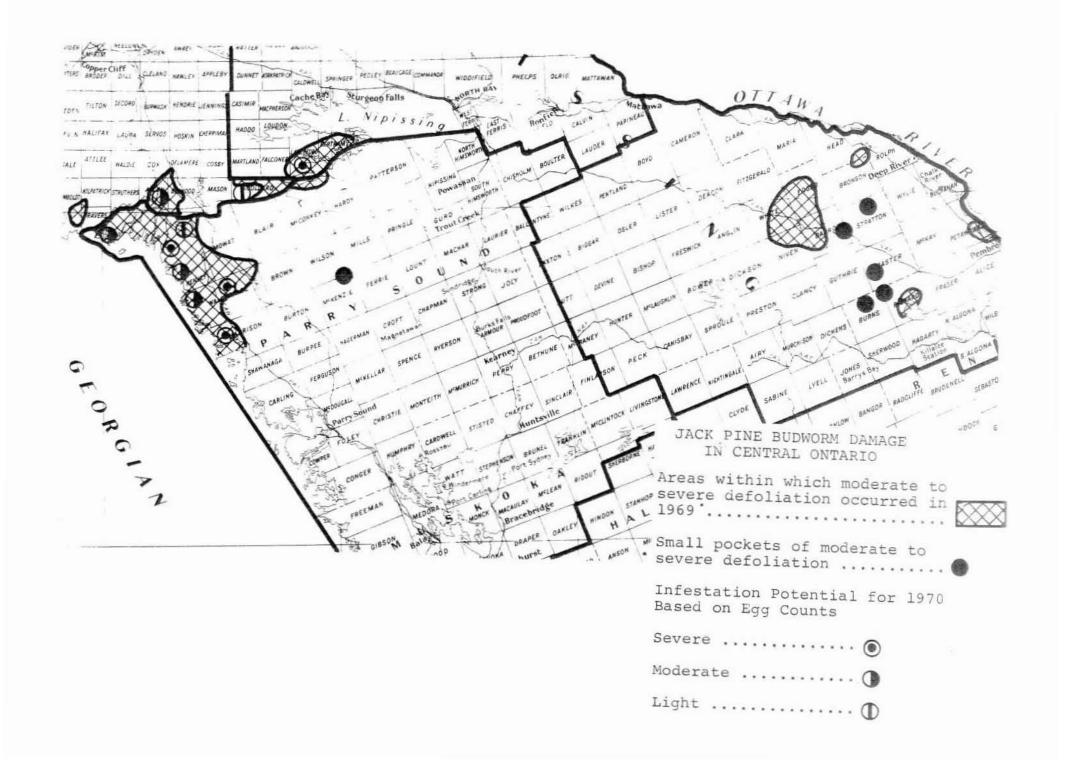
Larch Casebearer, Coleophora laricella Hbn.

Quantitative sampling records maintained for 12 consecutive seasons show only minor fluctuations in population levels of the larch casebearer during that period. A summary of the results for the period 1967 to 1969 is shown in Table 2.

TABLE 2
Summary of Larch Casebearer Larval Counts made at Five Points in the North Bay District, 1967-1969

Note: Counts were based on the examination of four 18-inch branch tips from each of four trees at each point.

Location	Av. d.b.h. of sample	Total 1967	number o	of larvae 1969
(township)	trees in inches	1907	1900	1707
Mattawan	4	32	15	15
Pedley	6	18	0	15
Widdifield	5	50	24	15
Gillies Limit	4	51	3	3
Strathcona	4	22	4	6



Cone Beetles, Conophthorus coniperda (Schz.) and Conophthorus resinosae Hopk.

These beetles continued to cause conspicuous damage in mature and overmature red and white pine stands at many points in the district. High numbers persisted in shoreline stands and on islands in Temagami, Rabbit, Snake and White Bear lakes in the Temagami Division and at Callander Bay, West Bay and North Bay in Division 71.

European Spruce Sawfly, Diprion hercyniae (Htg.)

No major infestations of this sawfly have occurred in the district since quantitative sampling stations were established in 1958. A minor decline in population levels was recorded at the five sample stations examined in 1969 (Table 3).

TABLE 3

Summary of European Spruce Sawfly Larval Counts Made on White Spruce
Trees at Five Points in the North Bay District in 1968 and 1969

Location	Av. d.b.h. of sample	Total number of larv per 15-tray sample	
(township)	trees in inches	1968	1969
French	7	99	69
Springer	7	52	21
MacPherson	8	24	11
Papineau	8	79	25
Coleman	, 6	49	17

A Noctuid, Enargia decolor Wlk.

Sharp increases in population levels of this insect were evident in all popular stands examined through the district. Small areas of moderate to severe defoliation were observed in the Field - River Valley area and in Bonfield, Calvin and Papineau townships near Mattawa. Light defoliation was common at numerous locations in the northern part of the district, particularly in the townships of Bucke, Barr, Firstbrook, Coleman, Lorrain and Gillies Limit.

Birch Leaf Miner, Fenusa pusilla (Lep.)

Severe mining of clumps of white birch trees averaging 15 feet in height was observed at several locations in Phelps Township near Redbridge. Host trees growing on abandoned farmland presented a scorched appearance in late summer. Small, open-grown and fringe trees were heavily attacked at many other locations but little defoliation of large trees was observed. As in recent years the leaves of ornamental birches were severely mined in the city of North Bay.

American Aspen Leaf Beetle, Gonioctena americana (Schaef.)

The heavy infestations of this leaf beetle which occurred in the northwestern part of the district in 1967 subsided in 1968, but recurred in 1969. Reproduction in cut-over stands was severely defoliated at many points in Bucke, Coleman, Barr and Gillies Limit townships. Groups of lightly defoliated trees were also observed in Field, Badgerow, Gibbons and Crerar townships in the Field - River Valley area and in Papineau and Calvin townships west of Mattawa.

Balsam-fir Sawfly, Neodiprion abietis complex

Balsam-fir sawfly population levels remained approximately the same as in 1968. Small, heavy infestations were present at several locations in Calvin, Papineau and Mattawan townships. Open-grown trees in woodlots in Badgerow and Lauder townships were lightly infested and scattered colonies were observed through the southern part of the district. Colony counts at four points are shown in Table 4.

TABLE 4

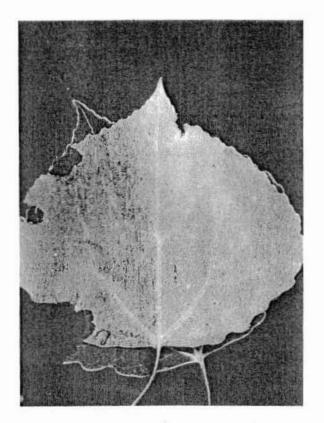
Summary of Balsam-fir Larval Colony Counts at Four Points in the North Bay District in 1968 and 1969

Note: Counts were based on the examination of 100 balsam-fir trees at each location.

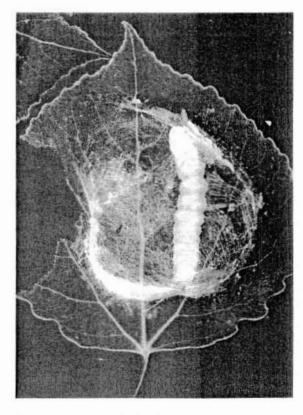
Location (township)	Av. d.b.h. of sample trees in inches	Total number o	f colonies 1969
Calvin	4	154	112
Papineau	7	56	61
Mattawan	5	170	124
Lauder	3	42	37



Severe defoliation of a poplar stand.



Two leaves tied together by a larva.



Leaves separated showing the larva.

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch.)

Little change in population levels of this sawfly occurred in 1969. Scattered colonies were observed through the former townships of Widdifield and West Ferris and in East Ferris Township but no extensive defoliation resulted.

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

Quantitative sampling showed a general decline to trace population levels in the district in 1969 (Table 5). Scattered colonies were observed at several points in the central part of the district and on islands in Lake Temagami and Lake Nipissing.

TABLE 5

Summary of Red-pine Sawfly Larval Colony Counts at Five Points in the North Bay District in 1968 and 1969

Note: Counts were based on the examination of 100 trees at each point.

Location		Av. d.b.h. of sample trees	Total n	
(township)	Host	in inches	1968	1969
Calvin	rP	4	11	1
MacPherson	jP	3	26	0
Loudon	jΡ	3	16	2
Haddo	jΡ	3	38	0
Joan	rP	3	56	14

Swaine Jack-pine Sawfly, Neodiprion swainei (Midd.)

Several small islands in Temagami and Rabbit lakes were again heavily infested with this sawfly and lightly infested trees were observed at several points along the West Arm of Lake Nipissing. An experimental control program using a virus was carried out on three islands in the Temagami area by the Insect Pathology Research Institute. This project will be continued in 1970.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Colonies of this sawfly were found in varying numbers in most jack pine stands examined in the district and small trees were lightly defoliated at many locations (Table 6).

TABLE 6

Summary of Red-headed Jack-pine Sawfly Larval Colony Counts at Five Points in the North Bay District in 1968 and 1969

Note: Counts were based on the examination of 100 jack-pine trees at each point.

Location	Av. d.b.h. of sample	Total number	r of colonies
(township)	trees in inches	1968	1969
Gladman	4	46	41
Sisk	4	24	37
Haddo	4	15	2
Loudon	3	21	4
French	3	46	8

White Pine Weevil, Pissodes strobi (Peck)

Quantitative sampling showed little change in population levels of the white pine weevil compared with 1968 (Table 7). High populations persisted at many locations, particularly in white pine reproduction in cut-over areas.

TABLE 7

Summary of Leader Damage by the White Pine Weevil at Four Points in the North Bay District in 1968 and 1969

Note: Counts were based on the examination of 100 trees at each point.

Location	Tree	Av. height of sample trees	Per cent of	trees weevilled
(township)	species	in feet	1968	1969
Widdifield	wIP	7	26	34
Gillies Limit	jР	14	7	3
Kirkpatrick	wS	6	4	6
Papineau	wiP	12	24	19

Larch Sawfly, Pristiphora erichsonii (Htg.)

A general increase in larch sawfly populations occurred in the southern part of the district in 1969. Fringe trees and several small stands north of North Bay were heavily defoliated. Scattered colorise were found in most larch stands examined but little defoliation was observed in the remainder of the district.

TABLE 8
Other Noteworthy Insects in the North Bay District, 1969

Insect	Host(s)	Remarks
Archips cerasivoranus Fitch.	Cherry	Heavily infested shrubs at many locations. Heavy on small red pine in French Twp.
Cecidomyia reeksi Vock.	jP	Light infestations in Merrick and Badgerow twps.
Dasineura balsamicola Lintn.	bF	Small groups of trees heavily infested at many locations
Epinotia solandriana Linn.	wB	Lightly infested trees common at many points in the district
Fenusa dohrnii (Tischb.)	Al	Heavily infested trees at numerous locations throughout district
Phenacaspis pinifoliae (Fitch)	jР	Heavily infested trees at several points
Pikonema alaskensis (Roh.)	wS, bS	Severely defoliated trees in small plantations and windbreaks at several points
Pineus floccus Patch. P. similis Gill.	bS	Heavily infested trees at widely separated points
Pristiphora geniculata (Htg.)	Мо	Severely defoliated trees at many locations
Pseudexentera oregonana Wlshm.	tA	Infestations subsided to low levels in 1969
Toumeyella numismaticum P. McD	jР	Heavily infested trees at several points
Zellaria haimbachi Busck.	jР	Light infestations common in southern part of district

Dutch Elm Disease, Ceratocystis ulmi (Buism.) C. Moreau

Distribution of this disease has remained essentially unchanged in the district since 1965. However, incidence of infected trees is generally moderate to heavy in infected stands and the number of dead trees is increasing annually. Table 9 shows a summary on incidence and infection levels at five locations in 1969.

TABLE 9

Summary of Incidence and Infection Levels of Dutch Elm Disease at Five Points in the North Bay District in 1969

Note: Based on the examination of 100 white elm trees at each point.

Location (township)	Tree height in feet	Level of incidence	Level of infection	
Dunnet	90	Heavy	Heavy	
Caldwell	60	Heavy	Heavy	
Springer	80	Moderate	Moderate	
Crerar	60	Light	Light	
North Bay	75	Moderate	Moderate	

Ink Spot of Aspen, Ciborinia whetzelii (Seaver) Seaver

Pockets of heavily infected trembling aspen trees were observed at many locations through the district in 1969. In most instances, relatively few trees within each stand were severely discoloured, but numerous small groups of heavily infected trees presented a scorched appearance at many points in the townships of MacBeth, McNish, McWilliams, Gibbons, Field and Bastedo.

Sweet-fern Blister Rust, Cronartium comptoniae Arth.

Although this stem canker is widely distributed through the district no significant trend in levels of infection has been observed in recent years. Pockets of heavy infection occur in Gillies Limit, Coleman and Dana townships and evaluations made in 1969 show moderate infection levels at two locations in Firstbrook Township. White Pine Blister Rust, Cronartium ribicola J. C. Fischer

This pathogen continued to cause appreciable mortality of white pine reproduction at many locations through the district. Evaluations made in 1969 are shown in Table 10.

TABLE 10

Summary of Incidence and Infection Levels of the White Pine Blister Rust at Three Points in the North Bay District in 1969,

Note: Based on the examination of 40 trees at each location.

Location (township)	Tree height in feet	Level of incidence	Level of infection
Papineau	40	Moderate	Moderate
Yates	80	Moderate	Moderate
Sisk	70	Moderate	Moderate

TABLE 11
Other Noteworthy Diseases

Organism	Host(s)	Remarks
Chrysomyxa sp.	wS	Trace levels of infection at several points
Hypoxylon mammatum (Wahl.) Miller	tA	Widespread branch and stem cankering
Endocronartium harknessii (J. P. Moore) Y. Hiratsuka	jР	Galls found in low numbers at several locations. Common at one point in Mattawan Twp.
Pollaccia radiosa (Lib.) Bald. & Cif.	tA	Aspen sucker growth heavily infected in Barr and Firstbrook twps.
Scleroderris lagerbergii Gremmen	rP, jP	Infected trees at one location in French Twp.