Lindsay District, 1969
Reports of Forest Research Technicians

Thomson, M.J.

Information Report O-X-115
(Forest Research Laboratory, Ontario Region)

CANADA

OUR FILE NO.
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DEPARTMENT OF FISHERIES AND FORESTRY
CANADIAN FORESTRY SERVICE

MINISTÈRE DES PÊCHES ET DES FORÊTS
LE SERVICE CANADIEN DES FORÊTS

FOREST RESEARCH LABORATORY
BOX 490
SAULT STE MARIE, ONT.

25 May 70

Dear Sir:

This is a composite of 18 individual Information Reports of Forest Insect and Disease Surveys which were issued and mailed several weeks ago to district foresters and other key forestry personnel in the various districts across Ontario. These reports were numbered consecutively as listed under the table of contents beginning with Lindsay District as O-X-115 and continuing to Fort Frances District as O-X-134, with Geraldton and White River combined as O-X-131. The content is confined to the results of field surveys of insect and disease conditions exclusive of those directly associated with aerial spraying operations carried out by the Ontario Department of Lands and Forests in 1969. Brief resumés of these operations as prepared for the Interdepartmental Committee on Forest Spraying operations in November are provided for your information as supplement reports at the back.

Yours very truly,

W. Lloyd Sippell

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W.L. Sippell,
Head, Insect and Disease Survey,
Ontario Region.

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REPORTS OF FOREST RESEARCH TECHNICIANS

Ontario, 1969

FOREWORD

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.

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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.

LINDSAY DISTRICT

1969

INTRODUCTION

(Continued)

TREE DISEASES

INTRODUCTION

The following report summarizes the status of insect and tree disease conditions in the Lindsay District. Tree diseases are dealt with on a district basis rather than by region as in past years.

Noteworthy insects and tree diseases in 1969 were spruce budworm, European pine sawfly, red-headed pine sawfly, and the white pine weevil, Fomes root rot, Armillaria root rot, Eutypella canker and Dutch elm disease.

Increases in spruce budworm population levels were recorded for the second consecutive year. The range of the European pine sawfly extended northeastward from the previous known boundary. Populations of the red-headed pine sawfly reached the lowest level in two decades. The upward trend in numbers of white pine weevils continued and severe damage was evident at widely distributed points.

Surveys of tree disease did not show any change in the distribution of Annosus root rot, however, light mortality did occur in areas affected in previous years. Armillaria root rot was found in four small-diameter plantations in the southern part of the district. Eutypella canker, a trunk canker affecting maples was distributed throughout the district and high incidence of infection was recorded at one point. The Dutch elm disease continued to ravage elm stands and open-grown trees in each county.

In anticipation of potential spread of the gypsy moth, Porthetria dispar, to Ontario from New York State technicians in the southeastern part of the province viewed infestations and damage caused to hardwood stands near the city of Plattsburgh.

Mass collections of important insects including one containing more than 500,000 European pine sawfly larvae were made for detailed studies in the Forest Research Laboratory. Approximately 50 extension and service calls were dealt with.

The assistance and co-operation extended by the Department of Lands and Forests and others is gratefully acknowledged.

M. J. Thomson

Pine Spittlebug, Aphrophora parallela Say

An increase in population levels of the pine spittlebug was evident in 1969. A heavy infestation was found on a Scots pine shelterbelt in Brighton Township in the southeastern part of Northumberland County.

Cedar Leaf Miners, Argyresthia thuiella Pack. and
Argyresthia aureoargentella Brower

High population levels of this leaf miner complex have persisted in the southern part of the district for a number of years. Although there was a marked decrease in numbers in 1968, heavy leaf mining caused conspicuous browning of the current foliage on eastern white cedars in Durham and Northumberland counties in 1969. Repeated defoliation has caused marked thinning of the tree crowns as well as tree and branch mortality on shallow sites and in open-grown pasture field clumps.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Distribution and population levels of the spruce budworm increased for the second consecutive year (see map). The medium infestation reported in spruce plantations south of Scugog Lake in Cartwright Township in 1968 recurred in 1969. Pockets of new infestation were found in a mixed white spruce, balsam-fir, and hardwood stand north of Nogies Creek in Harvey Township and on scattered near-mature white spruce in Bexley Township. Sequential sampling in the Harvey Township infestation showed current defoliation of approximately 31 per cent and indicated that moderate defoliation will probably recur in 1970. Larvae were found more commonly in random samples elsewhere in the northern half of the district.

The upward trend in population levels of the budworm will probably continue in 1970 because of the presence of budworm infestations in adjoining districts.

Larch Casebearer, Coleophora laricella Hbn.

A downward trend in population levels of the larch casebearer occurred in 1969. Heavy infestations recurred in a native larch stand at the west end of Rice Lake in South Monaghan Township and in a European larch plantation near Orono in Clarke Township. Moderate-to-severe damage of the foliage occurred in each stand. Quantitative sampling at six points elsewhere in the district showed decreases in numbers of casebearers at all but one location (Table 1).

TABLE 1

Summary of Larch Casebearer Counts in the Lindsay District, 1967 to 1969

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

Location (township)	Tree species	Av. d.b.h. of sample trees in inches	Av. no. of larvae per 18-inch branch tip		
			1967	1968	1969
Harvey	tL	8	4.5	8.0	2.4
South Monaghan	tL	7	--	53.0	17.2
Haldimand	eL	10	0.5	1.0	9.1
Cardiff	tL	3	4.0	6.7	0.1
Fenelon	tL	3	—	—	5.1
Clarke	eL	9	--	—	31.0
Snowdon	tL	2	1.1	3.0	0.9
Asphodel	tL	6	14.5	17.0	0.9

Eastern Pine Shoot Borer, Eucosma gloriola Heinr.

Little change occurred in population levels of this shoot borer in 1969. Quantitative sampling showed that although attacks were fewer on terminal shoots than in 1968, an increase occurred in numbers of attacks on lateral shoots at four of the five sample points (Table 2).

TABLE 2

Summary of Eastern Pine Shoot Borer Attacks in the Lindsay District, 1967 to 1969

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

Location (township)	Tree species	Av. d.b.h. of sample trees in inches	No. of shoots attacked					
			lateral shoots			terminal shoots		
			1967	1968	1969	1967	1968	1969
Clarke	wP	2	95	78	104	20	38	24
Somerville	rP	1	4	11	36	1	6	2
Verulam	wP	2	--	10	14	--	15	2
Hope	rP	1	--	2	11	--	1	0
Haldimand	rP	1	--	--	4	—	--	0

The Saddled Prominent, Heterocampa guttivitta Wlk.

A small, severe outbreak of this hardwood defoliator occurred in the district in 1969. Aerial and ground surveys revealed small pockets of heavy infestation in mixed hardwood stands in the northern part of Clarke Township, Durham County (see map). Light infestations were observed in nearby Manvers, Darlington, and Cartwright townships and in Guilford Township in the northeastern part of the district.

Defoliation ranged from approximately ten per cent in lightly infested areas to more than 90 per cent in the four heavily infested pockets in Clarke Township (see photograph). Sugar maple and red oak sustained the most severe defoliation.

Small numbers of Calosoma calidum adults, a common predator, were observed in the heavily infested areas.

The Cherry Scallop Shell Moth, Hydria prunivorata Ferg.

A spectacular increase in numbers of this insect occurred in the district in 1969.

Moderate-to-heavy infestations were observed on wild black cherry trees along roadsides and in mixed hardwood stands throughout the eastern half of Haliburton County. In some instances more than 50 per cent of the foliage was damaged on small trees along roadsides and on fringe stands. Small numbers were commonly observed in Northumberland County and at widely separated points elsewhere in the district.

A Leaf Miner on White Birch, Messa nana Klug

Surveys in southern Ontario in 1969 showed an increase in the distribution of this leaf mining sawfly, a relatively new species in Canada. Although no change in distribution was recorded in the Lindsay District where the insect was first discovered in 1967, it was more widely distributed in adjoining districts to the east and west.

Populations remained at much the same level as in 1968, however mined leaves were observed more commonly on open-grown and fringe white birch trees throughout the southern half of the district.

Balsam-fir Sawfly, Neodiprion abietis complex

Little change in population levels of this sawfly occurred in 1969. Small pockets of light infestation and scattered colonies were observed in Lutterworth, Cardiff, Anstruther, Dudley, and Monmouth townships in the northern half of the district. Defoliation was less than ten per cent at each point.

Larval colonies of the late summer population were observed on fringe and roadside trees in Monmouth Township.

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

There have been infestations of this pest every year in the district since 1948.

Surveys in the last three seasons have shown that a downward trend in population levels began in 1967. In 1969, the only infestation found was of medium intensity and confined to a windbreak south of Haliburton in Haliburton County.

The decline in population levels can be attributed to natural control factors and the extensive chemical control program which was carried out in 1967 and 1968 in plantations managed by the Department of Lands and Forests.

A Jack-pine Sawfly, Neodiprion pratti paradoxicus Ross

Little change in population levels of this sawfly occurred in 1969. Although a small pocket of heavy infestation reported on the north side of Chandos Lake in 1968 declined to light intensity, heavy infestations recurred and increased in intensity in Murray Township, Northumberland County and in Galway Township, Peterborough County.

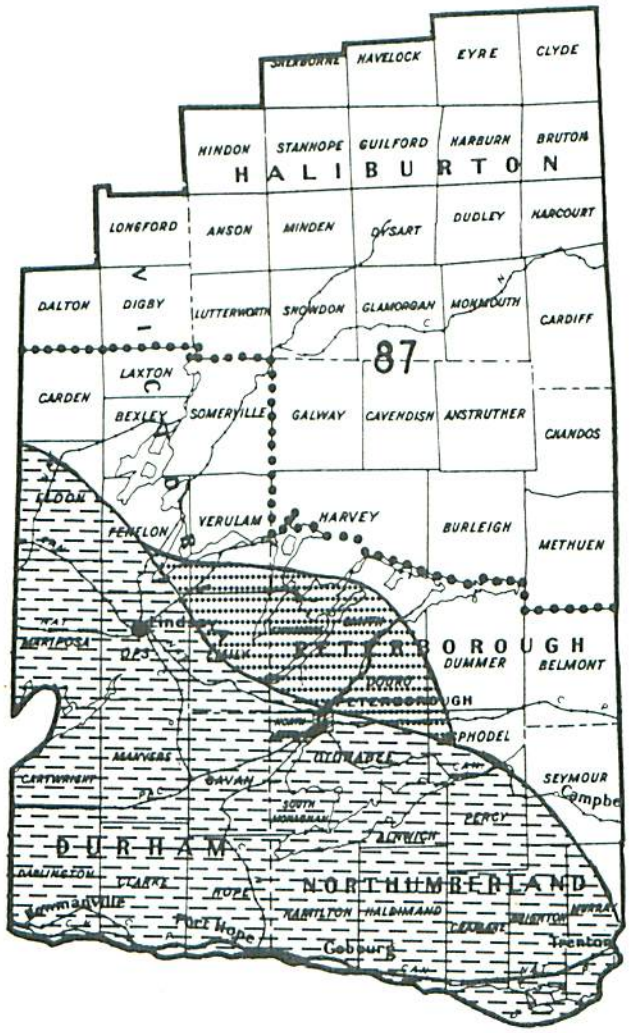
In Murray Township severe defoliation occurred in a 10-acre jack pine plantation and in a nearby roadside planting approximately two miles north of Trenton (see photograph). In Galway Township, despite chemical control measures, the upper part of the crowns of 30-foot jack pine trees was severely defoliated. Discussion with the owner of the plantation revealed that the spraying equipment used would not force the insecticide above the mid crown of the taller trees.

European Pine Sawfly, Neodiprion sertifer (Geoff.)

An extension in the range of this sawfly was recorded for the ninth consecutive year when larval colonies were found on roadside Scots pine trees east of Little Mud Lake in Smith Township, Peterborough County, approximately 15 miles northeast of the boundary established in 1968 (see map).

Marked increases in population levels occurred, especially in small diameter red pine plantations throughout Northumberland and Durham counties. For example a 50-acre red pine plantation in Clarke Township was heavily infested although no sawflies were found after an extensive search in 1968. A 10-acre Scots pine Christmas tree plantation also in Clarke Township was denuded of all but the current year's foliage and larval migration occurred when larvae were still in third and fourth instars. Undoubtedly, heavy mortality of larvae occurred in the area because of starvation.

LINDSAY DISTRICT



MILES

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EUROPEAN PINE SAWFLY

Known distribution in 1968 and 1969

Legend

Distribution before 1969 .....

Extension in distribution ....

Quantitative sampling revealed an increase in the average number of colonies per 100 trees examined at each of five points when compared with 1968 (Table 3).

Chemical control measures carried out by Department of Lands and Forests personnel were completely successful in some of the more severely infested areas. For example, no living larvae were found in a heavily infested 50-acre red pine plantation approximately 48 hours after aerial spraying with insecticide.

TABLE 3

Summary of European Pine Sawfly Larval Colony Counts in the Lindsay District, 1967 to 1969

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

Location (township)	Tree species	Av. d.b.h. of sample trees in inches	Av. no. of colonies per tree		
			1967	1968	1969
Darlington	ScP	2	--	--	6.5
Hope	ScP	2	--	2.4	4.7
Cartwright	ScP	2	12.5	1.0	2.4
Haldimand	rP	2	1.1	0.8	2.4
Clarke	rP	1	7.5	0.1	0.3

Yellow-headed Spruce Sawfly, Pikonema alaskensis Roh.

Population levels of this spruce defoliator increased in 1969. Severe defoliation occurred in a small diameter white spruce plantation in Anstruther Township, Peterborough County, and light defoliation was observed more commonly throughout the northern half of the district than in the three previous years.

White-pine Weevil, Pissodes strobi (Peck)

There was an increase in the amount of weevilling in 1969. Heavy infestations recurred with increased intensity in a mixed pine plantation in Haldimand Township (Table 4). In the former township a number of the trees examined had formed twin leaders because of past attack and in many instances both of these were weevilled in 1969. New heavy infestations were observed in spruce plantations in Clarke and Somerville townships.

Weevil control by clipping infested leaders was carried out in a white-pine plantation at one point in the Northumberland County Forest by Department of Lands and Forests personnel.

TABLE 4

Summary of Damage by the White-pine Weevil in the Lindsay District 1967 to 1969

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

Location (township)	Tree species	Av. d.b.h. of sample trees in inches	Per cent of trees infested 1967	1968	1969
Somerville	wP	2	24	54	78
Glamorgan	ScP	2	24	27	8
Haldimand	wP	1	15	19	28

Larch Sawfly, Pristiphora erichsonii (Htg.)

Population levels of the larch sawfly increased markedly in 1969. Severe defoliation of European larch occurred in two plantations in Clarke Township, Durham County. Moderate damage occurred in native larch stands in Chandos and Sherborne townships in the northern half of the district. Small numbers of colonies were observed more commonly in larch stands elsewhere than in 1968.

An Oak Leaf Miner, Profenusa lucifex Ross

A heavy infestation of this leaf mining sawfly with conspicuous discolouration of foliage recurred for the second consecutive year in a mixed white pine, and a red and white oak stand south of Rice Lake in Hamilton Township and a medium infestation was observed on fringe and open-grown oaks at one point in Haldimand Township.

European Pine Shoot Moth, Rhyacionia buoliana (Schiff.)

Populations of this insect remained at much the same level as in 1968 except in Darlington Township, Durham County where a new infestation caused moderate damage in a Scots pine plantation in the Darlington Provincial Park. Light-to-moderate damage recurred in a Scots pine plantation in Hamilton Township, Northumberland County, and on many highway plantings along the MacDonald-Cartier Freeway between the cities of Trenton and Oshawa.

TABLE 5

Other Noteworthy Insects

Insect	Host(s)	Remarks
Altica populi Brown	bPo	Moderate defoliation in Cartwright Township
Datana integerrima G. and R.	bWa	Moderate defoliation observed on scattered roadside trees at one point in Haldimand Township
Elaphidionoides parallelus Newm.	rO	Population levels of this twig pruner increased in the northern half of the district
Fenusa pusilla Lep.	wB, rB	Pockets of heavy infestation near Minden and in Hamilton Township
Hylobius pales Hbst.	ScP, rP	Severe twig damage in a Christmas tree plantation in Cartwright Township
Malacosoma americanum F.	Cch	Medium infestations on roadside trees near Fenelon Falls

Armillaria Root Rot, Armillaria mellea (Vahl ex Fr.) Kummer

This root rotting fungus caused light tree mortality in a small number of red pine plantations in the southern counties of the district.

Tree mortality was most prevalent in a small diameter red pine plantation in Clarke Township. Although infection could not be detected when the plantation was first examined in early spring several trees were either dead or severely deteriorated by mid summer. In some instances as much as five inches of current growth was produced before mortality occurred. Small groups or single recently dead trees were observed in small diameter red pine plantations at two points elsewhere in Clarke Township and on the fringe of a three inch diameter red pine plantation in the northeastern part of Haldimand Township.

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

This disease continued to cause severe mortality and damage to elms throughout the district in 1969. Quantitative sampling carried out at five widely separated points showed little change in numbers of trees with disease symptoms and, as in the previous year, the highest incidence of mortality and symptoms occurred in the southern part of the district (Table 6).

TABLE 6

Summary of the Occurrence of Dutch Elm Disease Symptoms in the Southeastern Region, 1968 to 1969

Note: Counts were based on examination of 50 trees at each location.

Location (township)	Per cent of trees with characteristic symptoms	
	1968	1969
Verulam	28	34
Digby	28	30
Belmont	50	38
Monmouth	42	52
Haldimand	76	72

Ink Spot of Aspen, Ciborinia whetzelii (Seaver) Seaver

Although this foliage disease was widely distributed, the level of infection was low except at one point in the northeastern part of the district in 1969.

Small diameter regeneration roadside aspens were severely infected along an access road in Clyde Township, Haliburton County. Most of the foliage on affected trees had turned brown and leaf drop was evident in early July.

A Foliage Rust of Hard Pines, Coleosporium solidaginis (Schw.) Thuem.

Extensive surveys at numerous points in the district in 1969 did not reveal the presence of this disease, common on hard pines, in either plantations or natural stands. However, trace infection of the rust was found on golden rod Solidago spp., an alternate host, in Harvey Township, Peterborough County and in Hindon Township, Haliburton County.

Although the disease is not known to cause mortality of host trees, marked retardation in height growth may result when heavy infection occurs on young trees.

Eutypella Canker of Maple, Eutypella parasitica Davidson & Lorenz

Surveys in hardwood stands at numerous points in 1969 indicated that this pathogen is present in most red and sugar maple stands in the district (Table 7). Quantitative sampling revealed that the incidence of diseased trees was lower in red maple stands than in sugar maple stands.

TABLE 7

Summary of Incidence and Infection of Eutypella Canker of Maple in Lindsay District, 1969

Note: Incidence is based on examination of four trees in each of ten plots at each location.

Location (township)	Tree species	Tree height in feet	Level of incidence	Level of infection
Lutterworth	sM	70	High	High
Cartwright	sM	100	Moderate	Moderate
Stanhope	rM	70	Moderate	Moderate
Cardiff	rM	70	Moderate	Light

Annosus Root Rot, Fomes annosus (Fr.) Cooke

Little change occurred in the status of this disease in 1969. Aerial and ground surveys did not reveal any new infection centres. However, light tree mortality did occur on the fringes of previously reported infection centres in a red pine plantation in Cartwright Township. Durham County and in mixed pine plantations in Brighton and Haldimand townships, Northumberland County.

A Nectria Canker of Hardwoods, Nectria sp.

A high incidence of this disease was found on basswoods in a mixed hardwood stand near Minden in Lutterworth Township and on trembling aspens in a mixed hardwood and softwood stand in Haldimand Township, Northumberland County. Quantitative sampling revealed that 42 per cent of the basswoods and 30 per cent of the aspens were infected.

Although the disease does not ordinarily cause mortality the reduction in merchantable volume is important.

Decline of Red and White Pine

Deterioration and recent mortality of red pine in selectively thinned plantations in Clarke and Hamilton townships recurred for the second consecutive year. Small ornamental white pines in Darlington Provincial Park near Oshawa were also affected in 1969. Symptoms of deterioration were similar in each area.

Although only light mortality occurred in affected areas, severe deterioration was evident in the Hamilton Township plantation. Both current and old foliage was conspicuously discoloured through approximately 75 per cent of the stand by late summer.

Soil sampling revealed a heavy clay-loam soil type and severe root compaction was evident in each area.

The combination of crown deterioration, foliage discolouration and poor soil conditions has been recognized in eastern North America as "red pine decline" which may also affect white pine when similar environmental conditions are present.

Ice Damage

A severe ice storm in mid January 1969 caused considerable damage to forest stands in parts of Haliburton County. An immature jack pine plantation in Stanhope Township was severely damaged and resulted in selective cutting of the damaged trees. Elsewhere broken limbs were commonly observed on most tree species.

TABLE 8

Other Noteworthy Diseases

Organism	Host(s)	Remarks
Scoleconectria cucurbitula (Tode ex Fr.) Booth	wP	Trace infection in a white pine plantation in Hope Township