ANNUAL DISTRICT REPORTS

FOREST INSECT AND DISEASE SURVEY

ONTARIO 1966

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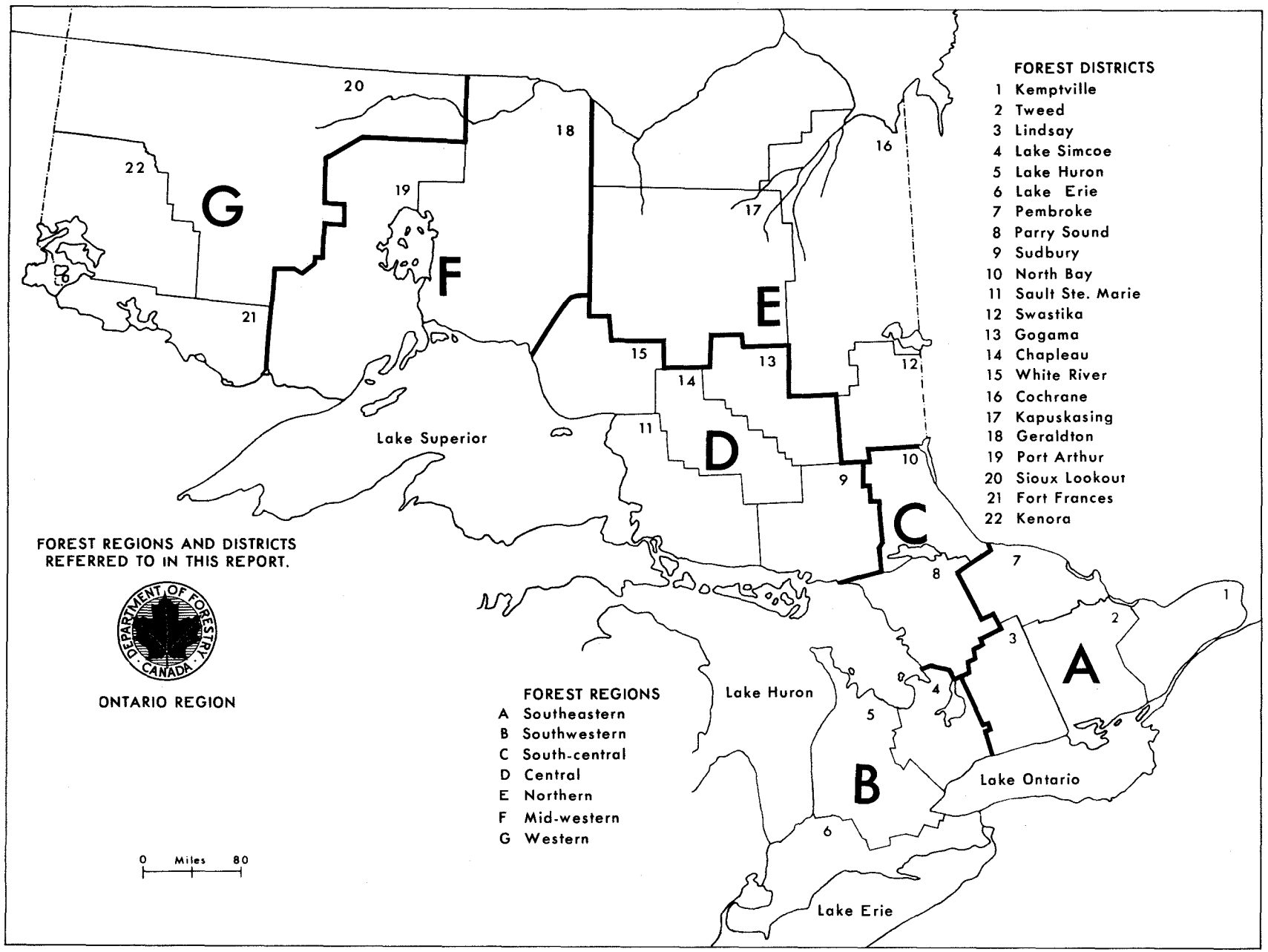
REPORTS OF FOREST RESEARCH TECHNICIANS

Ontario

* Regional Supervisors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FOREST REGIONS AND DISTRICTS REFERRED TO IN THIS REPORT.
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FOREWORD

J. E. MacDonald

A prolonged period of drought, extending from May until August, seriously affected the growth and survival of forest stands on shallow sites and in plantations, particularly in central and southern Ontario. This was evidenced in August when hardwoods on rocky sites in many areas turned brown and shed their foliage. Serious losses of conifers planted in 1966 were reported in the Sault Ste. Marie, Lake Huron, Lake Simcoe and Lindsay districts.

Intensive surveys were carried out in 1966 to determine the distribution and incidence of Scleroderris canker of pine and of Dutch elm disease. These revealed that Scleroderris canker is widely distributed in northern Ontario. Incidence and tree mortality was highest in young red and jack pine plantations, however, significant losses of jack pine reproduction were also observed in several areas. Incidence of the disease was low in southern Ontario. Dutch elm disease is well established throughout southern Ontario and in localized areas in North Bay and Sudbury districts in northern Ontario. The incidence of infection was particularly high in the Toronto, London and Windsor areas. Over 50 per cent of the elm trees in many areas in southwestern Ontario were infected and the disease has taken a heavy toll of trees in older areas of infection.

Noteworthy changes in the extent and intensity of infestations of the forest tent caterpillar and jack pine budworm occurred in 1966. Weather conditions in the spring brought about a collapse of the forest tent caterpillar outbreak that had occurred over a vast area in Sioux Lookout, Kenora and Port Arthur districts in recent years. Heavy infestations persisted in Fort Frances District and in numerous areas in central and southeastern Ontario, but no outstanding changes in their extent and intensity occurred. Forest tent caterpillar defoliation forecasts for 1967 are contained in the district reports that follow.

Jack pine budworm infestations were reported in three widely-separated parts of Ontario. The largest of these occurred in the western part of Fort Frances and Kenora districts. Pockets of infestation occurred in the southern part of Sault Ste. Marie District and on Manitoulin Island.

The European pine sawfly continued to be a serious pest in pine plantations in southern Ontario. Since its discovery in a Scots pine plantation on Manitoulin Island in 1965, it has been found in five additional plantations on the Island. The results of control measures using virus sprays to contain the sawfly in this northern location will be followed with interest in 1967.

Expansion of the forest research program of the Department of Forestry and Rural Development in Sault Ste. Marie and the establishment of new positions in the Insect and Disease Survey Section has resulted in many changes of duties for Survey technicians. Five new district technicians will be required for the 1967 field season and numerous district re-assignments will be made. A list of technicians and their district assignments will be issued to key personnel of the Department of Lands and Forests and Industry early in the field season.

SOUTHEASTERN FOREST REGION

1966

INTRODUCTION

STATUS OF TREE DISEASES (Regional)

INTRODUCTION

Southeastern Forest Region

The forest insects that in 1966 constituted major problems in the Southeastern Forest Region were: the forest tent caterpillar, the European pine sawfly and the red-headed pine sawfly. Infestations of forest tent caterpillar persisted in Pembroke and Tweed districts but increased in extent in Kemptville District. Infestations of the European pine sawfly increased slightly in Lindsay and Tweed districts. A new distribution record of the sawfly was established with the finding of the insect in a Scots pine plantation in Prince Edward County, Tweed District. Populations of the red-headed pine sawfly increased in all districts.

Mortality to pine plantations caused by the engraver beetle occurred at scattered locations in Lindsay District. A jack-pine sawfly, Neodiprion pratti paradoxicus Ross was found on pitch pine in the southern part of Kemptville District.

Severe drought in mid-summer caused many species of trees on ridges and in well drained areas to have their foliage die and fall prematurely. A deterioration condition of red pine occurred at scattered locations in the region. In Lindsay District, considerable mortality of young trees in plantations resulted.

Insect collections in the region in 1966 totalled 1122. Samples of tree diseases submitted to the Forest Pathology Laboratory totalled 351. Twenty-three special insect collections were made for parasite studies and various research projects. In co-operation with staff members of Atomic Energy of Canada Limited large numbers of red-headed pine sawflies were collected in Haliburton and Victoria counties.

The number of extension and service calls dealt with in 1966 was 230, compared with 157 in 1965.

W. J. Miller

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

Infections by C. ulmi continued throughout the Southeastern Forest Region in 1966. Incidence of the disease increased in 1966 compared with 1965, while tree mortality remained approximately the same. It is probable that the mortality of elms is higher than quantitative samples indicate because mortality figures are influenced by the removal of trees soon after mortality occurs.

Quantitative samples taken at 110 scattered locations in the Region revealed that incidence of the disease varied from 6 to 30 per cent and mortality from 5 to 18 per cent.

TABLE 1

Summary of the Occurrence of Dutch Elm Disease and of the Mortality in the Southeastern Region in 1966

District	No. of locations sampled	No. of trees examined	Per cent of trees diseased	Per cent of trees dead
Lindsay	32	2500	16	18
Tweed	29	1450	10	17
Kemptville	27	3975	6	5
Pembroke	22	716	30	6

Ink Spot of Aspen, Ciborina whetzelii (Seav.) Seav.

Incidence of the ink spot of aspen was heavy in three small areas in Harvey, Harcourt, and Clarke townships in Lindsay District. Light infections occurred in small pockets in Cambridge Township, Kemptville District; Sproule, Preston, Airy and Murchinson townships in Pembroke District; between Dacre and Calabogie in Tweed District; and in Methuen, Lutterworth and Somerville townships in Lindsay District. Occasional light infection occurred at scattered locations in the rest of the Region. A small area of very light infection occurred on Carolina poplar in Lutterworth Township.

White Pine Blister Rust, Cronartium ribicola J. C. Fischer

The status of this important pathogen was unchanged in the Southeastern Region in 1966. In Lindsay District a small area of 12-foot trees suffered 14 per cent infection and 14 per cent mortality. In Westmeath Township, Pembroke District, 32 per cent of the trees in a young white pine plantation were infected and 27 per cent were killed. Numerous shade trees in the town of Deep River were infected, and heavy mortality of regeneration was observed at one location in Wylie Township.

Highest incidence of infection in Kemptville District occurred at a sample point in Torbolton Township, where 10 per cent of the white pine were infected. The disease was observed commonly in Tweed District on white pine of all age classes.

Twig Blight, Cytospora kunzei Sacc.

Infection of spruce by this fungus occurred at four locations in the Region: two in Lindsay District, and one in each of Pembroke and Kemptville districts. In Lindsay District, an infection centre was observed on a Norway spruce fence-row in Ops Township, where heavy damage occurred. A second was on a Norway spruce fence-row in Manvers Township; of 100 trees examined 36 were dead and 25 showed symptoms of the disease. In Pembroke District the pathogen caused numerous stem cankers in a white spruce plantation at the Petawawa Forest Experimental Station. Of 126 trees checked in the plot, 11 were dead and 66 showed symptoms of the disease. In Kemptville District severe infection occurred in a 30-year-old white spruce plantation in the Larose Forest in Cambridge Township.

Black-knot of Cherry, Dibotryon morbosum (Schw.) Theiss. & Syd.

The black-knot disease of cherry, caused by D. morbosum is found throughout the Region in most areas where wild cherry or plum trees occur. Incidence and severity of the disease are generally low to medium. However, numerous centres of heavy infection were observed in Haliburton, Durham and Northumberland counties in the Lindsay District; near Cloyne, Slate Falls, and west of Maynooth in the Tweed District; and in Clara, Hagarty, Richards and Wilberforce townships in the Pembroke District.

Fomes Root Rot, Fomes annosus (Fries.) Cooke

Severe root rot caused by F. annosus occurred in six areas in the Region in 1966. Five of these occurred in red and jack pine plantations in the Northumberland County Forest, Lindsay District. The other pocket of infection occurred in a red pine plantation of six to twelve inch d.b.h. trees in a plantation in Cartwright Township, Durham County. The area of mortality in this instance is approximately 100 feet in diameter. The infected plantation that was found in the Northumberland County Forest in 1965 was clear cut in 1966.

Red Ring Rot of Conifers, Fomes pini (Thore ex Pers.) Lloyd

A root-exposure experiment was carried out at the Petawawa Forest Experiment Station in a 39-year-old white spruce plantation. Of twenty-five completely exposed root systems, five contained a high percentage of dead roots and roots showing cracks and heavy resinosis. The butts, to a height of three feet above the ground, showed interior rotting. The causal agent of this damage was identified as Fomes pini. The external appearance of the visible parts of the trees in this plantation appeared normal.

Leaf and Twig Blight of Poplar, Pollacia radiosa (Lib.) Bald. & Cif.

Centres of infection by this shoot blight of trembling aspen were again commonly observed in all districts of the Region. Incidence and severity were generally light and no trees above regeneration size were infected. Centres of heavy infection were observed in Abinger and Raglan townships in the Tweed District; Bathhurst, Marlborough, Mountain, Oxford,

and S. Sherbrooke townships in the Kemptville District; and Stratton and Peck townships in the Pembroke District, where 39 and 47 per cent respectively of trembling aspen were severely infected.

Die-back of Pines, Scleroderris lagerbergii Gremmen

In the Kemptville District, this fungus caused heavy mortality of transplanted white pine stock in the Department of Lands and Forests nursery in Oxford Township.

Light mortality of planting stock, obtained outside the district, occurred in four widely-scattered red pine plantations in Alice, Guthrie, Hagarty, and Murchison townships in the Pembroke District (Table 2). The disease was not observed in the Lindsay and Tweed districts.

TABLE 2

Incidence of Scleroderris lagerbergii in Four Red Pine Plantations in the Pembroke District in 1966

Township	Year planted	No. of trees checked	No. of dead seedlings	Per cent dead
Alice	1962	750	2	.3
Guthrie	1965	750	17	2.3
Hagarty	1965	750	12	1.6
Murchison	1965	750	7	.9

A Needle Droop Condition on Red Pine

A needle droop condition caused by an unknown agent occurred in the Southeastern Forest Region in 1966. Severe damage occurred in seven plantations in Lindsay District, three in Tweed District, and in one in Pembroke District (see map). The incidence of infection was highest in Minden Township, where 99 per cent of the trees were damaged and 57 per cent were killed; in Stanhope Township where 86 per cent were damaged and 28 per cent were killed; and in Mayo Township where most of the trees in a plantation were damaged but few were killed. In many plantations losses necessitated replanting programs.

In September 1965 severe damage, noted in a red pine plantation in Lindsay District, was confined to the current year's foliage and consisted of brown shrunken areas on those portions of needles within needle sheaths. The needle at this point drooped at an acute angle giving the foliage a pyramid-shaped appearance (see photograph). In late September and in October the foliage became brown and in many instances the buds at the end of the affected shoots died. In some areas the condition occurred later in the year and the foliage remained green until the following spring. Consequently most of the damaged areas reported in 1966 were the result of conditions initiated in 1965. The damage was noted in plantations of red pine from 8 inches high to plantations of 12-foot high trees. In general, trees 18 inches or more in height survived while most trees under that height died. In every instance where the injury was noted in 1965, the mite Setoptus jonesi (Keifer) was usually present in the sheath at or near the constricted portion of the needle. In the spring of 1966 the mite was again observed on the foliage, not

closely associated with the damaged needles of the 1965 growth, but usually associated with the 1964 foliage. Numerous trees with the same injury to the 1966 foliage were closely examined in September without finding any mites on any part of the trees. This seems at the moment to preclude the possibility that S. jonesi is responsible for the condition.

Samples from all parts of injured trees were submitted to the Forest Pathology at Maple at various times. In one plantation in Lindsay District cankers were found frequently on the trunks of trees, but they were not found consistently with the condition in other plantations and cannot be considered to be the cause of the damage. Other fungi occasionally associated with this needle droop condition were: Sclerophoma pithyophila, Aureobasidium pullulans, (de Bary) Arnaud, Cenagium ferruginosum, Valsa sp., Cytospora sp., Phoma sp.

Drought Injury

Drought conditions prevailed from late June until early August in the Region, and many tree species growing in shallow soil, rocky ridges or in other well drained areas, suffered severely. In the central parts of Lindsay and Tweed districts and in the vicinity of petawawa in Pembroke District. The foliage of oak, maple, birch, and most other species of deciduous trees died in early summer. Scattered young balsam fir and red pine growing on rocky ridges in the northern parts of Victoria and Peterborough counties and small white pine in plantations in Tweed District were killed. Less severe damage occurred at scattered locations in the rest of the Region.

Maple Deterioration

Roadside deterioration was severe throughout Lindsay, Tweed, and Kemptville districts. Tree mortality is low, even though the condition has persisted for several years and incidence level has been high (Table 3).

TABLE 3

Summary of the Occurrence of Deterioration and Mortality to Sugar Maple Trees in the Southeastern Region in 1966

Location by Township	No. of trees examined	Per cent of trees damaged	Per cent of trees dead
Lindsay District			
Asphodel	33	14	4
Cavan	100	26	1
Darlington	50	20	4
Hamilton	25	36	0
Hope	17	30	6
Mariposa	50	19	0
Ops	50	47	0
Otanabee	50	24	0
Seymour	50	14	0
Fenelon	34	8	2

TABLE 3 (concluded)

Location by Township	No. of trees examined	Per cent of trees damaged	Per cent of trees dead
Kemptville District			
Finch	50	6	2
Lanark	50	14	4
Osgoode	50	2	0
Oxford	50	4	2
Ramsay	50	16	0
Tweed District			
Hungerford	50	24	0
Rawdon	50	36	2
Sydney	50	24	4
Thurlow	50	20	0

NOTE: Trees examined ranged from 9" to 24" in diameter.

Oak Deterioration

Oak deterioration has increased for the past five years in Lindsay District. High incidence of this condition occurred in the southern half of the district and light incidence in the northern half in 1966. The areas of heaviest damage were in the Durham County Forest where numerous oaks had discoloured foliage and branch mortality. In one part of the forest, mortality of large trees was ten per cent. This condition was also recorded in Northumberland County.

TABLE 4

Other Noteworthy Diseases in the Southeastern Region in 1966

Organism	Host(s)	Remarks
Apiosporina collinsii (Schw.) Hoehn.	Se	Occasional large shrubs in Rolph Twp. infested, Pembroke District.
Arceuthobium pusillum Pk.	bS	Small centre of infection in Chandos and Burleigh twps., Lindsay District.
Armillaria mellea (Vahl ex F.) Kummer	Hi, rP wP, wS	Small centres of light infection at scattered points in the Region.
Aureobasidium pullulans (de Bary) Arnaud	rP, scP	Infections of high severity on red pine and low severity on Scots pine in plantations in Minden Twp.
Coryneum negundinis Berk. & Curt.	mM	Lightly infected Manitoba maple at scattered locations in Lindsay District.

TABLE 4 (continued)

Organism	Host(s)	Remarks
Cytospora chrysosperma (Pers.) Fr.	W, cPo	Increased incidence in Lindsay and Tweed districts, centre of heavy infection at Belleville.
Dothichiza populea Sacc. & Braird	cPo, wPo	Low incidence on ornamentals in Cramahe and Hope twps. in Lindsay District.
Fomes igniarius (L. ex Fr.) Gill.	Be, sM	Several small centres of infection throughout Lindsay District, one large centre of infection in Pembroke District.
Gnomonia ulmea (Schw.) Thuem.	wE	High incidence, low severity on white elm in Hagarty Twp., Pembroke District.
Frost injury	Hardwoods & Conifers	Night frosts late in the season caused injury to developing shoots at many points in the Pembroke District. Most noticeable on hardwoods in Finlayson, Peck and Canisbay twps.
Gymnosporangium juniperi-virginianae Schw.	rJ	Centres of heavy infection throughout southern part of Tweed District, small centres of infection in S. Crosby and Front-of-Yonge twps. in Kemptville District.
Hypodermella ampla (J. J. Davis) Dearn.	jP	Numerous small centres of light infection in Pembroke District.
Hypoxylon mammatum (Wahl.) Miller	tA	Occurs at numerous locations in the Region. Several centres of severe infection in Pembroke District; at one location in Haldimand Twp. in Lindsay District, 5 per cent of the trees examined were infected, and 5 per cent were dead.
Lophodermium pinastri (Schrad.) Chev.	jP	Small centre of severe infection in Clara Twp., Pembroke District.
Macrophoma tumefaciens Shear	tA	Seventy-five per cent trees infected in Buchanan Twp., Pembroke District.

TABLE 4 (continued)

Organism	Host(s)	Remarks
Melampsora abietis-canadensis Ludwig. ex Arth.	eH	Small centres of light infection in Cambridge and Mountain twps., Kemptville District.
Melampsora medusae Thuem.	tL	High incidence, low severity in Bronson Twp., Pembroke District.
Monilinia seaveri (Rehm) Honey	bCh, cCh	Centres of severe infection in Manvers and Cartwright twps., Lindsay District.
Peridermium sp.	jP, scP	Several centres of light infection in Westmeath and Maria twps., Pembroke District.
Pollacia elegans Serv.	lA	Commonly observed throughout the Southeastern Region.
Polyporus fumosus (Pers.) Fries	wS	Fruiting bodies common on white spruce stumps in Buchanan Twp., Pembroke District.
Polyporus hirsutus Wulf. ex Fr.	pCh	Small centre of high severity in Pentland Twp., Pembroke District.
Polyporus pargamenus Fr.	wS	Fruiting bodies common on stumps in Buchanan Twp., Pembroke Dist.
Polyporus tomentosus var. circinatus (Fries) Sartory & Maire	wS	Occasional fruiting bodies collected near white spruce stumps in Buchanan Twp., Pembroke Dist.
Pseudotomus tumefaciens (S. & T.) Duggar	Hi	Several centres of infection in Kemptville and Tweed districts.
Pucciniastrum epilobii Otth.	bF	Centre of high incidence and moderate severity in Sproule Twp., Pembroke District.
Retinocyclus abietis (Crovan) Groves & Wells	wS	Found on pole-size white spruce in Buchanan Twp., first Ontario record.
Rhytisma punctatum Fr.	stM	Eighty per cent striped maple in Finlayson Twp., Pembroke District, severely infected, numerous centres of infection in district.

TABLE 4 (concluded)

Organism	Host(s)	Remarks
Salt injury	Pinus spp.	Heavy damage to pines occurred along highway 115 in the Lindsay District, light to moderate damage at numerous other locations. Red pine trees in McNab and Horton twps. in Tweed District were moderately damaged.
Sclerophoma pithyophila (Corcla) Hoehn.	jP	Twenty-six per cent incidence, moderate severity in a stand of pole-size jack pine in Petawawa Twp., in Pembroke District.
Stigmina pulvinata (kunze ex Link) M. B. Ellis	Chinese elm	Commonly found on Chinese elm in the Kemptville District nursery; numerous Chinese elm hedges at various locations in Pembroke District, but mainly in the Town of Pembroke, moderately to severely infected.
Taphrina cerasi (Fuckel) Sadebeck	pCh	Centres of severe and light infection in Fraser and Head twps., Pembroke District.
Thelephora terrestris Ehrh.	forest floor	Fruiting bodies found commonly on forest floor in several plantations of conifers in Buchanan Twp., Pembroke District.
Uncinula salicis (DC. ex Merat) Wint.	bPo	Centres of heavy infection on understory balsam poplar in Cartwright Twp., Lindsay District; and Ross Twp. in Pembroke District.
Wetwood of Elm	Ulmus spp.	Centres of infection occurred in Lindsay, Tweed, and Kemptville districts. Heaviest infection in the Town of Lindsay on Chinese elm.
White Pine Resinosis	wP	Small numbers of white pine dead and small numbers in unthrifty condition due to this physiogenic disease in a plantation in Monmouth Twp., Lindsay District.

STATUS OF INSECTS IN LINDSAY DISTRICT

Wm. J. Miller

Cedar Leaf Miners, Argyresthia spp. and Pulicalvaria thujaella Kft.

Population levels of cedar leaf miners increased in 1966 compared with 1965. Heavy infestations persisted in the southern half of the district and scattered pockets of light infestations occurred in the northern part of Victoria and Peterborough counties (see map).

Most of the white cedar in the southern half of the district was very sparsely foliated as a result of mining and shedding of the foliage for five consecutive years.

The species of miners found most frequently in 1966 were Argyresthia thuiella Pack., Argyresthia freyella Wlshm., Argyresthia aureoargentella Brower and Pulicalvaria thujaella Kft.

Larch Casebearer, Coleophera laricella Hbn.

Populations of the larch casebearer were high in small patches of larch in Hamilton Township, Northumberland County, and in a European larch plantation in Clarke Township, Durham County. In the rest of the district populations were very low (Table 5).

TABLE 5

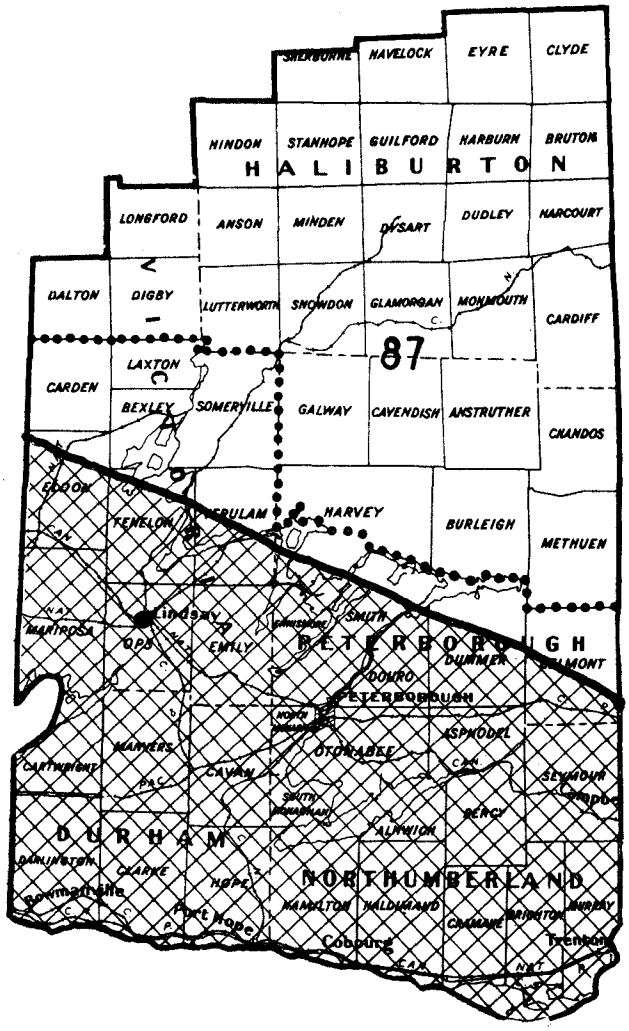
Summary of Larch Casebearer Counts in Lindsay District in 1965 and 1966

Location by township	Av. d.b.h. of trees in inches	Av. no. of larvae per 18-inch branch tip	
		1965	1966
Anson	8	0.2	0.3
Asphodel	8	1.2	1.0
Cardiff	8	0.3	0.2
Dysart	10	0.0	0.0
Galway	10	0.1	0.0
Haldimand	10	0.2	0.0
Hamilton	8	4.7	4.4
Harvey	8	1.0	2.2
Minden	10	0.0	0.0
Snowdon	8	0.1	0.5
Somerville	8	0.1	0.2
Stanhope	10	0.4	1.5

Lace bugs, Corythucha spp. and Gargaphia tiliae Walsh

Heavy infestations of lace bugs prevailed on white oak trees in the vicinity of Campbellford and along the Trent Canal in Seymour Township in Northumberland County. Light infestations occurred on black cherry in Minden Township, on basswood in Laxton Township, and on elm and other deciduous trees at scattered locations in the rest of the district. Infestations were less severe and widespread in 1966 than in 1965.

LINDSAY DISTRICT



CEDAR LEAF MINERS

Areas within which heavy infestations occurred in 1966

Legend

Heavy infestation . . . . . .

The species found most frequently in 1966 were; Corythucha arcuata (Say), C. ulmi O. & D., C. pergandei Heidmann, C. juglandis (Fitch) and Gargaphia tiliae Walsh.

Nursery Pine Sawfly, Diprion frutetorum (F.)

Populations of this sawfly remained at a low level on Scots pine throughout the district in 1966. The numbers of larvae in tray samples were generally lower than in 1965, but the difference was of little significance (Table 6).

TABLE 6

Summary of Nursery Pine Sawfly Larval Counts Taken in Lindsay District in 1965 and 1966

Location by township	Av. d.b.h. of trees in inches	Total number of larvae per 15-tray sample	
		1965	1966
Burleigh	3	1	0
Cartwright	6	37	25
Clarke	4	7	6
Darlington	5	0	2
Fenelon	5	11	2
Haldimand	4	23	30
Hope	4	11	8
Manvers	3	5	5
Snowdon	4	9	8
Somerville	4	16	1

European Spruce Sawfly, Diprion hercyniae (Htg.)

Low populations of this sawfly occurred on white spruce trees throughout the district in 1966. Small numbers were also found on red spruce in Haliburton County. Population levels declined at most sample points compared with 1965 (Table 7).

TABLE 7

Summary of European Spruce Sawfly Larval Counts in Lindsay District in 1965 and 1966

Location by township	Av. d.b.h. of trees in inches	Total number of larvae per 15-tray sample	
		1965	1966
Cardiff	10	9	9
Cartwright	9	8	1
Galway	16	29	8
Havelock	10	2	4
Laxton	17	34	9
Sherborne	10	30	7
Snowdon	10	11	3
Somerville	14	23	19
Stanhope	12	19	5

Introduced Pine Sawfly, Diprion similis (Htg.)

Light infestations of this sawfly persisted in Cartwright, Manvers and Clarke townships in Durham County. A light infestation in the southern part of Fenelon Township, Victoria County subsided in 1966. The variation in larval counts at most sample points was small and did not indicate any real changes in infestation intensity (Table 8).

TABLE 8

Summary of Introduced Pine Sawfly Larval Counts in Lindsay District from 1964 to 1966

Location by township	Av. d.b.h. of trees in inches	Total number of larvae per 15-tray sample		
		1964	1965	1966
Cartwright	6	18	19	18
Clarke	5	1	2	1
Fenelon	4	3	1	0
Manvers	5	13	2	6

White-pine Shoot Borer, Eucosma gloriola Heinr.

Light and medium infestations of this insect occurred in pine plantations throughout Durham and Northumberland counties. Population levels were highest in a Scots pine plantation in Haldimand Township where 100 per cent of the trees were infested with an average of 3.3 damaged shoots per tree (Table 9). Light infestations and small numbers occurred in Scots, white and red pine plantations in Victoria, Peterborough and Haliburton counties.

TABLE 9

Summary of Shoot Damage Caused by the White-pine Shoot Borer in Pine Plantations in Lindsay District from 1964 to 1966

NOTE: One hundred trees were examined at each location.

Location by township	Tree Species	Av. d.b.h. of trees in inches	No. of trees infested in 1966	Av. no. of infested shoots per tree		
				1964	1965	1966
Brighton	wP	7	100	2.0	1.5	1.9
Clarke	rP	4	18	1.0	1.0	0.2
Haldimand	scP	3	100	0.0	1.0	3.3

Birch Leaf Miner, Fenusa pusilla (Lep.)

Scattered pockets of heavy infestation of this miner occurred throughout the district in 1966. The heaviest damage was observed in Cardiff and Sherborne townships in Haliburton County and in Clarke and Cartwright townships in Durham County, where over 90 per cent of the foliage of white birch trees was infested (Table 10). Light infestations were common on White Birch undergrowth in the rest of the district.

TABLE 10

Summary of Birch Leaf Miner Damage in Lindsay District
1964 to 1966

NOTE: Counts were based on the examination of 100 leaves taken at random from three white birch trees at each location.

Location by township	Per cent of leaves mined			Total no. of mines		
	1964	1965	1966	1964	1965	1966
Brighton	5	8	12	8	8	15
Cardiff	-	-	100	-	-	200
Cartwright	-	-	98	-	-	196
Clarke	6	9	90	10	14	144
Eyre	2	75	77	6	150	150
Harburn	50	50	72	151	150	163
Havelock	4	10	25	9	16	34

Root and Stump Weevils, Hylobius pales Boh. and Pissodes approximatus Hopk.

Heavy infestations and severe damage caused by these root and stump weevils persisted in the Christmas tree growing areas of Durham and Northumberland counties in 1966. Considerable flagging of Scots and white pine trees was caused by the adults feeding on the bark of the twigs.

Pine Engraver, Ips pini Say

Several small patches of heavy infestation of this beetle occurred in Scots pine Christmas tree plantations in Darlington Township, Durham County in 1966. Approximately 30 trees were severely damaged in each area and were dead by September. Heavy infestations also occurred on individual red pine trees in a plantation of 10- to 12-inch d.b.h. trees in the Victoria County forest. The trunks of the trees were completely girdled by the beetle galleries, and in most cases the trees were dead by late September.

In Glamorgan Township, Haliburton County, a plantation of 4- to 5-inch d.b.h. red pine trees was infested. A quantitative sample taken at this location in September revealed that 25 per cent of the 1500 trees in the plantation were heavily infested. Woodpeckers fed on the beetles and stripped most of the bark from the infested trees. When examined in September the foliage on the infested trees was still green but there is

little question that mortality will occur. Small numbers of infested red and Scots pine trees were observed at scattered locations in the rest of the district.

In the infestations noted above, there was a lack of suitable slash or wood available for the second generation of the insects. Under these circumstances the beetles attacked living trees.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

Populations of this caterpillar declined to a very low level in the district in 1966. Light infestations occurred in patches of cherry trees in Harvey Township, Peterborough County and in Fenelon Township, Victoria County. Scattered colonies were observed in the rest of the district. Roadside brushing and spraying with herbicides by the Department of Highways was largely responsible for the drop in population levels.

TABLE 11

Summary of Eastern Tent Caterpillar Colony Counts in Lindsay District 1964 to 1966

Location by township	No. of tents observed per mile of roadside		
	1964	1965	1966
Glamorgan	1	5	1
Guilford	1	1	0
Harvey	58	130	36
Lutterworth	42	102	0
Manvers	0	2	0
Minden	38	52	1
Percy	2	11	0
Snowdon	23	2	5

Balsam-fir Sawfly, Neodiprion abietis complex

Light infestations and small numbers of this sawfly occurred at scattered locations in the district in 1966, particularly in Haliburton and in the northern part of Victoria and Peterborough counties.

Two separate larval populations of this insect have occurred each year in the district since 1958. The distinction between the two is a matter of timing only. The early summer populations pupate at the time the mid-summer populations are hatching. From 1958 to 1964 the mid-summer larval populations were the most abundant but in 1965 and 1966 the early summer populations were the most common.

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Heavy infestations occurred in red pine plantations in Stanhope, Minden and Glamorgan Townships in Haliburton County, in Somerville Township, Victoria County and in Cavendish Township and Asphodel Township in Peterborough County. Every tree in a 32-acre red pine plantation in Stanhope Township and a 2-acre plantation in Glamorgan Township was infested. Counts revealed an average of 4 and 6 colonies per tree respectively in these plantations. The trees in both plantations averaged 4 feet in height.

Control measures using emulsifiable D.D.T. at a 2.5 per cent concentration with water, and hand-operated pack sprayers were again carried out by personnel of the Ontario Department of Lands and Forests. The spraying was confined to plantations under the Department's management where heavy infestations occurred. In Stanhope and Snowdon townships and in the Victoria County Forest red pine plantations totalling 916 acres were sprayed. Results were generally good and in most instances defoliation following spraying was negligible.

Jack-pine Sawflies, Neodiprion pratti banksianae Roh.
Neodiprion pratti paradoxicus Ross.

Larval populations of N. pratti banksianae declined in 1966 for the third consecutive year. Light infestations occurred in small patches of jack pine in Dalton Township, Victoria County and in Minden Township, Haliburton County.

Heavy infestations of N. pratti paradoxicus occurred in jack pine plantations in Anstruther, Burleight, Chandos, and Belmont townships in Peterborough County. Light infestations were observed in one plantation in Haldimand Township, Northumberland County, in several plantations in Methuen Township, Peterborough County and in one plantation in Dysart Township, Haliburton County. Population levels were higher at sample points in 1966 than in 1965. In Anstruther, Burleigh, Chandos, and Belmont townships 12, 10, 8 and 9 colonies per tree respectively were counted.

European Pine Sawfly, Neodiprion sertifer (Geoff.)

Minor advances in the known distribution of this sawfly occurred in 1966 in the northern part of Durham County and eastward into Cramahe Township in Northumberland County (see map). Pockets of heavy infestation within the area of infestation increased in number and quantitative samples revealed that larval populations were generally higher than in 1965. At sample points in Haldimand and Darlington townships more than 20 colonies per infested tree were counted and all trees in the plantations were infested (Table 12).

Control operations using a variety of insecticides were employed in the district. The Ontario Department of Highways sprayed roadside trees along Highway 401 in an effort to eradicate infestations. However the insecticides were applied when the insect was in the late larval stages and the effectiveness of the operation will not be known until larval populations become active in 1967. Private tree growers used helicopters to apply Phosphamidion and D.D.T. on plantations in Durham and Northumberland counties. In most

cases these operations were considered successful. In 1965 and 1966 a polyhedral virus was introduced in some of the heavy infestations with good results.

TABLE 12

Summary of European Pine Sawfly Colony Counts in Lindsay District 1964 to 1966

NOTE: Counts were based on the examination of 100 Scots pine trees at each location.

Location by township	Number of trees infested in 1966	Average no. of colonies per tree		
		1964	1965	1966
Cartwright	100	8.5	0.2	3.6
Cavan	35	-	-	5.5
Clarke	100	-	-	5.6
Darlington	100	-	19.2	22.0
Haldimand	100	0	10.0	21.0
Hamilton	100	-	-	1.4
Manvers	25	-	-	2.0

Pine Bark Aphid, Pineus strobi (Htg.)

Scattered pockets of heavy infestation of this accidentally introduced aphid from Europe occurred in white pine plantations in the Northumberland and the Durham county forests, and in the southwestern part of Cartwright Township, Durham County. Since the infestations occurred on white pine trees over five inches d.b.h. no serious injury resulted.

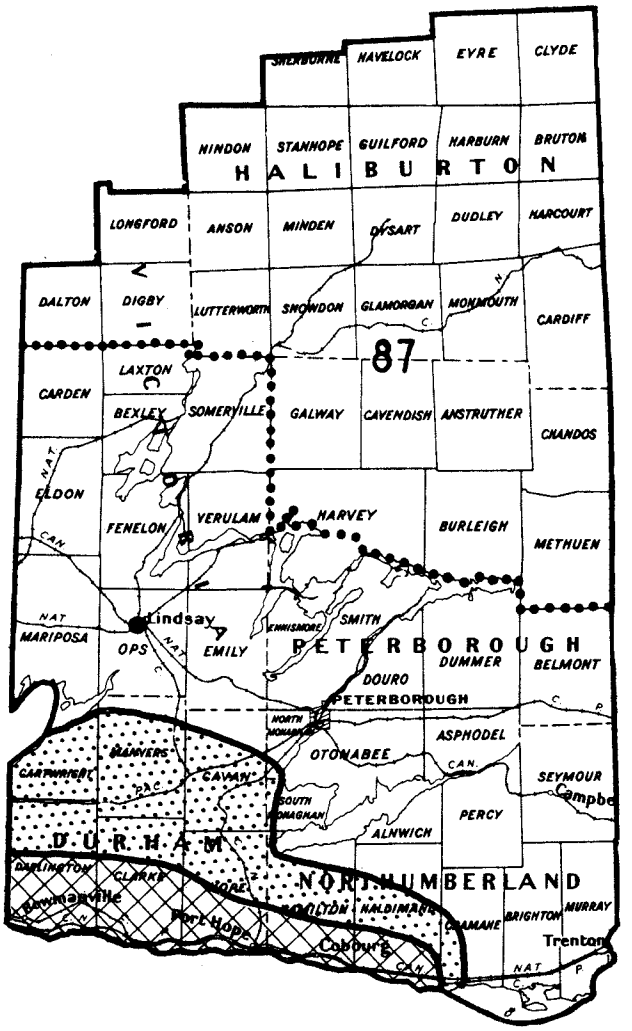
White-pine Weevil, Pissodes strobi (Peck)

Heavy infestations occurred in mixed pine plantations in Galway and Harvey townships in Peterborough County, in Dalton Township, Victoria County, and in a clump of mixed white and jack pine in Guilford Township, Haliburton County. Light infestations occurred in Asphodel, Cavendish, Guilford and Manvers townships. Small numbers of infested trees were observed in the rest of the district.

Populations were lower at sample points in 1966 than in 1965 (Table 13). In Galway Township a mixed pine plantation containing 45 per cent white pine, 45 per cent Scots pine, 8 per cent red pine and 2 per cent jack pine was examined to determine the incidence of weevil attack. The results are shown in Table 13.

Very few weevilled trees were observed in county forests or other plantations managed by the Department of Lands and Forests, demonstrating the effectiveness of control measures taken by departmental personnel.

LINDSAY DISTRICT



EUROPEAN PINE SAWFLY

Areas in which infestations occurred in 1966

Legend

Heavy infestation . . . .

Light infestation . . . .

TABLE 13

Summary of Damage by the White-pine Weevil
in Lindsay District in 1965 and 1966

NOTE: One hundred trees were examined at each location.

Location by township	Av. d.b.h. of trees in inches	Tree species	Degree of shade	Per cent of trees weevilled 1965	1966
Galway	3	scP	open	58	14
"	3	wP	"	30	9
"	3	rP	"	0	4
"	3	jP	"	0	0
Stanhope	3	wP	40	5	0
Hamilton	4	wP	25	2	2

Larch Sawfly, Pristiphora erichsonii (Htg.)

Populations of the larch sawfly have declined in Lindsay District for the past five years. In 1966 a small patch of medium infestation occurred at one location in Somerville Township, Victoria County, and two light infestations were observed in European larch plantations in the Northumberland County Forest and in the Durham County Forest. Relatively small numbers of colonies were found in the rest of the district.

The infestation in the Northumberland County Forest persisted at a high level for approximately eight years prior to 1965. In 1965 and 1966 heavy mortality of the insects in the mid-larval stages reduced populations to a very low level.

European Pine Shoot Moth, Rhyacionia bouliana (Schiff)

Heavy infestations of this insect continued on Scots and red pine along the MacDonald-Cartier Highway and along Highway 115 from its junction with Highway 2 north to the cutoff at Orono. A light infestation persisted in 1966 in a small red pine plantation in Cramahe Township, Northumberland County. Very small numbers were observed in the rest of the district.

In Hamilton Township, Northumberland County, a quantitative sample taken from a highway planting revealed that 100 per cent of the Scots pine trees were attacked and 52 per cent of the available bud clusters were infested. This sample was taken in late August when the overwintering larval population occurred in the bud clusters.

Elm Bark Beetles, Scolytus multistriatus (Marsh.) and
Hylurgopinus rufipes Eich.

Populations of the smaller European elm bark beetle, S. multistriatus occurred in the same areas in 1966 as in 1965. Light infestations to low numbers occurred on dead elms throughout Durham and Northumberland counties in the southern three townships in Victoria County, and in North Monaghan, Otonabee and Asphodel townships in Peterborough County.

Heavy infestations of the native elm bark beetle H. rufipes occurred throughout the district in 1966. Small increases in population levels occurred in 1966 compared with 1965. The abundance of dead elm trees throughout the district provided ideal conditions for an increase in population levels.

In areas where the range of the two species overlap in the district, H. rufipes predominates. This is contrary to the situation in the southern part of the Southwestern Region whereever the two populations occur, S. multistriatus outnumbers the native beetle.

TABLE 14

Summary of Miscellaneous Insects Collected in Lindsay District

Insect	Host(s)	Remarks
Adelges abietis Linn.	wS	Light infestations occurred in a plantation of white spruce in the Orono Nursery.
Agromyza ulmi Frost	E.	Small numbers on a few trees in Harvey Township.
Altica ulmi Wood	E	Light infestations on a few scattered trees at one location in Minden Twp.
Anacampsis innocuella Zell.	tA	Light infestations on scattered trees in Dalton, Laxton and Methuen twps.
Anchylopera burgessiana Zell.	rO	Light infestations on scattered oak trees in Hope Twp.
Aphrophora parallela Say.	ScP	Heavy infestation in a Christmas tree plantation in Burleigh Twp.
Apion nigrum	Lo	Weevils numerous on patches of locust in Haldimand Twp.
Argyrotaenia pinitubana Kft.	wP	Light infestations of these tube makers on white pine understory in Ganaraska forest.
Argyrotaenia quercifoliana Fitch.	Scarlet oak	Small numbers on a few trees in Haldimand Twp.
Caliroa sp.	rO	Medium infestations occurred (on red oak) in Haldimand Twp., Northumberland County.
Cenopsis acerivorana MacK	moM, sM	Light infestations at scattered locations in Monmouth and Dudley twps.

TABLE 14 (continued)

Insect	Host(s)	Remarks
Chilocorus stigma Say.	bPo	Small numbers observed at one location in Minden Township.
Choristoneura fumiferana Clem	wS	Small numbers in one plantation in Cartwright Township.
Coleophera betulivora McD.	wB	Birch casebearers were very scarce in Lindsay District. Small numbers were found in Cartwright Township.
Coleophera fuscedinella Zell.	wB	Small numbers found in Hope Twp.
Coleophora ulmifoliella MacD.	E	Heavy infestation on a few roadside trees at one location in Hope Twp. Small numbers found in the rest of the township
Conophthorus resinosae Hopk.	rP	Heavy infestations around Kennisis Lake in Havelock Twp. Small numbers at one location in the Northumberland County forest.
Croesia semipurpurana (Kft.)	O	Heavy infestations persisted in approximately 100 acres of oak in Clarke Twp, Durham County. Defoliation of infested trees was approximately 99%.
Depressaria groteella Rob.	Hazel	Light infestations on scattered clumps of hazel in Harcourt and Dudley townships.
Ecdytolopha insiticiana Zell.	Lo	Heavy infestations of these stem borers in Clarke Twp. Light infestations in Burleight Township.
Ectoedemia populella Busck	tA	Heavy infestations in small patches of aspen in Douro Township. Light infestations in Cartwright, Clarke, Darlington, Hope and Cramahe twps.
Epinotia nisella criddleana Kft.	Po	Small numbers found throughout the district.
Epinotia solandriana Linn	wB	Light infestations in the Northumberland County forest and in Cartwright Township.
Episimus argutanus Clem.	Summac	Numerous in a small clump of summac at one location in Haldimand Twp.

TABLE 14 (continued)

Insect	Host(s)	Remarks
Exoteleia dodecella Linn.	scP	Heavy infestations on small clumps of ornamental trees planted along Highway 401.
Exoteleia pinifoliella Cham.	jP	A light infestation occurred in a plantation of jack pine at one location in Hamilton Twp. This was a decline from the heavy infestations of previous years at this location.
Fenusa ulmi Sund.	E	Heavy infestation occurred on Wyche elms in the Town of Cobourg. This infestation has persisted for over 10 years. Scattered trees were heavily infested in the rest of the district.
Gargaphia tiliae (Walsh)	Ba	Heavy infestations on small clumps of basswood trees in Clarke Twp.
Gossyparia spuria (Modeer)	E	Numerous scales on a few scattered trees at one location in Clarke Twp.
Gracillaria cuculipennella Hbn.	wAs	Heavy infestation occurred in one compartment of the Orono nursery.
Hydria prunivorata Fern	bCh	Small numbers were found on scattered clumps of black cherry trees throughout the district.
Hyphantria cunea Dru.	bCh, E, bAs	Very small numbers of tents were found throughout the district.
Lithocolletis ostensackenella Fitch.	Lo	Heavy infestations occurred on locust hedges in the Orono nursery.
Lithocolletis salicifoliella Chamb.	tA, ltA	Light infestations in small clumps of poplar in Seymour and Cartwright townships.
Meadorus lateralis Say	wB	Small numbers found in the Northumberland County Forest.
Nematus limbatus Cress.	W	Light infestations on willows near Minden and at one location in Harburn Township.
Neodiprion nanulus nanulus Schedl.	rP	Light infestations occurred on roadside trees at one location in Belmont Twp. An average of 10 colonies per tree was noted at one location in Chandos Township.

TABLE 14 (continued)

Insect	Host(s)	Remarks
Nepticula sp. (a petiole miner)	tA	Heavy infestations of these miners occurred in small patches of aspen in Clarke, Haldimand and Hope twps.
Nephopteryx subcaesiella Clem.	Lo	Small numbers were found at one location in Haldimand Township.
Neurotoma inconspicua (Nort.)	pCh	Small numbers were found at one location in Bruton Township.
Parectopa robiniella Clem.	Lo	Several acres of heavy infestation occurred at one location in Hope Township.
Pareophora minuta MacG.	bAs	Heavy infestation on a few small ash trees alongside the Mt. Julian Viamede road in Burleigh Township.
Philonix nigra	wO	Light infestations of these leaf galls in Haldimand Township.
Pikonema alaskensis (Roh.)	wS	Light infestations occurred on small clumps of white spruce in Emily and Snowdon townships.
Phyllocolpa agama (Roh.)	W	Light infestations on a few willows at one location in Clarke Township.
Pristiphora cadma W. & R.	wB	Small numbers occurred near Cranberry Creek in Dalton Township.
Profenusa sp.	wO	Heavy infestations occurred in approximately 200 acres of wO in the northern part of Hamilton Twp. Small patches of heavy infestation also occurred in Haldimand and Otonabee townships.
Prolachnus agilus	scP	These aphids were numerous on small numbers of Scots pine in a small area in Haldimand Township.
Pityogenes hopkinsi Sw.	sP	Heavy populations on a few white pine in Haldimand and Cavan twps.
Podapion gallicola Riley	rP	Heavy infestation in one plantation in the Northumberland County Forest.
Pristiphora geniculata (Htg.)	sMo	Light infestations on roadside trees in Haldimand Twp. Small numbers found in Hope and Eyre townships.

TABLE 14 (concluded)

Insect	Host(s)	Remarks
Protoboarmia porcelaria indicataria Wlk.	bF	Small numbers found in tray samples at balsam fir plots in Somerville and Minden townships.
Sciaphilus asperatus Bonsd.	sM	Heavy infestations of these weevils found on understory, deciduous trees in plantations in the Victoria County Forest in Somerville Twp. and in plantations in the northern part of Cartwright Township.
Semiothisa bisignata Wlk.	wP	Numerous in a white pine plantation in the Ganaraska Forest.
Semiothisa dispuncta (group)	wS, bF	Small numbers found in beating tray samples at scattered locations in the district.
Semiothisa ocellinata Gn.	Lo	Light populations occurred in clumps of locust in Haldimand, Otonabee, Hope and Clarke townships.
Semiothisa pinitubana	wP	Light infestations in plantations in the Ganaraska Forest.
Tischeria castaneaeella Cham.	rO	Small numbers of these leaf folders were found in plantations in Cramahe Township.
Trisetacus alborum Keifer	wP	Small numbers found in plantations in the Ganaraska forest.
Xystoteras poculum	wO	Small numbers found on scattered oaks in Haldimand Township.
Zeiraphera ratzeburgiana Ratz.	wS	Heavy infestations on scattered white spruce in Galway Township. Light infestations occurred in Dalton Township.

STATUS OF INSECTS IN TWEED DISTRICT

F. Livesey

Pine Spittle Bug, Aphrophora parallela (Say)

Population levels of this insect increased in 1966. As a result extremely heavy infestations occurred on Scots pine and white pine at scattered locations throughout the district.

The highest populations on white pine occurred east of Brewer's Mills in Frontenac County and in Sidney Township in Hastings County. All age classes of Scots pine in Sand Banks Provincial Park in Prince Edward County were heavily infested, and Scots pine trees in plantations in Kaladar and Sheffield townships in Lennox-Addington supported medium infestations.

Cherry Ugly-nest Caterpillar, Archips cerasivoranus Fitch

Pockets of heavy infestation were observed at scattered locations in the southern half of the district. Larval nests were most numerous in Hillier, Athol and Ameliasburgh townships in Prince Edward County (Table 5). Small pockets of heavy infestation occurred on roadside choke cherry shrubs between Tweed and Madoc in Hastings County.

TABLE 5

Summary of Cherry Ugly-nest Caterpillar Counts per Mile of Roadside in the Tweed District from 1964 to 1966

Township	Total number of colonies per mile		
	1964	1965	1966
Athol	-	237	1000+
Ameliasburgh	-	1000	41
Hillier	-	-	94
Oso	3	8	2

Larch Casebearer, Coleophora laricella (Hbn.)

This insect was observed commonly in the district and a slight increase in numbers of larvae occurred at most quantitative sample points (Table 6).

Nursery Pine Sawfly, Diprion frutetorum (F.)

Population levels of this sawfly remained at a low ebb. Small numbers occurred on Scots pine trees in the Southwestern part of the district (Table 7).

TABLE 6

Summary of Larch Casebearer Counts in the Tweed District from 1964 to 1966

NOTE: Counts were made on sixteen 18-inch branch tips, four from the mid-crown of each of four trees.

Township	Av. d.b.h. of trees in inches	Av. no. of larvae per 18-inch branch tip		
		1964	1965	1966
Anglesea	6	-	-	1.0
Bagot	6	0.2	0.2	0.5
Carlow	4	1.8	0	0.7
Cashel	5	0.2	0.2	3.7
Elzevir	7	1.8	0.8	2.0
Faraday	3	0.1	0.2	1.5
Kaladar	4	-	0.6	1.0
Olden	6	1.8	0.2	1.1
Palmerston	5	0.4	0.3	1.3
Tudor	3	0.2	0.2	1.0
Wollaston	4	1.2	0	0.5

TABLE 7

Summary of Nursery Pine Sawfly Larval Counts on Scots Pine in the Tweed District from 1963 to 1966

Township	Av. d.b.h. of trees in inches	Total no. of larvae per 15-tray sample			
		1963	1964	1965	1966
Elzevir	6	-	-	8	4
Hungerford	2	4	10	4	12
Sheffield	5	-	-	-	7
Sidney	2	43	29	16	12
Tyendinaga	7	2	25	35	53

European Spruce Sawfly, Diprion hercyniae (Htg.)

This insect increased slightly in numbers in 1965 but declined to an endemic level in 1966. The highest count was recorded in Herschel Township, where a total of 15 larvae per beating tray sample occurred (Table 8).

TABLE 8

Summary of European Spruce Sawfly Larval Counts
in Tweed District from 1963 to 1966

Township	Av. d.b.h. of wS trees in inches	Total no. of larvae per 15-tray sample			
		1963	1964	1965	1966
Brougham	7	-	-	6	8
Faraday	9	7	2	13	3
Herschel	6	6	6	70	15
Hungerford	6	3	7	15	3
Limerick	5	4	6	18	4
McClure	3	27	11	10	3
McNab	5	39	3	12	6
Oso	7	-	-	12	5
Wicklow	5	7	2	3	1
Wollaston	8	0	6	12	2

Pine Bud Moth, Exoterleia dodecella Linn.

A new light infestation of this insect occurred in a young 40-acre Scots pine plantation south west of Napanee in Lennox-Addington County. The generally low population levels prevailing in the rest of the district are reflected by counts shown in Table 9.

TABLE 9

Summary of Damaged Buds Caused by the European Pine Bud Moth
in the Tweed District from 1963 to 1966

NOTE: Counts are based on the examination of 50 bud clusters from each of four Scots pine trees.

Township	Per cent of buds destroyed			
	1963	1964	1965	1966
Hinchinbrooke	12.0	7.0	2.0	1.0
Kaladar	6.0	3.0	2.5	2.0
Sheffield	29.0	12.0	4.0	1.0
N. Fredericksburgh	-	-	-	6.5

Elm Leaf Miner, Fenusa ulmi Sund.

Extremely heavy infestations persisted on all age classes of slippery elm and Camperdown elm throughout the district. Severe damage, causing discolouration and premature foliage loss, occurred in Huntingdon, Hungerford and Madoc townships in Hastings County, in Ernestown Township in Lennox-Addington County, and in North Marysburgh Township in Prince Edward County. In these areas virtually all the foliage of host trees was heavily infested. As in 1965, no infested white elm or rock elm trees were observed.

Sugar Maple Borer, Glycobius speciosus (Say)

This beetle caused considerable mortality of mature sugar maple trees in farm woodlots in Camden and Sheffield townships in Lennox-Addington County.

The insect lays its eggs in crevices in the bark. After hatching, the larva feeds across the grain of the wood beneath the bark, cutting a deep channel into the wood (see photograph). These channels frequently girdle large branches and the stems of host trees, causing mortality.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

A marked increase in population levels occurred on choke cherry throughout the district even though late spring frosts caused considerable mortality of young larvae at many locations. Colony counts at sample points ranged from a low of 4 to a high of 962 (Table 10).

TABLE 10

Summary of Eastern Tent Caterpillar Colony Counts
in Tweed District from 1964 to 1966

Township	Number of tents observed per mile of roadside		
	1964	1965	1966
Bagot	74	14	160
Elzevir	47	16	126
Faraday	15	15	31
Grattan	-	114	962
Griffith	26	39	156
Hinchinbrooke (1)	63	73	66
Hinchinbrooke (2)	-	-	124
Lyndoch	49	10	117
Madoc	-	114	380
McNab	-	46	240
Oso	93	103	61
Radcliffe (1)	109	62	12
Radcliffe (2)	-	-	369
Raglan	96	41	94
Sheffield	112	538	274
Thurlow	82	40	91
Wicklow	6	7	28
Wollaston	12	3	4

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Egg band counts made in 1965 indicated that severe defoliation of host trees would recur in infestations in Radcliffe, Bangor and Kaladar townships. However, spring frosts decimated early instar larvae in Kaladar and Bangor townships, and only the infestation at Halfway Lake in Radcliffe Township reached the level of intensity that was forecast.

Light to moderate defoliation of trembling aspen occurred in woodlots at scattered locations in the southeastern part of Renfrew County, and small areas of light infestation were observed in Oso and Palmerston townships in Frontenac County.

Tables 11 and 12 show results of cocoon dissections, egg band counts, and infestation forecasts for 1967.

TABLE 11

Summary of Forest Tent Caterpillar Cocoon Dissections in Tweed District from 1964 to 1966

Township	Per cent of cocoons parasitized			Per cent adult emergence		
	1964	1965	1966	1964	1965	1966
Kaladar	-	31	39	-	67	59
McNab	-	39	63	-	60	38
Radcliffe	46	43	34	47	55	66

TABLE 12

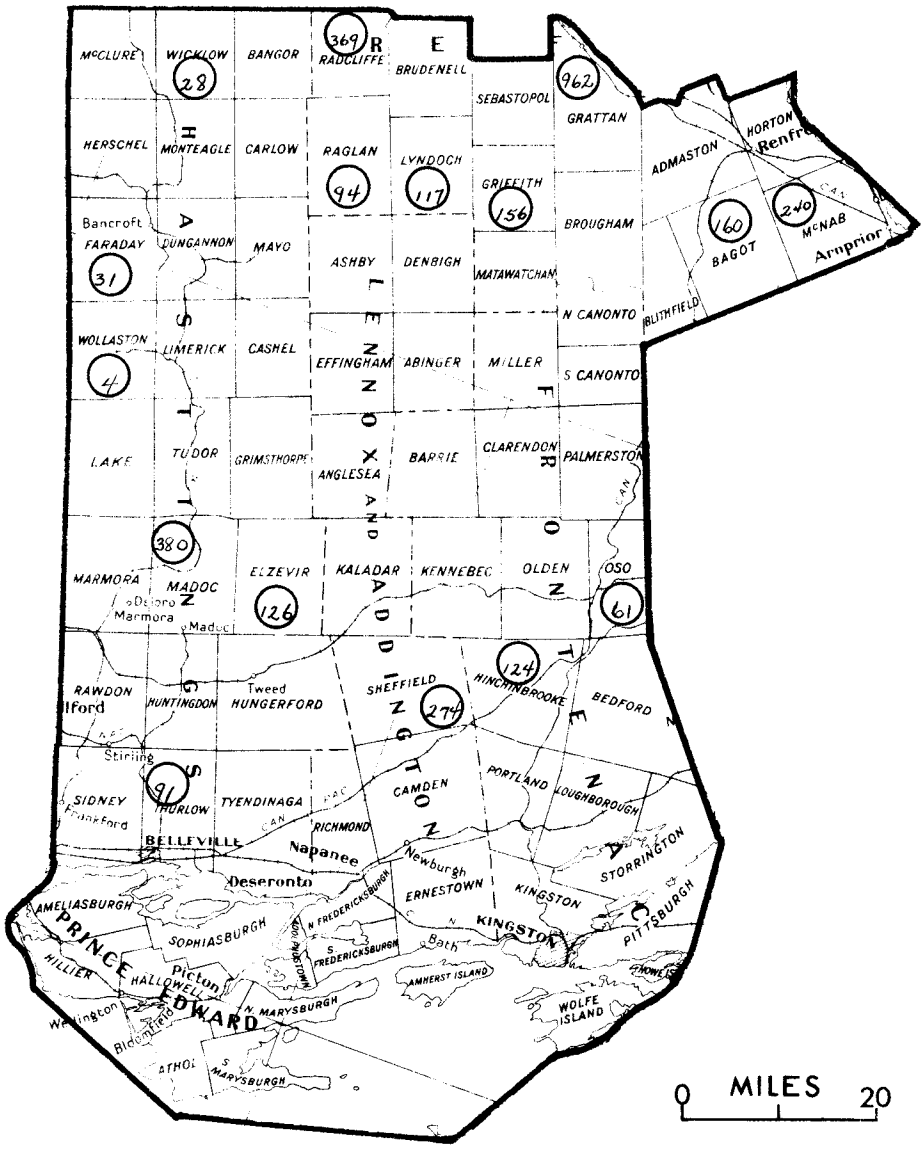
Summary of Forest Tent Caterpillar Egg Band Counts in Tweed District from 1964 to 1966 and Infestation Forecasts for 1967

Township	Av. d.b.h. of sample trees in inches	Av. no. of egg bands per tree			Forecast for 1967
		1964	1965	1966	
Bangor	5	-	36.9	2.3	Moderate
Kaladar	4	-	12.1	0.3	Light
McNab	2	-	1.3	0.3	Light
Radcliffe	6	25.3	17.1	7.0	Heavy

Cedar Sawfly, Monoctenus fulvus Nort.

A decline in numbers of this insect occurred throughout the district. As shown in Table 13, counts ranged from a low of 2 larvae per 15-tray sample in Rawdon Township to a high of 12 larvae in a similar sample from Sheffield Township.

TWEED DISTRICT



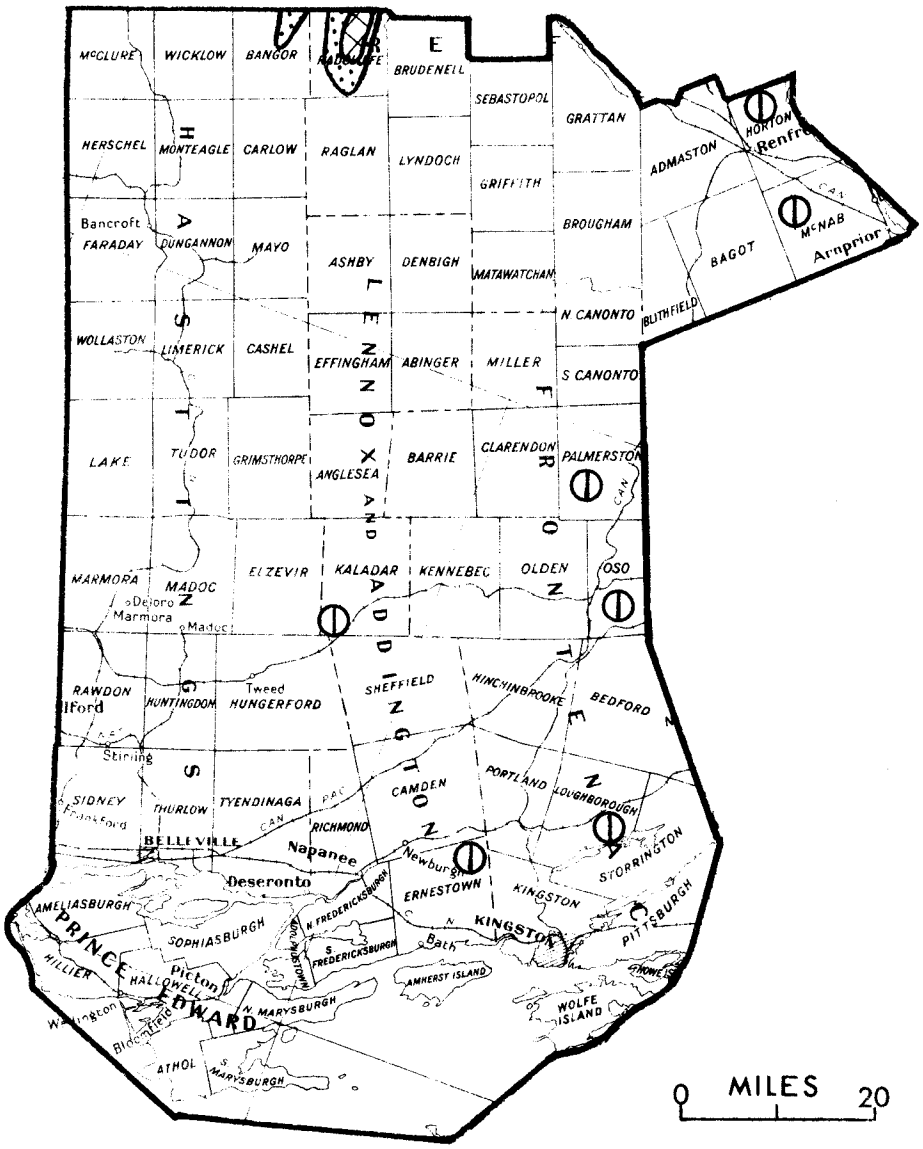
EASTERN TENT CATERPILLAR

Numbers of tents per measured mile of roadside

Legend

Numbers of tents . . . . . (10)

TWEED DISTRICT



FOREST TENT CATERPILLAR

Areas in which defoliation occurred in 1966

Legend

Light defoliation . . . . . or

Moderate to severe defoliation .

TABLE 13

Summary of Cedar Sawfly Larval Counts
in Tweed District from 1964 to 1966

Township	Av. d.b.h. of trees in inches	Total number of larvae per 15-tray sample		
		1964	1965	1966
Admaston	6	29	11	4
Bangor	5	0	23	3
Huntingdon	4	0	34	9
Kingston	2	-	5	6
Limerick	3	0	70	3
Matawachan	6	16	9	7
Oso	6	16	8	6
Rawdon	4	3	29	2
Sheffield	6	-	7	12
Wollaston	4	30	13	9

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Heavy infestations occurred in red pine plantations in Pittsburgh and Barrie townships in Frontenac County; in Elzevir, Wollaston, and Marmora townships in Hastings County; in McNab Township in Renfrew County, and in Kaladar Township in Lennox-Addington County. The heaviest infestation, on 15- to 20-foot trees in a privately-owned plantation in Pittsburgh Township, was controlled by spraying with D.D.T. Considerable branch mortality had resulted from complete defoliation in the plantation in 1965.

Numerous pockets of medium to heavy infestation occurred in plantations and on reproduction elsewhere in the district. The results of quantitative sampling are summarized in Table 14.

TABLE 14

Summary of Red-headed Pine Sawfly Colony Counts
in the Tweed District from 1964 to 1966

Township	No. and species examined	Average height of trees	No. of trees infested	Av. no. of colonies per infested tree		
				1964	1965	1966
Effingham	100 rP	7	8	-	1.3	1.5
Elzevir	100 rP	4	33	-	1.2	1.3
Grattan	100 rP	4	15	1.0	1.0	1.8
McNab	50 rP	8	50	1.3	6.0	4.8
Olden	20 rP	6	9	-	2.1	1.6
Thurlow	16 jP	30	3	1.0	1.0	1.0

Jack-pine Sawfly, Neodiprion pratti paradoxicus Ross

This insect increased in numbers on jack pine throughout the district in 1966. Pockets of severe defoliation were observed in Marmora Township in Hastings County; in McNab, Horton and Radcliffe townships in Renfrew County, and in Olden and Bedford townships in Frontenac County.

Light infestations and scattered colonies were observed commonly on jack pine in the remainder of the district. For the third consecutive year roadside trees in Marmora Township were most heavily infested (Table 15).

TABLE 15

Summary of Jack-pine Sawfly Colony Counts in the Tweed District from 1964 to 1966

Township	Av. d.b.h. of trees in inches	No. of trees examined	Av. no. of colonies per tree		
			1964	1965	1966
Abinger	3	10	-	1.7	1.1
Bangor	3	10	-	9.5	12.4
Elzevir	7	10	5.2	8.5	12.7
Hungerford	7	10	3.2	14.1	25.0
Marmora	6	10	50+	50+	50+
Olden	4	10	7.0	8.1	7.1
Pittsburgh	2	10	-	-	8.3

European Pine Sawfly, Neodiprion sertifer (Geoff.)

Small numbers of this important insect were found in Sand Banks Provincial Park, posing a problem in Scots pine plantations. Moderate defoliation of Scots, jack, red, and Mugho pines recurred in the city of Belleville. The insect was not found elsewhere in the district.

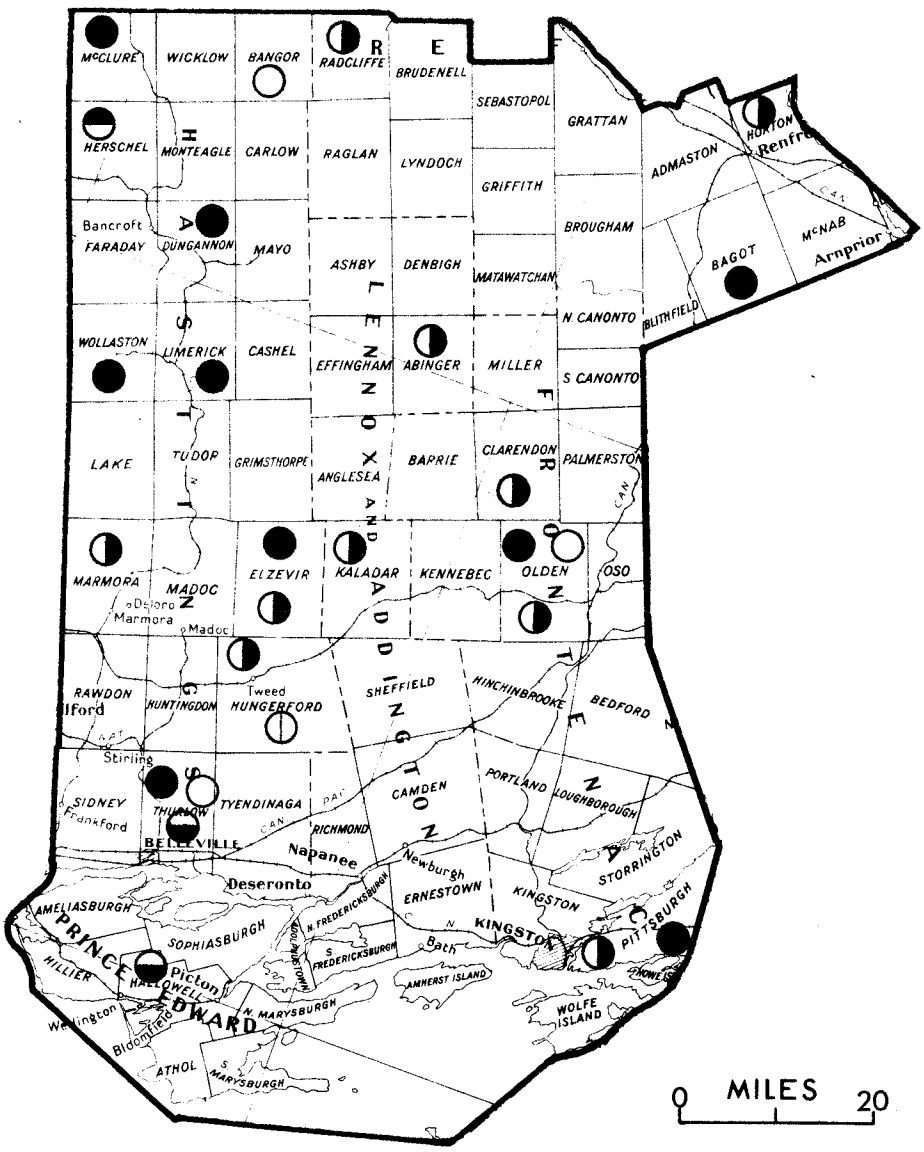
Yellow-headed Spruce Sawfly, Pikonema alaskensis Roh.

Population levels of this sawfly were comparable to 1965 in the district. Locally, severe infestations recurred on white spruce plantations at the O'Hara Mill in Madoc Township, on underplanted white spruce at Sand Banks Provincial Park in Prince Edward County and on a white spruce windbreak along Highway 41 in Lennox-Addington County. Low populations were observed in all other spruce stands sampled in the district.

White Pine Weevil, Pissodes strobi Peck

The white pine weevil was found commonly on white pine, jack pine and red pine throughout the district. The highest incidence of damage occurred in a mixed white pine-red pine plantation in Effingham Township in Lennox-Addington County. At this location 16 per cent of the white pine were infested (Table 16).

TWEED DISTRICT



Locations where five species of pine sawflies were collected and cocoons were exposed in 1966

Legend

Neodiprion compar. . . . . ◓

Neodiprion lecontei. . . . . ●

Neodiprion nanulus nanulus . . ◐

Neodiprion pratti paradoxicus. . ◑

Neodiprion sertifer. . . . . ◒

Cocoon exposure points . . . . . ○

TABLE 16

Summary of White Pine Weevil Counts
in Tweed District in 1965 and 1966

Township	Host tree and number sampled	Av. d.b.h. in inches	Per cent of leaders weevilled 1965	1966
Effingham	200 wP	2	25	16
Effingham	100 rP	2	9	3
Grattan	100 wP	1	4	5
Hungerford	100 wP	2	21	12
Kaladar	100 wP	1	9	7
Madoc	100 wP	1	6	6
McNab	200 wP	1	5	3
Pittsburgh	100 wP	1	-	3
Radcliffe	100 jP	2	6	5
Sidney	100 wP	1	-	3

Larch Sawfly, Pristiphora erichsonii (Htg.)

A small heavy infestation persisted in a 100-acre tamarack stand in Kaladar Township in 1966. Approximately 65 per cent defoliation occurred in 1966 compared with 85 per cent in 1965. Damage in the remainder of the district was negligible.

TABLE 17

Summary of Miscellaneous Insects Collected
in Tweed District

Insect	Host(s)	Remarks
Acleris variana Fern.	wS, bF	Small numbers near Springbrooke in Rawdon Township.
Acmeops proteus Kby.	wS	Collected in trap logs in Raglan Twp.
Adelges abietis Linn.	wS	Widely separated trees in Hastings County were heavily infested.
Agromyza ulmi Frost	sE	Light leaf miner infestation near Hawkins Bay, Hungerford Township.
Alsophila pometaria Harr.	wE, Ba	Small numbers in souther part of district.
Anacampsis innocuella Zell.	tA	Heavy leaf roller infestation on roadside reproduction in Effingham Township.
Anomoea laticlavia Frost	W	Leaf beetles found in Raglan Twp.

TABLE 16 (continued)

Insect	Host(s)	Remarks
Anomogyna elimata Gn.	bF	Few near Silver Lake, Oso Township.
Anoplonyx luteipes (Cress.)	tL	Occurred in small numbers in Kaladar and Griffith townships.
Archippus packardianus Fern.	wS	Small numbers near Springbrook, Rawdon Township.
Archips infumatanus Zell.	Wa	One colony in plantation in Pittsburgh Township.
Argyresthia aureoargentella Brower	eC	Trees lightly infested north of Trenton.
Argyresthia laricella Kft.	tL	Found throughout the district in small numbers.
Argyresthia thuiella Pack.	eC	Light infestations in the northern half of Hastings County.
Argyrotaenia pinatubana Kft.	wP	Low pine tube moth populations throughout the district.
Biston cognataria Gn.	Hon.	In beating tray samples in Hastings and Prince Edward counties.
Bucculatrix ainsliella Murt.	wO	Light leaf miner infestation near Marysville, Tyendinaga Township.
Caripeta angustiorata Wlk.	wP	The brown pine looper. Common in small numbers in September.
Caripeta divisata Wlk.	bf,eH,wS	The grey spruce looper. Small numbers throughout the district in September.
Cecidomyia verrucicola O.S.	Ba	Heavy wart gall infestations in Ernestown, Hillier, and Pittsburgh townships.
Cenopis acerivorana Mack.	sM	Low population levels at Glanmire Lake, Tudor Township.
Cenopis pettitana Rob.	Ba	Few found on small trees in Oso Twp.
Chlorochlamys chloroleucaria Gn.	eH	Cat-faced looper found east of Verona, Frontenac County.
Choristoneura fumiferana (Clem.)	wS	Small light infestation of spruce budworm in Rawdon Township, Hastings County.

TABLE 16 (continued)

Insect	Host(s)	Remarks
Choristoneura vosaceana Harr.	wB	Low leaf tier population at White Lake, Olden Township.
Coleophora betulivora McD.	wB	Birch casebearer. Found only at White Lake, Olden Township.
Compsolechia niveopulvella Chamb.	tA	Small heavy infestation on regeneration near Cloyne, Effingham Township.
Dasyneura balsamicola Lintn.	dF	Several trees lightly infested at Silver Lake in Oso Township.
Dasyneura communis Felt	sM	Leaf galls common on small trees in Denbigh Township.
Dichelonyx linearis Gyll.	He	Common on one tree only at White Lake, Olden Township.
Ecdytolopha insiticiana Zell.	Hon.	Common in the southern half of the district.
Ectropis crepuscularia (Schiff.)	He	Low numbers in Bangor Township, Hastings County.
Erannis tiliaria (Harr.)	wF, Ba	The basswood looper was found rarely and only in the southern half of the district.
Erynnis icelus Scud. and Burg.	tA	Low numbers of larvae in Denbigh and McNab townships.
Eufidonia notataria Wlk.	He, wP	Low numbers of loopers obtained in beating samples in Bangor and Hungerford townships.
Eupithecia filmata Pears.	wS	The early brown looper was found at three locations.
Eupithecia palpata Pack.	wP	Small numbers in three townships.
Eupithecia sobrinata Hbn.	Juniper	Common in Palmerston Township.
Evodinus monticola (Rand.)	wS	Recovered from trap logs in Renfrew County.
Fenusa pusilla (Lep.)	wB	Increase in numbers over 1965. Heavily infested trees found in three townships.

TABLE 16 (continued)

Insect	Host(s)	Remarks
Feralia jocosa Gn.	jP, wP	Low numbers at two locations.
Galerucella decora Say	W	The gray willow leaf beetle. Light infestation in Raglan Township.
Gonioctena americana Schaeff.	tA	Common throughout the district.
Gretchena delicatana Heinr.	I	Small numbers in Frontenac County.
Griselda radicana Wlshm.	wS	Small numbers at several locations.
Hydriomena divisaria Wlk.	tL, wS	The transverse-banded looper. Small numbers in Oso and McClure townships.
Hypagyrtis piniata Pack.	wS,tL,He	Pine measuring worm. Common throughout the district.
Hyphantria cunea (Drury)	E, W	Fall webworm common on Bay of Quinte and Lake Ontario shorelines.
Lapara bombycoides Wlk.	wP	Small numbers at two locations.
Leucanthiza dircella Braun	Leatherwood	Heavy infestations in Hastings County.
Lithocolletis robiniella Clem.	Hon.	Widespread, low numbers.
Nematus salicisodoratus Dyar	W	Widespread in small numbers.
Neodiprion abietis complex	bF	Balsam fir sawfly. Rare in the district.
Neodiprion compar (Leach)	rP	Found only in Herschel Township.
Neodiprion nanulus nanulus Schedl	rP	Small numbers in the town of Tweed.
Nepytia conosaria Wlk.	He	Small numbers of the false hemlock looper at four locations.
Pareophora minuta MacG.	bAs	Light defoliation in Dungannon and Ernestown townships.
Phytagromyza populicola (Hal.)	lPo	Heavily infested trees common in southern Hastings County.

TABLE 16 (concluded)

Insect	Host(s)	Remarks
Pikonema dimmockii (Cress.)	wS	Widespread, low numbers.
Plagiodera versicolora Laich	W	Heavy infestations on ornamental trees in south Frontenac County.
Podapion gallicola Riley	rP	Pine gall weevil common at one location in Kaladar Township.
Protoboarmia porcelaria indicataria Wlk.	wS,tL,He	Small numbers throughout the district.
Pseudexentera oregonana Wlshm.	tA	Light leaf roller infestations in Oso, Palmerston and Olden townships.
Rhyacionia buoliana (Schiff.)	scP	Light damage between Belleville and Trenton.
Schizurra concinna J. E. Smith	Deciduous	Small numbers on a wide variety of hosts.
Sciaphila duplex Wlshm.	tA	Common near Cloyne.
Semiothisa bicolorata Fabr.	wP, rP	Low population near Denbigh.
Semiothisa bisignata Wlk.	wP	Common throughout the district.
Semiothisa dispuncta (group)	wS, bF	Common throughout the district.
Semiothisa ocellinata Gn.	Lo, Hon.	Common in southern part of district.
Semiothisa sexmaculata Pack.	tL	Small numbers on all larch examined.
Semiothisa submarmorata Wlk.	tL	Small numbers throughout the district.
Thera juniperata L.	Juniper	Found only at Silver Lake, Oso Twp.
Zeiraphera ratzeburgiana Sax.	wS	Small light infestation in Rawdon Township, Hastings County.

STATUS OF INSECTS IN KEMPTVILLE DISTRICT

J. Hook

Cherry Ugly-nest Caterpillar, Archips cerasivoranus (Fitch)

An increase in the number of nests formed by this caterpillar occurred in 1966. Light infestations were observed in Montague, South Sherbrooke, Oxford and Beckwith townships (Table 5). Easter choke cherry was the preferred host.

TABLE 5

Summary of Cherry Ugly-nest Caterpillar Colony Counts in Kemptville District

Location by township	Tents per mile of roadside 1966
Beckwith	11
Montague	13
Nepean	20
N. Crosby	4
Oxford	15
S. Sherbrooke	15
Wolford	6

Cedar Leaf Miners, Pulicalvaria thujaella (Kft.)
Argyresthia freyella

For the third consecutive year a decline in population levels of these leaf miners occurred in the district. Small numbers were observed on cedar hedgerows in the Kemptville Nursery and on open-grown clumps of white cedar in Dalhousie and Goulbourn townships.

A Miner on Ironwood, Chrysopelia ostryaella Cham.

A major decline in numbers of this leaf miner on ironwood occurred in the district in 1966. In 1965, heavy infestations and severe mining occurred commonly in most stands containing ironwood trees but, in 1966, very low numbers were found only in Mountain and Nepean townships.

Larch Casebearer, Coleophora laricella (Hbn.)

For the first time in the past decade a small increase in population levels of this introduced casebearer occurred at four widely separated permanent sample points. The highest incidence was recorded on a clump of open-grown larch near Smiths Falls, Montague Township (Table 6).

TABLE 6

Summary of Larch Casebearer Counts in Kemptville District in 1965 and 1966

Location by township	Av. d.b.h. of trees in inches	Av. no. of larvae per 18-inch branch tip 1965	1966
Dalhousie	3	0.5	3.7
Montague	4	9.2	10.3
Oxford	4	2.0	3.4
N. Plantagenet	4	1.6	3.4

Pitted Ambrosia Beetle, Corthylus punctatissimus (Zim.)

Little change in population levels of this beetle occurred in 1966. Light infestations causing some mortality to sugar maple reproduction recurred in Beckwith, Goulbourn and Wolford townships (Table 7).

TABLE 7

Summary of Damage by the Pitted Ambrosia Beetle in Kemptville District in 1966

NOTE: Each sample consisted of sugar maple reproduction per square yard quadrat (deep shade).

Location by township	Av. basal diameter in inches	No. of trees examined	No. of trees infested
Beckwith	1/4"	40	2
Goulbourn	1/4"	60	3
Mountain	1/4"	36	0
Wolford	1/4"	50	3

European Spruce Sawfly, Diprion hercyniae (Htg.)

Population levels of this introduced spruce sawfly have remained at a low level in the district for the past decade. Little change in numbers occurred at sample points in 1966 (Table 8).

TABLE 8

Summary of European Spruce Sawfly Larval Counts in Kemptville District in 1965 and 1966

Location by township	Av. d.b.h. of trees in inches	No. of larvae per 15-tray samples 1965	1966
Beckwith	6	9	1
Cambridge	5	2	0
Mountain	6	6	2
Oxford	5	0	2
Ramsay	6	0	0
S. Crosby	5	2	2

White-pine Shoot Borer, Eucosma gloriola Heinr.

Light damage by this shoot borer was observed commonly on the lateral branches of red, white, Scots and jack pine trees in Marlborough, Oxford, Mountain and Wolford townships. Small numbers occurred on mugho-pine in the Howard G. Ferguson nursery in Oxford Township.

Birch Leaf Miner, Fenusa pusilla (Lep.)

High population levels of this miner persisted in the district for the third consecutive year (see map). Severe browning of the foliage of white birch trees in all diameter classes recurred from Smiths Falls eastward to the Quebec border and as far north as Fitzroy Harbour. Discoloration and withering of foliage of shade trees caused much concern among private property owners, especially in the Constance Bay area and in the town of Kemptville.

Fall Webworm, Hyphantria cunea (Drury)

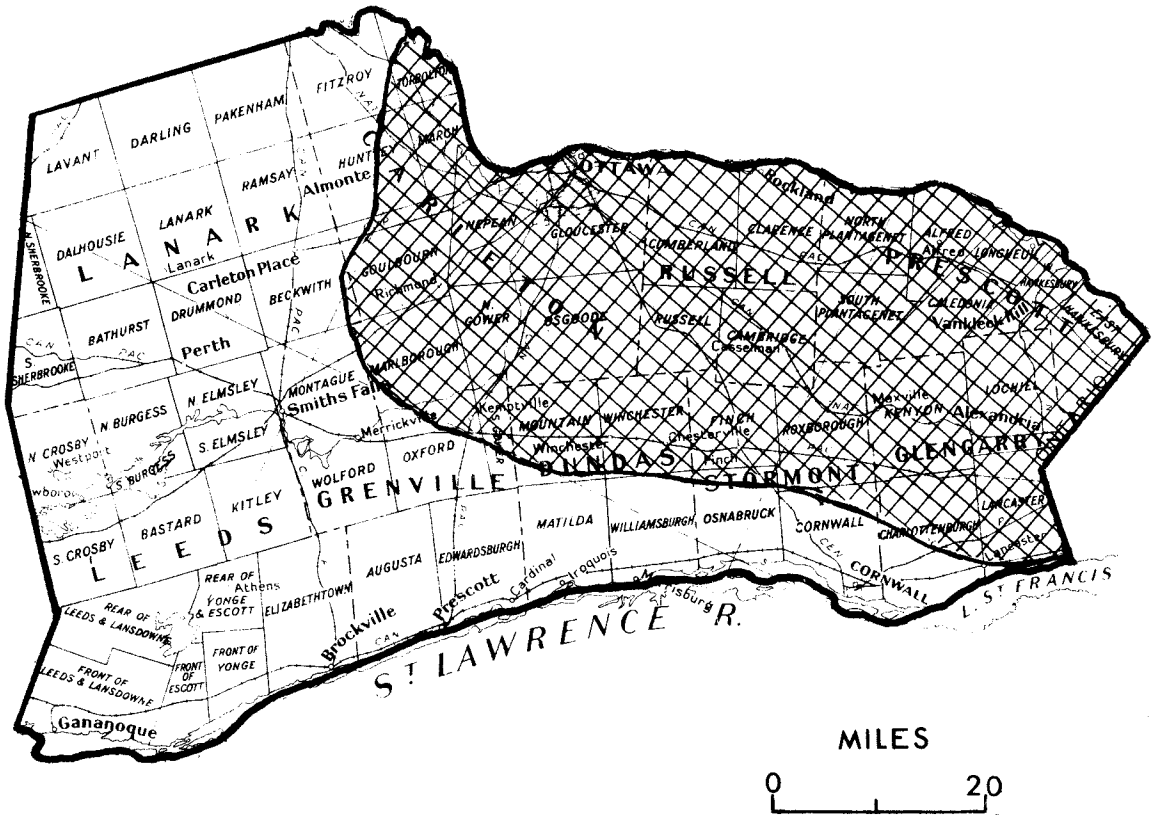
Small numbers of larval colonies were observed throughout the district in 1966. Counts made at seven widely separated locations averaged 2.9 tents per mile of roadside (Table 9).

TABLE 9

Summary of Fall Webworm Counts in the Kemptville District in 1966

Location by township	Tree species	Number of tents per mile of roadside
Darling	ch	2
Edwardsburg	wE	5
Goulbourn	ch	3
Matilda	wE	6
Montague	wE	1
North Gower	tA	1
Osmabruch	wE	4
Wolford	wE	1

KEMPTVILLE DISTRICT



MILES

0 20

BIRCH LEAF MINER

Areas in which infestations occurred in 1966

Legend

Heavy infestation . . . . . ▨

Eastern Tent Caterpillar, Malacosoma americanum (F.)

Heavy infestations of this insect persisted northwest of Ottawa in the Constance Bay area where severe defoliation was observed. A small increase in population levels occurred at seven of nine sampling points (Table 10). The highest count was recorded in Drummond Township where 193 tents per mile of roadside occurred.

TABLE 10

Summary of Eastern Tent Caterpillar Colony Counts in Kemptville District in 1965 and 1966

Location by township	No. of tents observed per mile of roadside	
	1965	1966
Bathurst	21	37
Beckwith	6	23
Drummond	153	193
Goulbourn	73	19
Kitley	40	60
Lanark	3	14
Montague	33	53
N. Elmsley	48	30
Oxford	60	69

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Infestations of this caterpillar increased in extent and intensity in the district in 1966 (see map). Severe defoliation of most hardwood stands occurred in Carleton, Russell and the northern part of Dundas counties. Pockets of light defoliation were recorded in Beckwith and Finch townships. The insect caused most concern among cottage owners in the Constance Bay area along the Ottawa River, where trembling aspen and red oak trees were severely defoliated. Egg band counts taken in the fall indicate that defoliation in this area will be severe again in 1967 (Table 11).

TABLE 11

Summary of Forest Tent Caterpillar Egg Band Counts in Kemptville District in 1965 and 1966

Location	Av. d.b.h. of sample trees in inches	Av. no. of egg bands per tree		Forecast for 1967
		1965	1966	
Beckwith	2	0	.6	Light
Cambridge	3	7.3	3.7	Moderate
Clarence	3	-	2.6	Moderate
Finch	3	-	1.3	Light
Mountain	2	-	1.3	Light
McGower	2	-	0	Nil
Osgoode	3	7.0	6.6	Severe
Russell	3	-	2.0	Moderate
S. Plantagenet	3	9.6	6.6	Severe
Torbolton	3	3.3	8.6	Severe
Torbolton	3	-	1.6	Light

Cedar Sawfly, Monoctenus fulvus Nort.

A slight increase in numbers of this insect occurred at all sample points (Table 12). Light infestations were recorded in Beckwith, Huntley and Oxford townships. Four new sampling locations were established to study population trends.

TABLE 12

Summary of Cedar Sawfly Larval Counts in Kemptville District in 1965 and 1966

Location by township	Av. d.b.h. of trees in inches	Total no. of larvae per 15-tray sample	
		1965	1966
Beckwith	3	-	24
Cambridge	3	-	7
Goulbourn	4	1	2
Huntley	3	4	21
Nepean	3	-	7
Oxford	3	-	23
Ramsay	4	3	14

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

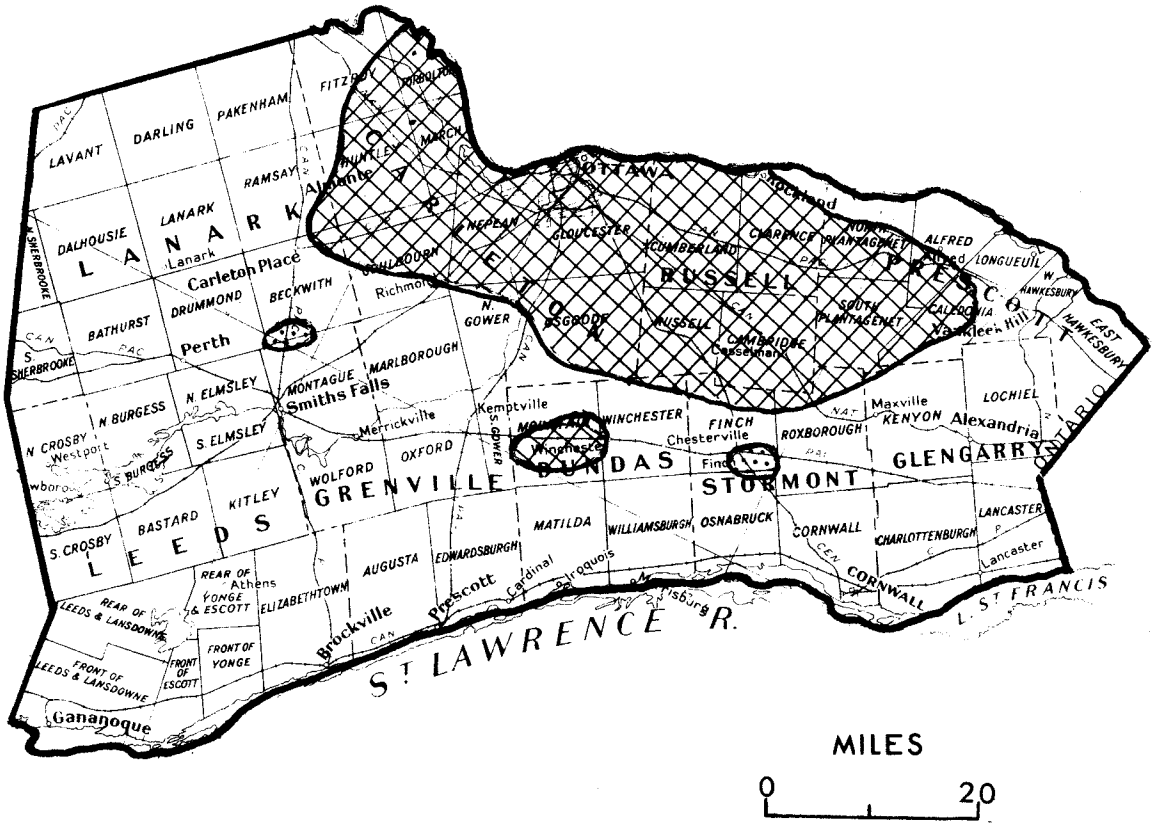
Little change in population levels of this sawfly occurred at quantitative sampling locations in 1966 compared with 1965 (Table 13). Two pockets of heavy infestation occurred on red pine trees in Darling and Wolford townships. Scattered colonies were widely distributed in red and jack pine plantations in the district. Control measures, using emulsifiable D.D.T. in a 2.5 per cent concentration with water and hand-operated pack sprayers, were again carried out by personnel of the Ontario Department of Lands and Forests. The spraying was confined to plantations under the Department's management in the Limerick and Larose forests. Control measures were effective and in most instances defoliation following spraying was negligible.

TABLE 13

Summary of Red-headed Pine Sawfly Colony Counts in Kemptville District in 1965 and 1966

Location by township	Tree Species	No. of trees examined	Average height in feet	No. of trees infested	Av. no. of colonies per infested tree	
					1965	1966
Bathurst	jP	50	16	10	2.0	4.0
Dalhousie	rP	100	16	4	3.6	1.5
N. Elmsley	rP	25	16	6	1.5	1.0
Oxford	rP	100	16	2	1.5	1.5
S. Crosby	rP	50	16	1	2.0	0.1
Wolford	rP	50	16	4	-	2.5

KEMPTVILLE DISTRICT



FOREST TENT CATERPILLAR

Areas in which defoliation occurred in 1966

Legend

Light defoliation . . . . . .

Moderate to severe defoliation . .

Jack-pine Sawfly, Neodiprion pratti paradoxicus Ross

Colonies of this sawfly were more abundant in 1966 than in 1965. Severe defoliation occurred in jack-pine plantations in Drummond, Bathurst, Oxford, North Gower and Cambridge townships. Moderate defoliation was recorded in Edwardsburg, Lanark, Marlborough and Goulbourn townships. Along the St. Lawrence River, west of Brockville, several colonies of this sawfly were observed feeding on pitch pine.

Maple Leaf Cutter, Paraclemensia acerifoliella (Fitch)

A sharp decline in population levels of this insect occurred throughout the district in 1966. The heavy infestation that occurred in Mountain Township in 1965 declined to very light intensity in 1966. Scattered larvae were observed on maple reproduction in Goulbourn and South Gower townships. No larvae were observed elsewhere in the district.

A Leaf Folding Sawfly, Phyllocolpa sp.

For the second year a slight decline in larval population of this insect occurred. Counts taken on poplar trees at six locations showed an average of 26.3 folds per 100 leaves in 1965, compared with 17.0 in 1966 (Table 14).

TABLE 14

Summary of Damage by a Leaf Folding Sawfly on Trembling Aspen in Kemptville District in 1965 and 1966

Location by township	No. of folds per 100 leaf samples 1965	1966
Alfred	22	18
Dalhousie	27	6
Goulbourn	31	30
Longeuill	23	-
N. Crosby	13	14
Oxford	40	27

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Defoliation by this sawfly was observed commonly on open-grown spruce trees throughout the district in 1966. Moderate defoliation occurred on Norway spruce in the Limerick Forest. Groups of white spruce trees along highways and in nurseries suffered light to severe defoliation.

White-pine Weevil, Pissodes strobi (Peck)

Light infestations of this weevil recurred for the fifth consecutive year (Table 15). The highest incidence of damage was recorded in a white-spruce stand in Darling Township where six per cent of the leaders were weevilled.

TABLE 15

Summary of Damage to White Pine by the White-pine Weevil in Kemptville District in 1965 and 1966

NOTE: One hundred white pine trees were examined at each location.

Location by township	Av. d.b.h. of trees in inches	Degree of shade	Per cent of trees weevilled 1965	1966
Augusta	4	0	4	1
Bathurst	3	25	1	1
Cambridge	3	0	1	3
Dalhousie	3	10	3	-
Oxford	3	0	4	3
Stormont	2	0	6	4

Larch Sawfly, Pristiphora erichsonii (Htg.)

For the fourth consecutive year populations of this sawfly remained at a low level. Scattered colonies were observed on open-grown larch reproduction in Oxford, Finch, South Crosby and Clarence townships.

Mountain-ash Sawfly, Pristiphora geniculata (Htg.)

Very low numbers of this insect were observed in 1964 and 1965 but, in 1966 scattered colonies occurred on ornamental and shade trees throughout the district. A light infestation occurred on European mountain-ash in the Howard G. Ferguson nursery in Oxford Township.

TABLE 16

Summary of Miscellaneous Insects Collected in the Kemptville District

Insect	Host(s)	Remarks
Acleris variana (Fern.)	nS	Few larvae collected in Beckwith and Goulbourn townships.
Acrobasis betulella Hltst.	wB	Small numbers on seedlings in Kemptville Nursery.
Adelges abiets Linn	wS	Heavy infestations in Ramsay, Oxford and Wolford townships. Light in Darling Township.
Altica populi Brown	b Pl	Severe mining of foliage in Wolford and Mountain townships.
Altica ulmi Wood	wE	Small numbers observed feeding on underside of foliage on open-grown trees in the Limerick Forest.

TABLE 16 (continued)

Insect	Host(s)	Remarks
Aphrophora parallela Say	wP	Medium infestation on mature white pine, Bathurst Township.
Arge pectoralis (Leach)	wB	Scattered colonies observed on fringe trees in the Limerick Forest.
Caripeta divisata Wlk.	bF	Small numbers collected by beating tray samples in Bathurst Township.
Chionodes obscurusella Cham.	mM	Light infestation on nursery fringe trees, Oxford Township.
Coleophora betulivora McD.	wB	First known record of this insect in Kemptville District.
Dasyneura balsamicola (Lintn.)	bF	Small numbers observed on beating tray in Beckwith Township.
Elaphidionoides parallelum Newn.	rO	Light damage to roadside hosts in Front of Yonge Township.
Eupithecia sobrinata Hbn.	J	Very small numbers occurred in Beckwith Township.
Fenusa ulmi Sund.	wE	Light infestations on roadside elm in Nepean Township.
Gonioctena americana (Scheaf.)	tA	Scattered colonies on reproduction in Torbolton and Mountain townships.
Lepidosaphes ulmi (Linn.)	Do	Heavy infestation in Torbolton Twp.
Lithocolletis hamadryadella Clem.	rO	Low population on reproduction in South Elmsley Township.
Lithocolletis ostryarella Cham.	I	Small numbers observed in Beckwith Township.
Neodiprion abietis Complex	bF	Small numbers collected on beating tray in Bathurst Township.
Nematus hyalinus (Nort.)	w	Heavy infestations on open-grown hosts along the River St. Lawrence, Charlottenburg Township.
Nematus ventralis Say	w	Scattered colonies occurred in Marlborough and Oxford townships.
Nycteola frigidana Wlk.	w	Low population on open-grown hosts in Marlborough Township.
Pineus strobi (Htg.)	wP	Heavy infestations in the Larose Forest, small numbers in Oxford and Torbolton townships.
Plagiodera versicolora Laich.	w	Scattered colonies occurred on nursery stock, Oxford Township.

TABLE 16 (concluded)

Insect	Host(s)	Remarks
Phyllocnistis populiella Chamb.	tA	Small numbers observed on reproduction hosts in Ramsay and S. Gower twps.
Phytophaga piceae Felt	wS	Heavy infestation in a privately owned plantation in Lanark Township.
Prociphilus tessellatus (Fitch)	al	Small numbers observed in the Rideau Provincial Park.
Profenusa canadensis (Marlott.)	Haw	Heavy infestations in Carleton, Grenville and Dundas counties.
Profenusa thomsonii (Konow.)	wB	Very low numbers in Beckwith and S. Crosby townships.
Pseudexentera oregonana Wlshm.	tA	Small numbers of leaf rollers in Mountain and Torbolton townships.
Rhyacionia buskona Hein.	jP	Light damage in the Limerick Forest, Wolford Township.
Sparganothis directana Wlk.	cCh	Small numbers observed on open-grown hosts in Goulbourn Township.
Vespamia pini Kell	wS	Light infestations on wind break hosts in Front of Leeds Lansdowne Township.
Zeiraphera ratzeburgiana Ratz	wS	Commonly found in the Limerick Forest, Wolford Township.

STATUS OF INSECTS IN THE PEMBROKE DISTRICT

R. Trieselmann

Ugly-nest Caterpillar, Archips cerasivorana Fitch

Although population levels were generally lower than in 1965, a heavy infestation of this insect recurred in the village of Alice (Table 5). Herbicide spraying along roadsides in Bromley, Ross, and Stafford townships killed the host plants and resulted in negative counts at sampling stations in these townships.

TABLE 5

Summary of Ugly-nest Caterpillar Colony Counts in Pembroke District from 1964 to 1966

Location by township	Host	No. of nests observed per one mile of roadside		
		1964	1965	1966
Alice	cCh	210	673	547
Airy	cCh	-	3	0
Bromley	cCh	-	19	0*
Murchison	cCh	27	27	26
Nightingale	cCh	-	2	0
Ross	cCh	-	8	0*
Sherwood	cCh	2	3	2
Stafford	cCh	-	39	0*
Wilberforce	cCh	29	28	5

* Roadsides sprayed with herbicide

A Cecidomyid Midge in Red Pine Needles

A heavy infestation of this insect occurred on pole-sized red pine in an extensive stand in Stratton Township. All trees in the stand were infested and approximately 25 per cent of the current year's needles were destroyed. The larvae feed in the needle fascicles of the current year's growth causing infested needles to turn progressively white from the tip to the needle fascicle. Infested needles eventually turn brown and drop to the ground. Similar damage was observed on occasional red pine trees in plantations in Buchanan, McKay and Wylie townships.

Larch Casebearer, Coleophora laricella Hbn.

Small numbers of the larch casebearer were observed in most tamarack stands in the district. Consistently higher larval counts at sample points reflect an increase in population levels in 1966 (Table 6).

TABLE 6

Summary of Larch Casebearer Counts in Pembroke District from 1965 to 1966

Location by township	Host	Av. d.b.h. of sample trees in inches	Av. no. of larvae per 18-inch branch tip		
			1964	1965	1966
Airy	tL	3	0.90	0.88	2.94
Bromley	tL	5	0.50	0.00	1.00
Buchanan	tL	6	1.60	1.62	2.31
Cameron	tL	6	2.40	0.88	0.75
N. Algona	tL	4	1.60	0.88	1.06
Rolph	tL	4	0.30	2.00	2.69
Sproule	tL	8	1.20	3.30	4.44
Westmeath	tL	6	0.60	0.25	0.56

European Spruce Sawfly, Diprion hercyniae (Htg.)

Although population levels declined, small numbers of larvae of this insect were collected in beating samples at many locations in the district (Table 7). Defoliation was insignificant and confined to the lower crowns of open-growing black spruce and white spruce.

TABLE 7

Summary of European Spruce Sawfly Larval Counts in the Pembroke District in 1966

Location by township	Host	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample
Buchanan	wS	7	15
Canisbay	wS	5	12
Finlayson	wS	7	19
Head	wS	5	14
Lyell	wS	6	8
Nightingale	bS	6	8
Preston	wS	4	14
S. Algona	wS	9	21
Wylie	wS	5	11

Birch Leaf Miner, Fenusa pusilla (Lep.)

Infestations of this insect increased in number and intensity in 1966. One large pocket of heavy infestation occurred along the shore of Olmstead Lake in Ross Township where white birch was almost totally defoliated. Other pockets of severe defoliation occurred in Buchanan and Pembroke townships. Ornamental European birch, wire birch and cut-leaf varieties at the Petawawa Forest Experiment Station, and in the towns of Deep River and Pembroke were heavily infested. Light to moderate damage to white birch foliage occurred at numerous points elsewhere in the district (Table 8).

TABLE 8

Summary of Damage by the Birch Leaf Miner in the Pembroke District from 1964 to 1966

Location by township	Host	Av. d.b.h. of sample trees in inches	Per cent of leaves mined			Per cent of leaf surface mined		
			1964	1965	1966	1964	1965	1966
Buchanan	wiB	1	-	-	47	-	-	60
Cameron	wB	1	-	-	19	-	-	30
McKay	wB	1	-	-	12	-	-	60
Hagarty	wB	1	-	-	29	-	-	50
Rolph	wB	3	27	21	25	25	25	35
Ross	wB	4	-	-	98	-	-	85
S. Algona	wB	1	-	-	32	-	-	50
Sproule	wB	3	31	15	32	35	10	40
Westmeath	wB	3	32	29	38	20	50	60

Pine Root-collar Weevil, Hylobius radicis Buch.

Scots pine averaging 2 inches d.b.h. were severely infested by this pine weevil in a 50-acre plantation in Westmeath Township (see photograph).

Of 900 trees tallied along three lines transecting the plantation, 148 had died prior to 1966 and 90 were killed during the current season. Many other trees in the plantation were infested. No evidence of the weevil was found in adjacent jack pine and red pine stands.

Fall Webworm, Hyphantria cunea Dru.

Slight increases in population levels of this insect occurred at all sample stations (Table 9). Small numbers of webs were observed on roadside shrubbery at many locations in the district.

TABLE 9

Summary of Fall Webworm Colony Counts in Pembroke District from 1964 to 1966

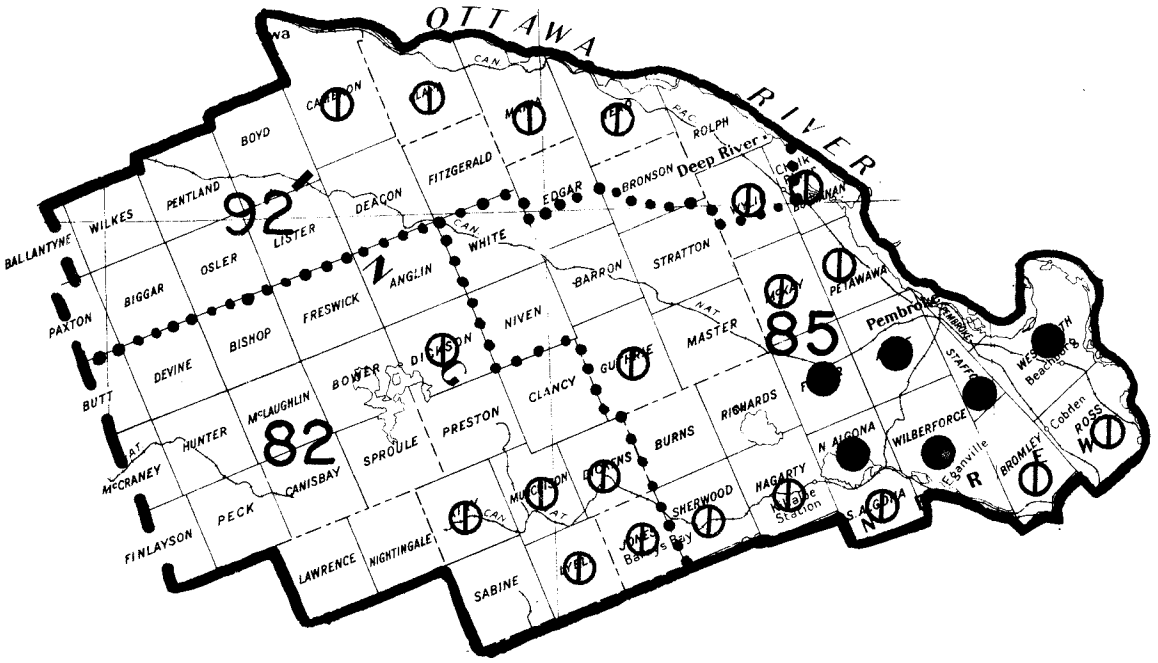
Location by township	Host	No. of webs per mile of roadside		
		1964	1965	1966
Airy	W	0	0	2
Hagarty	wE	0	0	1
Head	wB	0	0	3
Ross	wE	1	0	1
Westmeath	wB	0	0	1
Wilberforce	wE	12	0	1

Eastern Tent Caterpillar, Malacosoma americanum (F.)

Heavy infestations recurred in Alice, Hagarty, Fraser, Stafford and Wilberforce townships and light to medium infestations were observed at many locations in the district (see map). The average number of primary tents at nine sampling stations declined from 281 in 1965 to 179 in 1966 (Table 10).

The eastern tent caterpillar occurred in association with the forest tent caterpillar, the American poplar leaf beetle, and an aspen leaf roller (Pseudexentera oregonana Wlshm.) in Alice, Bromley, Fraser, Hagarty, N. Algona, Richards, S. Algona, Sherwood and Wilberforce townships.

PEMBROKE DISTRICT



EASTERN TENT CATERPILLAR

Locations where infestations were observed in 1966

Legend

Light infestation . . . . . ⊖

Heavy infestation . . . . . ●

TABLE 10

Summary of Eastern Tent Caterpillar Colony Counts
in the Pembroke District from 1963 to 1966

Location by township	Host	No. of tents counted per mile of roadside			
		1963	1964	1965	1966
Alice	ec Ch	24	107	860	418
Buchanan	pCh	27	2	39	4
Fraser	ec Ch	27	149	423	624
Hagarty	ec Ch	50	176	305	103
Lyell	ec Ch	26	76	35	47
Petawawa	ec Ch	23	1	195	23
Stafford	ec Ch	22	69	352	153
Westmeath	ec Ch	24	89	115	98
Wilberforce	ec Ch	43	167	206	138

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Defoliation of deciduous trees by the forest tent caterpillar was somewhat lighter in 1966 than in 1965. Heavy infestations persisted in one large area in the southwestern part of the district (see map).

One hundred cocoons from each of ten widely-separated locations were dissected to determine the degree of biological control and the number of adults that emerged. Parasitism by a flesh fly, Sarcophaga aldrichi Park., was the most common cause of pre-pupal mortality. Adult emergence was significantly lower than in recent years (Table 11).

In September, egg band counts were taken at ten locations to forecast population trends and defoliation. These indicate that defoliation in the district will be lighter in 1967 than in 1966 except in Buchanan, Fraser and Westmeath townships (Table 12).

TABLE 11

Summary of Forest Tent Caterpillar Cocoon Dissections
in the Pembroke District from 1964 to 1966

Location by township	Per cent of cocoons parasitized			Per cent other mortality			Per cent adult emergence		
	1964	1965	1966	1964	1965	1966	1964	1965	1966
Alice	62	59	77	2	3	15	36	38	8
Buchanan	58	59	69	0	16	21	42	25	10
Fraser	-	-	90	-	-	9	-	-	1
Hagarty	-	-	78	-	-	17	-	-	5
McKay	-	-	80	-	-	14	-	-	6
Petawawa	41	50	79	0	0	10	59	50	11
Westmeath	43	49	79	3	4	18	54	47	3
Westmeath	-	-	61	-	-	28	-	-	11
Wilberforce	52	49	89	8	13	7	40	38	4
Wilberforce	-	-	76	-	-	18	-	-	6

TABLE 12

Summary of Forest Tent Caterpillar Egg Band Counts in the Pembroke District from 1964 to 1966

Location by township	Av. d.b.h. of sample trees in inches	Av. no. of egg bands per tree 1964	1965	1966	Defoliation forecast for 1967
Anglin	5	0	0	0	nil
Buchanan	10	35.6	3.3	6.3	moderate
Burns	7	54.6	1.6	0.7	light
Dickens	6	2.6	0.6	0	nil
Fraser	7	50.3	19.0	22.7	severe
Head	4	4.3	0	0	nil
Master	3	5.0	3.0	0.3	light
Richards	8	29.6	4.3	0	nil
Stratton	4	0	0	0.3	light
Westmeath	5	10.6	3.0	11.0	severe

Cedar Sawfly, Monoctenus fulvus (Nort.)

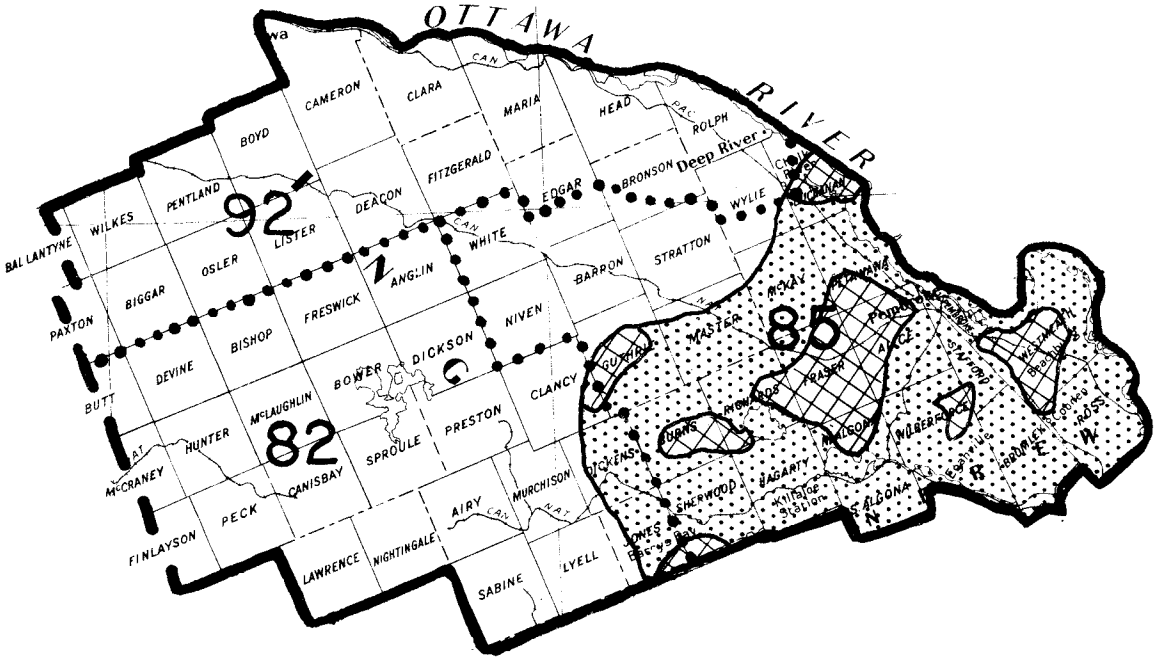
Population levels of this sawfly on white cedar and juniper declined for the fourth consecutive year in the district. The average number of larvae per beating sample was six in 1966 compared with 189 during the population peak in 1963. Larvae were generally more numerous on juniper than on white cedar (Table 13).

TABLE 13

Summary of Cedar Sawfly Larval Counts in Pembroke District from 1963 to 1966

Location by township	Host	Average d.b.h. of host in inches	Total no. of larvae per 15-tray sample 1963	1964	1965	1966
Bromley	eC	8	146	47	1	6
Bromley	cJ	nil	-	-	-	8
Buchanan	eC	3	-	-	-	2
Buchanan	cJ	nil	-	-	-	12
Maria	eC	6	-	-	-	2
Maria	cJ	nil	-	-	-	8
N. Algona	eC	7	180	13	7	1
Ross	eC	6	293	142	33	3
Ross	cJ	nil	-	-	-	9
S. Algona	eC	4	263	33	7	3
S. Algona	cJ	nil	-	-	-	6
Westmeath	eC	8	90	22	36	3
Wilberforce	eC	5	162	22	4	13

PEMBROKE DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1965

Legend

Light defoliation. . . . . .

Moderate to severe defoliation . .

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Population levels fluctuated slightly at sample points (Table 14). Light to medium infestations occurred on small red pine trees in plantations and natural stands at many points in the district, mainly on the fringes of stands and on exposed sites (see map). Several plantations in Buchanan Township were infested and occasional trees were completely defoliated. Small patches of red pine regeneration along the Hydro service road in Bronson Township were severely defoliated (see photograph). Single infested jack pine and white pine trees were observed in Rolph Township.

TABLE 14

Summary of Red-headed Pine Sawfly Colony Counts on Red Pine Trees in the Pembroke District in 1965 and 1966

Location by township	No. of trees examined	Average height of trees in feet	Av. no. of colonies per tree	
			1965	1966
Alice	100	3	1.5	.05
Bronson	10	10	-	1.2
Buchanan	100	3	-	.3
Cameron	100	6	1.3	1.2
Clara	100	6	1.1	1.3
Maria	10	6	1.0	1.2
N. Algona	200	4	-	.2
S. Algona	100	3	-	.2
Wilberforce	50	6	1.0	1.2
Wylie	100	6	-	1.1

Red Pine Sawfly, Neodiprion nanulus nanulus Schedl.

Population levels of this sawfly increased in 1966 (Table 15). Severe defoliation occurred in a jack pine plantation in Petawawa Township and in a red pine plantation in Westmeath Township. Moderate and light defoliation was observed at many points in the district, particularly in Cameron, Hagarty, Ross, Sabine, and Sherwood townships (see map).

TABLE 15

Summary of Red Pine Sawfly Colony Counts in the Pembroke District in 1965 and 1966

Location by township	Host	Average d.b.h. of sample trees in inches	Av. no. of colonies on each of 10 trees	
			1965	1966
Cameron	rP	6	.9	1.2
Fraser	jP	6	1.6	1.8
Hagarty	rP	1	-	3.7
Petawawa	jP	3	2.5	9.4
Ross	rP	4	11.0	12.1
Sherwood	rP	2	-	3.2
Westmeath	rP	4	6.5	18.9
Westmeath	jP	3	2.2	1.4

Jack-pine Sawfly, Neodiprion pratti paradoxicus Ross

Colonies of this sawfly were less numerous than in 1965. Moderate infestations in N. Algona, Petawawa, and Westmeath townships subsided, and only light defoliation of jack pine trees was observed at sample points (Table 16).

TABLE 16

Summary of Jack-pine Sawfly Colony Counts in the Pembroke District from 1964 to 1966

Location by township	Average d.b.h. of sample trees in inches	Average no. of colonies on each of 10 trees		
		1964	1965	1966
Bronson	6	3	0	0
Buchanan	6	1	3	0
Maria	6	0	0	1.6
N. Algona	10	15	25	2.9
Petawawa	4	1	10	1.4
Richards	6	0	1	0
Westmeath	6	21	26	2.9

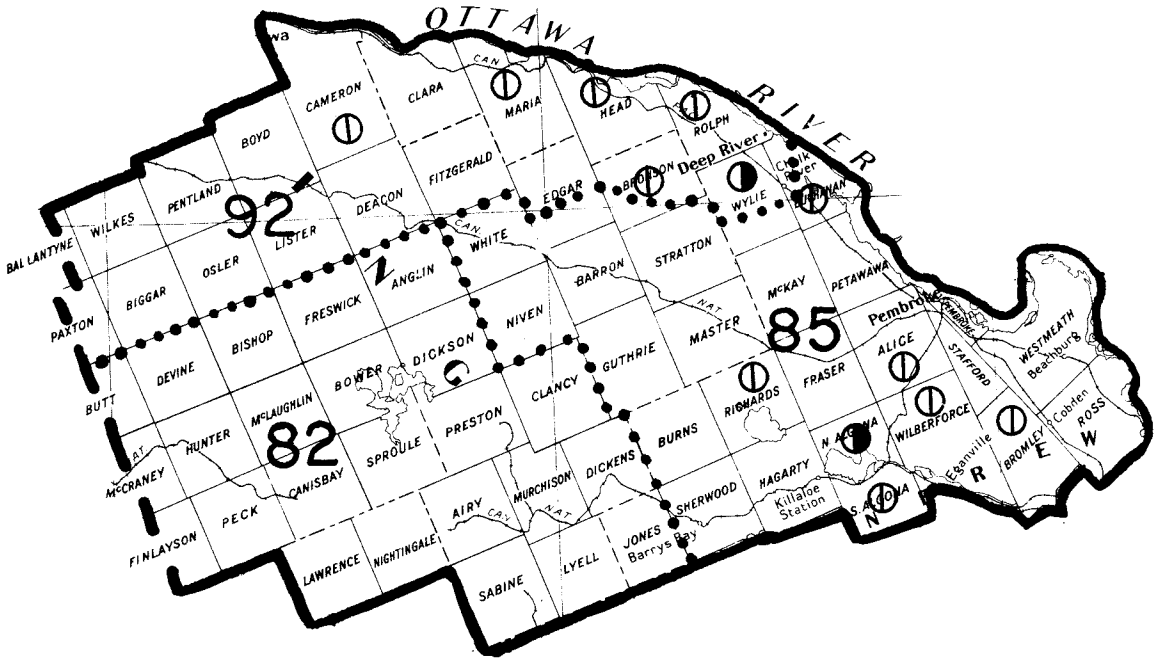
Bruce Spanworm, Operophtera bruceata Hlst.

Sugar maple and beech in the southeastern part of Finlayson Township and in the extreme southwestern tip of Peck Township were moderately to severely defoliated by this insect. Sugar maple was generally the more heavily infested of the two species. Low populations were observed on occasional other hardwoods such as yellow birch and white birch, presumably an overflow from adjacent heavily infested sugar maple and beech. About sixty per cent of the foliage of sugar maple and beech was infested and approximately 35 per cent of the tissue of infested leaves was consumed by the larvae.

A Leaf-folding Sawfly on Trembling Aspen, Phyllocolpa sp.

Population levels of this insect declined at sampling stations (Table 17). Large numbers of folded leaves were observed at many locations in the district but few of the leaf-folds were occupied by larvae.

PEMBROKE DISTRICT



20 MILES

RED-HEADED PINE SAWFLY

Locations where infestations were observed in 1966

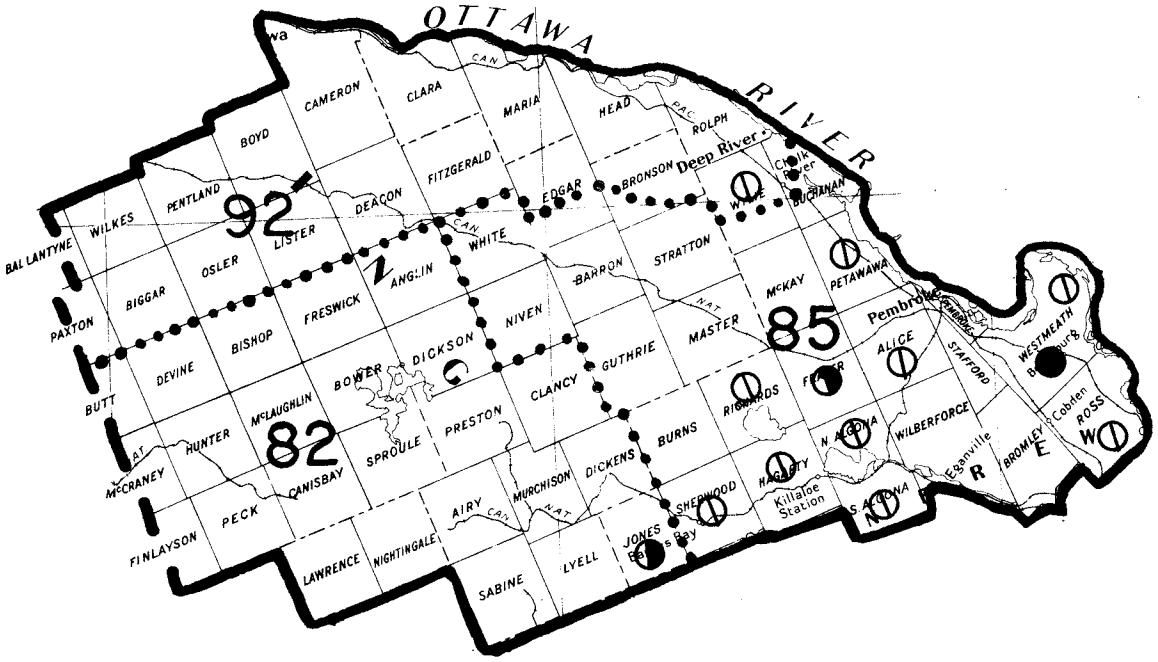
Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation. . . . . ●

PEMBROKE DISTRICT



20 MILES

RED PINE SAWFLY

Locations where infestations were observed in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

TABLE 17

Summary of Counts of the Leaf-folding Sawfly in the Pembroke District from 1964 to 1966

Location by township	Average d.b.h. of sample trees in inches	Number of folds per 100 leaves 1964	1965	1966
Cameron	2	1	22	19
Finlayson	1	37	52	11
Fraser	1	67	83	20
Richards	2	61	92	65
Westmeath	1	108	112	96
Average for the year		55	72	42

White-pine Weevil, Pissodes strobi (Peck)

No significant changes in population levels of the white-pine weevil occurred in 1966 (Table 18). Open-grown trees were much more severely attacked than those growing in partial shade. Fully-shaded trees were not infested. Most plantations and natural stands of young white pine in the district suffered various degrees of damage but only a few lightly infested jack pine, black spruce, and white spruce stands were observed (see photograph).

TABLE 18

Summary of White Pine Shoot Damage by the White-pine Weevil in Pembroke District in 1965 and 1966

Location by township	Average height of trees in feet	No. of trees examined	Per cent of trees weevilled 1965	1966
Alice	10	100	-	29
Buchanan	6	100	28	26
Bronson	10	100	-	16
Cameron	11	100	31	29
Preston	20	100	3	1
Petawawa	16	100	-	9
Sproule	14	100	-	16
White	9	100	-	9
Wylie	7	100	-	2

A Leaf-roller on Aspen, Pseudexentera oregonana (Wlshm.)

Population levels of this insect declined in 1966. Areas of light and medium infestation were observed at many locations in the district, mainly in Alice, Buchanan, Cameron, Clara, Fraser, Head, Guthrie, Richards, Sproule, Sherwood, and Wilberforce townships (Table 19).

This leaf-roller occurred in association with the forest tent caterpillar, the American poplar leaf beetle, and/or other insects of the trembling aspen complex.

TABLE 19

Summary of Leaf Damage by a Leaf Roller on Aspen in the Pembroke District in 1966

Location by township	Host	Average d.b.h. of sample trees in inches	No. of rolled leaves per 100 random leaf sample
Alice	tA	2	17
Buchanan	tA	2	11
Cameron	tA	2	1
Fraser	tA	2	21
Guthrie	tA	2	4
Head	tA	1	7
Richards	tA	3	16
Sherwood	lA	1	4
Wilberforce	tA	4	24

TABLE 20

Summary of Miscellaneous Insects Collected in the Pembroke District in 1966

Insect	Host(s)	Remarks
Acleris variana Fern.	wS	Small numbers of larvae in Rolph and Sproule townships.
Acmaeops proteus Kby.	wS	Common in traplogs in Buchanan Township.
Acronicta lepusculina Gn.	tA, bPo	Occasional larvae in S. Algona and Wilberforce townships.
Adelges abietis Linn.	wS	Small pocket of medium infestation in Wilberforce Township.
Agromyza ulmi Frost	wE	Nineteen per cent leaves infested, 1.1 mines per leaf, in Wilberforce Twp.
Altica corni Woods	Do	Dogwood in Bromley Township 20 per cent defoliated.
Altica ulmi Wood	wE	Pocket of light infestation in Bromley Township.
Anacampsis innocuella Zell.	tA	Small numbers of larvae in Guthrie and Sherwood townships.
Anomoea laticlavia Forst.	cCh	Numerous adults feeding on foliage in Wilberforce Township.
Anomogyna elimata Gn.	jP, wP	Small numbers of larvae in beating samples at many locations.

TABLE 20 (continued)

Insect	Host(s)	Remarks
Archips argyrospila Wlk.	rO	Small numbers of larvae in Wilberforce Township.
Caliroa sp.	rO	Small pockets of severely infested regeneration in Head and Wylie twps., small pocket of light infestation in MacKay Township.
Caripeta angustiorata Wlk.	jP, scP, wP	Occasional larvae in beating samples at several locations.
Caripeta divisata Wlk.	bF, eH, wS	Small numbers of larvae in beating samples at widely scattered locations.
Cenopis pettitana Roh.	Ir	Occasional lightly infested trees in Wylie Township.
Cephalcia marginata Haw.	rP	Occasional trees lightly infested in Fraser Township.
Cerura multiscripta Riley	tA	Small numbers of larvae found in Algona Township.
Choristoneura fumiferana Clem.	wS	Single larvae in beating samples in Sproule and S. Algona Townships.
Compsolechia niveopulvella Chamb.	tA	Occurred in association with other foliage insects in Buchanan, Clara and Head townships.
Dasyneura serrulatae O.S.	Al	Large pocket of light infestation in Buchanan Township.
Datana ministra Dru.	wB	Occasional colonies at several widely scattered locations.
Depressaria groteella Rob.	Hazel	Small pockets of light infestation in Canisbay and Finlayson townships.
Disonycha alternata Ill.	W	Pockets of severe infestation in Wylie and Sabine townships, pocket of light infestation in Head Township.
Dryocoetes affaber Mann.	wS	Common in traplogs in Buchanan Twp.
Dryocoetes autographus Ratz.	wS	Rare in traplogs in Buchanan Township.
Epinotia solandriana Linn.	wB	Scattered small pockets of light infestation in Clara, Head, Maria and Rolph townships.
Eriophyes rhoinus Ckll.	Sumach	Pockets of severe infestation in Ross and Wilberforce townships.
Eucosma gloriola Heinr.	scP	Fifty per cent of the trees in a plantation in Westmeath Twp. were infested; in a sample of 236 infested trees, 646 lateral shoots and four leaders had been killed.

TABLE 20 (continued)

Insect	Host(s)	Remarks
Eupithecia palpata Pack.	jP, rP, wP	Small numbers of larvae collected in beating samples at many locations.
Eupithecia transcanadata McK.	bF, eH, wS	Commonly found in beating samples at various locations.
Evodinus monticola (Rand.)	wS	Numerous larvae in trap logs in Buchanan Township.
Feralia jocosa Gn.	eH, wS	Single larvae collected in beating samples at scattered locations.
Filatima demissae Wlk.	Juneberry	Pocket of light infestation in Guthrie Township.
Framinghamia helvalis Wlk.	bPo	Low population levels in Wilberforce Township.
Gonioctena americana Schaef.	tA	Light to medium infestations at many locations in the central and northern parts of the district; occurred usually in association with other insects of the trembling aspen complex.
Gracillaria alnivorella Cham.	Al	Large pocket of moderate defoliation in Buchanan Township.
Gracillaria cuculipennella Hbn.	bAs, wAs	Lightly infested regeneration at many locations in Div. 82.
Griselda radicana Wlshm.	wS	Occasional lightly infested trees in Sproule Township.
Hemicroa crocea (Four.)	Al	Small pocket of light infestation in Buchanan Township.
Hydria prunivorata Ferg.	bCh	A few black cherry in McKay and Sabine townships severely infested.
Hydriomena divisaria Wlk.	eH, wS	Found in beating samples at numerous locations.
Hypagyrtis piniata Pack.	jP, scP	Occasional larvae on plantation grown trees at various locations.
Hyposoter fugitivus fugitivus Say	Schizura concinna	Occasional colonies of the red-humped caterpillar were completely wiped out by this parasite in Buchanan Township.
Ipomorpha pleonectusa Grt.	lA	Small numbers collected in Buchanan Twp.
Ips pini Say and Ips perroti Sw.	rP	Pole-size red pine in plantation in Buchanan Township severely infested, moderate mortality.
Lambdina fiscellaria fiscellaria Gn.	bF, eH, wS	Occasional larvae in beating samples at numerous locations.

TABLE 20 (continued)

Insect	Host(s)	Remarks
Macremphytus varianus (Nort.)	Do	Light defoliation in Bromley Township.
Melaphis rhois (Fitch)	Sumach	Severe infestations in Alic and Hagarty townships.
Meroptera pravella Grt.	tA	Large numbers of larvae in empty forest tent caterpillar cocoons.
Monochamus scutellatus Grt.	wS	Larvae feeding in traplogs in Buchanan Township.
Nematus limbatus Cress.	W	Small numbers of colonies observed at many points.
Nematus salicisodoratus Dyar	W	Occasional colonies at many locations.
Nematus ventralis Say	tA	Small numbers observed at numerous locations.
Neodiprion abbotti (Leach)	rP	Numerous small colonies of 5 - 12 larvae on pole size red pine in Buchanan Township.
Neodiprion abietis complex	rS	A few lightly infested trees in S. Algona Township.
Neodiprion compar (Leach)	rP	Single larvae collected in Buchanan Twp.
Nephopterix subfuscella Rag.	Sumach	Pocket of light infestation in Westmeath Township.
Nepytia canosaria Wlk.	eC, bF, eH, rP, wS	Small numbers of larvae in beating samples at widely scattered locations.
Neurotoma inconspicua (Nort.)	pCh	Pocket of light infestation in Buchanan Township, 12 nests per square chain sample.
Nycteola cinereana N. & D.	bPo	Occasional small trees in Wilberforce Township lightly infested.
Nymphalis antiopa Linn.	tA, W	Single colonies observed at many locations.
Nymphula obliteralis (Wlkr.)	Nuphar sp.	Very common on Nuphar sp. in Corry Lake, Buchanan Township.
Orthosia revicta Morr.	wS, W	Single larvae found at scattered locations.
Palthis angulalis Hbn.	Ju, wS	Single larvae found at scattered locations.
Pareophora minuta (MacG.)	bAs	Pocket of light infestation in Wilberforce Township.

TABLE 20 (continued)

Insect	Host(s)	Remarks
Phenacaspis pinifoliae Fitch	rP	Small pocket of light to moderate infestation in Buchanan Township.
Phyllocolpa populi (Marlatt)	lA, HyPo	Roadside regeneration in Buchanan and Deacon townships lightly infested.
Phytagromyza populicola (Wlk.)	HyPo	Small pocket of heavy infestation in Buchanan Township; 100 per cent leaves infested, 3.7 mines per leaf.
Pikonema alaskensis (Roh.)	wS	Small numbers of larvae found in beating samples at many locations.
Pikonema dimmockii (Cress.)	bS, wS	Small numbers of larvae in beating samples at numerous widely scattered locations.
Pineus similis Gill.	wS	Lightly infested trees in Preston and Westmeath townships.
Pissodes approximatus Hopk.	wS	Larvae, pupae, and adults very common in trap logs in Buchanan Township.
Plagiodera versicolora Laich.	W	Large shade trees fifty per cent defoliated in Westmeath Township.
Podapion gallicola Riley	rP	Lightly infested trees observed at numerous locations.
Polygraphus rufipennis Kby.	wS	Common in traplogs in Buchanan Township.
Pristiphora erichsonii (Htg.)	tL	Occasional colonies observed in Sproule and S. Algona Townships.
Pristiphora geniculata (Htg.)	mAs	Lightly infested mountain ash at scattered locations.
Pristiphora lena Kinc.	wS	Occasional larvae in beating samples at several locations.
Profenusa canadensis (Marlatt)	Haw	Fencerows of hawthorn in Ross Township severely defoliated by this leaf-mining sawfly.
Protoboarmia porcelaria indicataria Wlk.	eC, bF, eH, jP, wS	Small numbers of larvae found in beating samples at many locations.
Psilocorsis fletcherella Gibs.	tA	Lightly infested trees in McKay Township.
Psilocorsis quercicella	rO	Pocket of light infestation in Buchanan Township.
Pulicalvaria piceaella Kft.	wS	Occasional lightly infested trees in Peck and Sproule townships.
Rhagium inquisitor (Linn.)	wS	Common in traplogs in Buchanan Township.

TABLE 20 (concluded)

Insect	Host(s)	Remarks
Schizura concinna A. & S.	ta, W	Small numbers of colonies observed in Buchanan and McKay townships.
Semiothisa bicolorata Fabr.	jP, rP, scP	Small numbers of larvae in beating samples at scattered locations.
Semiothisa bisignata Wlk.	wP	Small numbers of larvae in beating samples at scattered locations.
Semiothisa dispuncta Wlk.	bF, wS	Small numbers of larvae in beating samples at scattered locations.
Semiothisa fissinotata Wlk.	eH	Small numbers of larvae in beating samples at two locations.
Semiothisa orillata Wlk.	eC	Occasional larvae in beating samples.
Tetralopha robustella Zell.	jP, scP	Occasional webs found in Fitzgerald and Westmeath townships.
Tetropium cinnamopterum Kby.	wS	Common in traplogs in Buchanan Township.
Thera contractata Pack.	Ju	Rare in beating samples.
Thera juniperata Linn.	Ju	Small numbers of larvae in beating samples at scattered locations.
Tolype laricis Fitch	eH, rP	Occasional larvae in beating samples in Buchanan Township.
Toumeyella numismaticum (P. & M.)	jP, rP, scP	Small pocket of infestation on Scots pine in Buchanan Twp., occasional lightly infested red pine and jack pine in Clara, N. Algona, Wilberforce, and Wylie townships.
Trichiocampus irregularis (Dyar)	W	Small pockets of light infestation in Bronson, Deacon and Rolph townships.
Trichiosoma triangulum Kby.	W	Small numbers of larvae in Sabine and Wilberforce townships.
Typocerus velutina (Oliv.)	Solidago spp.	Numberous adults observed in Lyell Township.
Vasates quadripes Shim.	sM	Severely infested ornamentals in Pembroke.
Vespamia pini Kell.	wS	Occasional cankered trees in a plantation in Buchanan Township lightly infested.
Xyela minor Nort.	rP	Large numbers of larvae observed descending from trees in Buchanan Township.

SOUTHWESTERN FOREST REGION

1966

INTRODUCTION

STATUS OF INSECTS (Regional)

STATUS OF TREE DISEASES (Regional)

STATUS OF INSECTS (District)

INTRODUCTION

Southwestern Region

This report deals with forest insect and tree disease surveys in the southwestern Region. Two major insect pests and several disease organisms are dealt with on a regional basis. Other currently important insects are written on a district basis.

Several common species of sawfly (see photographs) caused from light to almost complete defoliation of pines. Infestations of the most destructive species, the European pine sawfly, increased in extent and intensity causing widespread heavy defoliation. Pockets of heavy infestation of two jack pine sawflies and the red-headed pine sawfly recurred and light infestations of other species were common in the region. Population levels of larch sawfly, larch casebearer and spruce budworm increased in some areas and decreased in others. Infestations of a birch leaf miner, walnut caterpillar, yellow-necked caterpillar, jack-pine needle miner, fall webworm and balsam fir sawfly increased in intensity.

Dutch elm disease was widespread in the region. The root diseases, Fomes annosus (Fries) Cke, Armillaria mellea (Vahl ex Fries) Kummer, and Polyporus tomentosus Fries continued to cause mortality of their respective host trees. Prolonged drought and high temperatures caused heavy mortality of a variety of tree species at widely-separated points.

Infestations of eastern subteranean termites, Reticulitermes flavipes (Kollar) persisted in Toronto and were reconfirmed in Kincardine and Oxley.

The control program against the European pine sawfly was greatly expanded. Phosphamidon was applied by helicopter to approximately 3000 acres of Christmas trees and a polyhedral virus culture was used in numerous unpruned plantations. The quantity of virus infected larvae collected for future control of the insect was tripled in 1966.

Life history studies of the ironwood leaf miner, Chrysopeleia ostryaella Cham. and a needle miner on spruce, Epinotia nanana Treit. have been completed and were published. Extension work increased considerably as a result of problems caused by the European pine sawfly, Dutch elm disease and extreme weather. The co-operation given by Department of Lands and Forests personnel is gratefully acknowledged.

A. A. Harnden

STATUS OF INSECTS (Regional)

European Pine Sawfly, Neodiprion sertifer (Geoff.)

This sawfly (see photograph) increased in intensity at many locations and decreased at others in 1966 (Table 1). Moderate to severe defoliation of the old foliage of Scots, red and jack pine occurred commonly in young plantations and for the second consecutive year severe defoliation was observed in older plantations in which the crowns were closed. Small pockets of medium and heavy infestation occurred in widely-separated Austrian pine plantations. The northeastern limit of known distribution advanced approximately 15 miles to a line extending between Orillia and Coldwater and infestations advanced northwards approximately eight miles on Bruce Peninsula (see map). When severe defoliation is caused by this insect for more than two consecutive years the growth of host trees is noticeably reduced. In addition, larval feeding on the tender bark of current shoots causes considerable wilting, breakage and stem distortion.

In Lake Simcoe District, new light infestations occurred in Scots pine plantations along Highway 400 in Medonte Township and along Highway 11 near Orillia. Occasional colonies were observed elsewhere in the areas. Scattered light to heavy infestations persisted in the old area of infestation in Tiny, Flos, Innisfil, Essa, Vespra, Sunnidale and Nottawasaga townships in Simcoe County, the north half of York County and in Scott, Brock, Uxbridge and Reach townships in Ontario County. Heavy infestations causing almost complete defoliation of the old foliage persisted in unsprayed plantations in most of Dufferin County, in the north half of Peel County, the south half of York County and Pickering and Whitby townships in Ontario County.

In Lake Huron District, although defoliation was generally less severe than in 1965 heavy infestations occurred at numerous locations. High populations persisted in several Scots pine plantations in the Durham area and at several points in Huron, Wentworth and Halton counties. Seventy-five to 90 per cent defoliation occurred in a young Scots pine plantation in Nassagaweya Township where a count showed an average of seven colonies per 5-foot tree. Moderate defoliation was common on jack pine and Scots pine in mixed plantations in the Galt and Hamilton areas whereas red pine suffered generally light damage.

In Lake Erie District, medium to heavy infestations were observed in numerous plantations, particularly in Norfolk and Haldimand counties. Medium to heavy infestations recurred on mature red pine trees at St. Williams Nursery. Fifteen jack pine trees in Canborough Township were severely defoliated for the third consecutive year. Medium infestations were observed in red pine plantations in Charlotteville Township and on Scots pine trees at numerous points elsewhere in the district. Although not a favoured host, severe defoliation of Austrian pine occurred at Petrolia and light infestations were recorded at several other locations.

TABLE 1

Summary of European Pine Sawfly Colony Counts and Degrees of Infestation in the Southwestern Region in 1965 and 1966

Location (township by district)	Host	Av. height of trees in feet	Av. no. colonies per infested tree 1965	Av. no. colonies per infested tree 1966	Per cent of trees infested in 1966	Degree of infestation in 1966
Lake Simcoe						
Caledon	scP	18	8	3	90	Light
Toronto	scP	30	14	10	100	Medium
Pickering	scP	15	23	100 plus	100	Heavy
E.Gwillimbury	scP	6	1	8	100	Medium
W.Gwillimbury	scP	8	0.5	2	80	Light
Georgina	rP	6	-	3	80	Light
Mulmur	rP	8	-	2	80	Light
Orillia	scP	10	0	1	80	Light
Melancthon	rP	20	3	2	90	Light
Tosorontio	scP	10	3	5	90	Light
Tosorontio	rP	8	1	2	75	Light
Lake Huron						
Stanley	scP	16	1	2	16	Light
E.Wawanosh	scP	20	12	14	100	Medium
Goderich	scP	10	6	10	100	Medium
Brant	scP	17	2	2	35	Light
Nassagaweya	scP	5	-	7	100	Heavy
Sullivan	scP	20	-	1	60	Light
Holland	scP	13	-	8	100	Medium
Lake Erie						
Adelaide	scP	7	4	5	75	Medium
Aldborough	scP	7	1	4	80	Medium
Euphemia	scP	11	4	8	100	Medium
McGillivray	rP	6	5	6	95	Medium
Mosa	rP	3	-	2	70	Medium
S. Cayuga	scP	11	5	4	80	Medium
Romney	scP	11	2	3	75	Medium
Willoughby	scP	12	3	6	90	Medium

A large scale control program was carried out in Dufferin and Peel counties where approximately 2500 acres was treated with Phosphamidon. The insecticide was applied by helicopter at the rate of 1.2 ounces per gallon of water per acre. Spraying started on June 1st when larval hatch was completed and surveys showed that good control was obtained in sample areas within three days of application of the insecticide. However, when applied at the same concentration a week or more later, approximately 50 per cent of the larval population survived. As a result, all plantations treated after June 7 were resprayed with DDT. Chemical control of the adults in 1965 were encouraging so controlled experiments on a larger scale were carried out in September 1966. Several plots in Christmas tree plantations in Mulmur Township were sprayed with one part of 25 per cent emulsifiable concentrate DDT to three parts of water by mist blower. The results will be assessed in 1967.

A polyhedral virus disease was used against the insect in many plantations in the region. Examination of treated areas after spraying revealed that excellent control was obtained when the virus was applied before the fourth larval instar. In Lake Simcoe District, sufficient virus to treat 550 acres in ten townships was distributed in private plantations, County forests and shelterbelts (Table 2). An extensive virus recovery program was repeated in 1966 by Department of Lands and Forests personnel in co-operation with the Forest Research Technician. Twenty-two quarts of diseased larvae were collected for virus extraction.

TABLE 2

Summary of Distribution of Polyhedral Virus Disease to Control *Neodiprion sertifer* (Geoff.) Populations in Lake Simcoe District in 1966

Location (township)	Number of acres sprayed by				Virus by oz. distributed
	Pack sprayer	Mist blower	Aircraft	Hydraulic	
Albion	48	50	50	-	56
King	54	-	-	20	24
Mulmur	20	-	-	-	8
Adjala	12	36	-	-	20
Uxbridge	60	-	-	-	22
Whitchurch	10	-	85	-	38
Nottawasaga	-	30	-	-	12
Tecumseth	-	10	-	-	5
Tosorontio	-	5	-	-	2
W. Gwillimbury	-	60	-	-	24

Normally larvae in cocoons transform to the pupal and adult stages in the fall. In June 1966, up to 80 per cent of cocoons examined at points in Mulmur and Keppel townships contained larvae in prolonged diapause. As a result it may be necessary to carry out control operations in more than one year. Marked increases in numbers of parasites were recorded at several locations. Swarms of adults of two species, Exenterus canadensis Prov. and Exenterus amictorius (Panzer) were observed attacking late instar N. sertifer larvae at points in Tiny, Vespra, Mulmur, Melancthon, Mono and Albion townships. Approximately 40 per cent of overwintering cocoons collected in mid-May were killed by these species at one location in Tosorontio Township.

Larch Sawfly, Pristiphora erichsonii (Htg.)

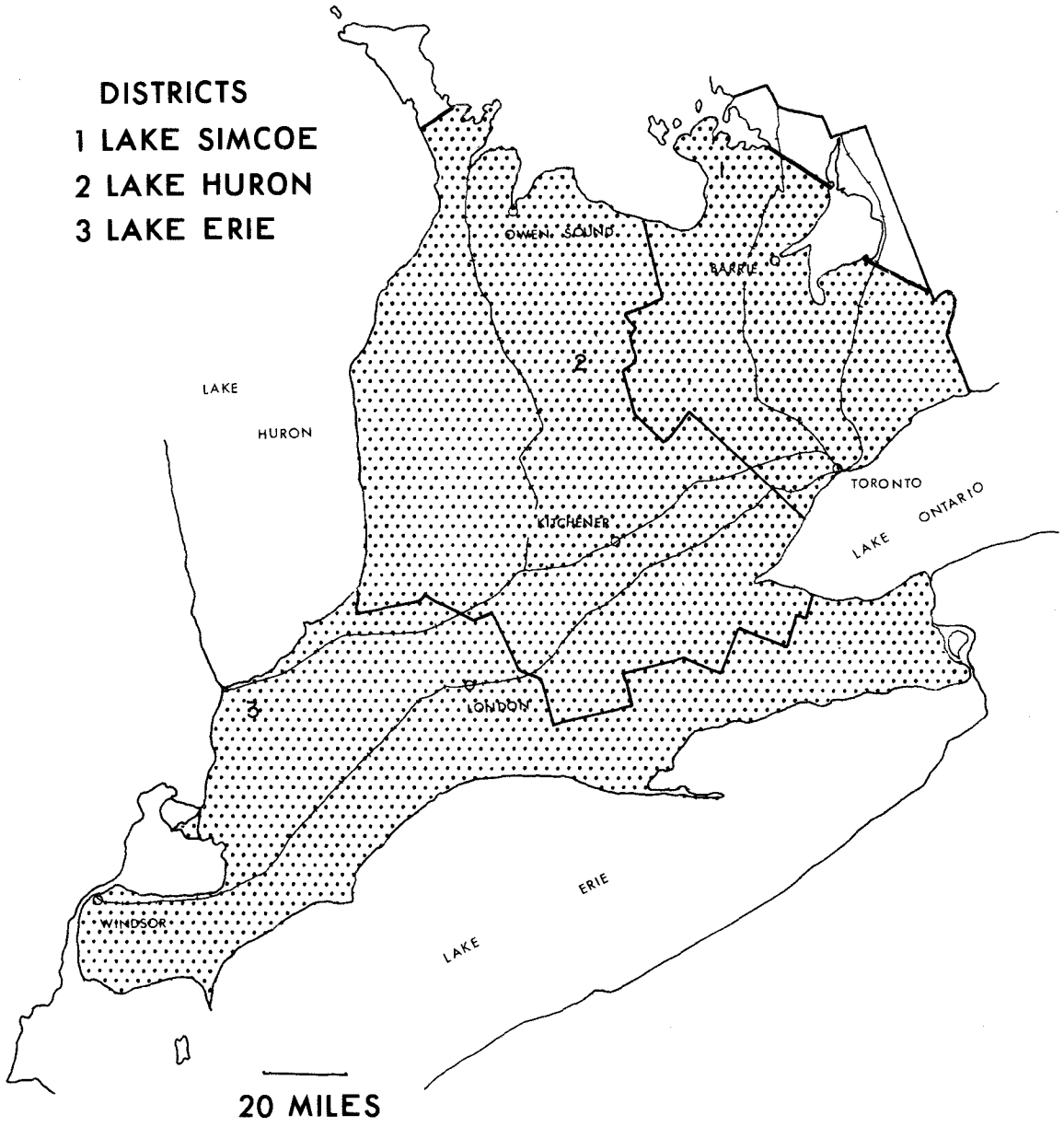
High populations of this insect prevalied in older European and Japanese larch plantations in Lake Simcoe and Lake Erie districts and in tamarack stands in the northern part of the Bruce Peninsula (see map). Seventy-five to 100 per cent defoliation occurred commonly in Lake Simcoe District and at scattered points elsewhere in the region.

Infestations were generally light to medium in younger plantations in Lake Simcoe District, except in Orr Lake and Wildman forests where heavy infestations recurred. At a sample point in Uxbridge Forest oviposition occurred on 100 per cent of the current shoots examined and 80 per cent tip mortality resulted. In contrast, a sharp decline in population levels occurred in Oro Township where only six per cent of the tips were affected compared with 60 per cent in 1965 (Table 3). Defoliation was light and only two cocoons were found in two, 3-foot traps compared with over 100 in recent years. Infestations in natural tamarack stands were generally light with occasional small pockets of medium intensity. Various species of birds fed extensively on late instar larvae near Orr Lake in Medonte Township.

In Lake Huron District medium to heavy infestations occurred in numerous pockets of tamarack in St. Edmund and Lindsay townships. Sequential sampling in St. Edmund Township revealed that 48 per cent of the new shoots were curled as a result of oviposition. Moderate defoliation was common in Eastnor Township and light damage, with occasional pockets of moderate damage, occurred generally in Albemarle and Amabel townships. Heavy infestations in small clumps of tamarack and European larch caused 50 to 75 per cent defoliation at numerous locations in Artemesia, Derby, Howick and Grey townships.

In Lake Erie District a heavy infestation recurred in South Walsingham Township for the fourth consecutive year and medium infestations persisted in Howard Township. Medium infestations recurred on mature European and Japanese larch at St. Williams forest nursery. Population levels were very low in the Turkey Point Nursery where heavy infestations were sprayed with Malathion in 1965. However, one mile south of this area a new infestation occurred in a European larch plantation causing moderate defoliation.

SOUTHWESTERN REGION



EUROPEAN PINE SAWFLY

Known distribution in the Region
in 1966

Legend

Known distribution . . . . .

Sequential sampling to determine population densities was carried out at five points in the region. The results, based on the percentage of curled tips caused by adult oviposition, are summarized in Table 3.

TABLE 3

Summary of Curled Shoot Counts and Degrees of Infestation of the Larch Sawfly in the Southwestern Region from 1964 to 1966

Location (township by district)	Host	Av. d.b.h. in inches in 1966	Per cent of tips curled 1964	1965	1966	Degree of infestation 1964	1965	1966
Lake Simcoe								
Oro	eL	7	65	60	6	H	H	L
Uxbridge	eL	9	35	70	100	H	H	H
Lake Huron								
St. Edmund	tL	8	16	50	48	M	H	H
Lake Erie								
Howard	eL	10	4	20	22	L	M	M
S. Walsingham	eL	10	60	44	28	H	H	H

STATUS OF TREE DISEASES

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Pk.

The status of this disease was unchanged in 1966. Moderate branch mortality and light stem mortality recurred on white spruce and black spruce trees in the northern part of the Bruce Peninsula and heavy infections were noted on white spruce trees in Flos and Orillia townships for the second consecutive year.

Armillaria Root Rot, *Armillaria mellea* (Vahl ex Fries) Kummer

This disease was associated with tree mortality at several locations in the region. An infection centre in a plantation in Oro Township continued to advance in all directions from an old maple stump, killing several red pine saplings and causing a typical circular opening in the stand. A new infection centre at Midhurst Nursery spread from an old maple stump located in a cedar hedge and killed cedars for about 25 feet on both sides of the stump.

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

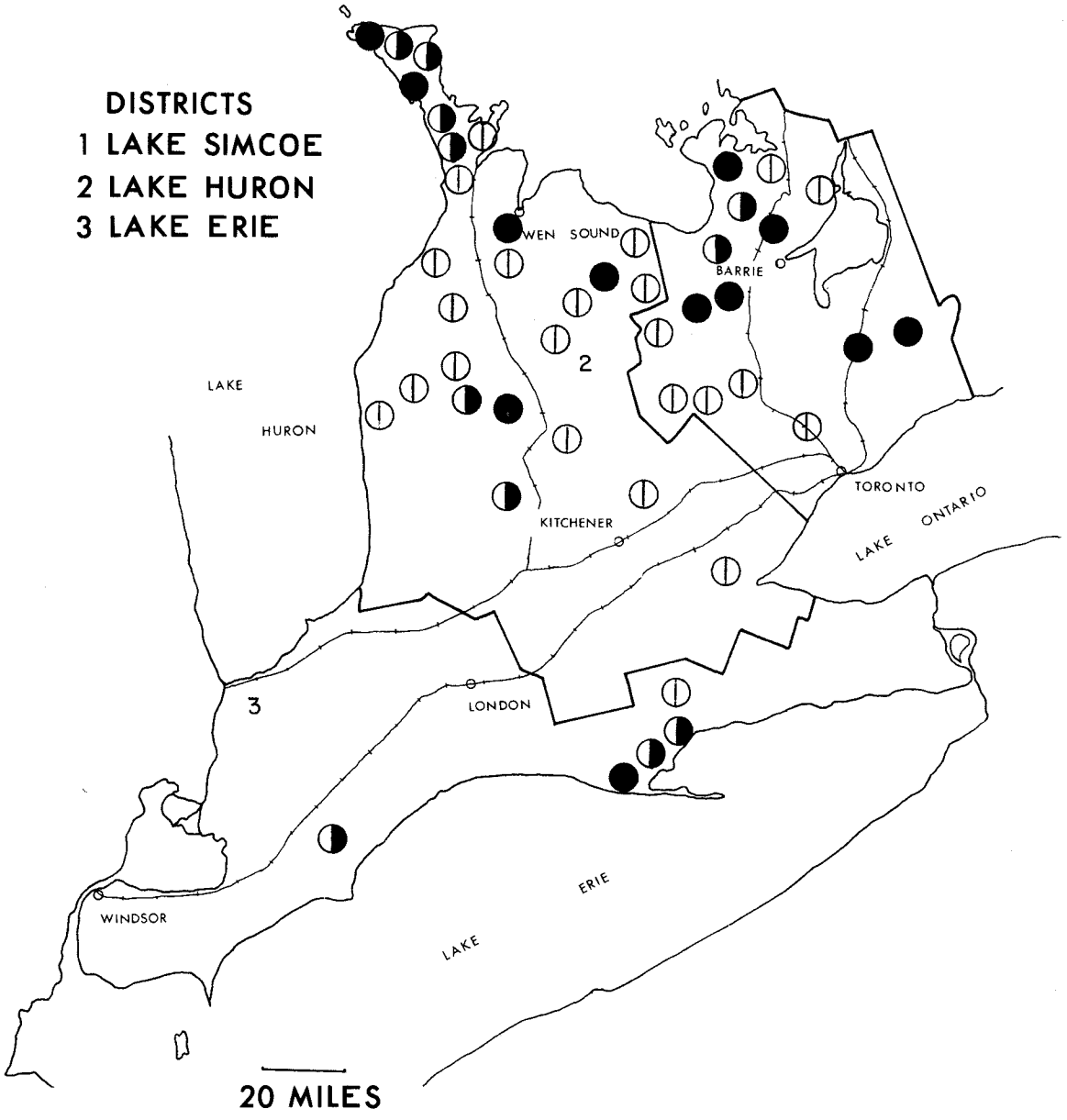
The incidence of infection and mortality of elm trees caused by the Dutch elm disease increased alarmingly in 1966. This increase seemed to be closely related to the vectors, the smaller Elm Bark Beetle, Scolytus multistriatus (Marsh.) and the Native Elm Bark Beetle, Hylurgopinus rufipes Eich. (see photographs). Extensive surveys conducted in the region showed the incidence of infection varied widely, and that mortality reached 100 per cent in pure stands at several points (Table 3). Tree mortality and incidence of infection were generally highest in the Toronto-Hamilton-London area. This condition possibly resulted from inadequate sanitation of trees killed by mechanical disturbance and attraction of adult vectors by city illumination. Generally, the degrees of infection varied greatly between swamp, field and roadside trees, averaging 83, 68 and 46 per cent respectively. Rapid advance of the disease from tree to tree through root grafts probably resulted in the higher degree of infection in fence row and dense stands.

In Lake Simcoe District, surveys at 45 locations showed that the incidence of infection increased generally in 1966 particularly between Lake Ontario, Orangeville and Markham in the southern part of the district. For example, the incidence of infection increased from 25 to 80 per cent at a sample point west of Toronto. As in recent years, the degree of infection gradually diminished from heavy in the south, to pockets of medium and heavy in the central parts of the district, and to light levels of intensity in the northern part of Simcoe and throughout most of Ontario County.

Surveys at 54 locations in Lake Huron District showed that the most notable increases of disease incidence occurred in the south and west-central parts of the district and in Bruce and Grey counties. Damage appraisals at points of relatively high infection throughout the district revealed that on the average, 73 per cent of the trees were either dead or infected. The average degree of infection in the southern part of the district was approximately 50 per cent and in the north 10 per cent.

Surveys at 41 locations in Lake Erie District showed that the incidence of infection averaged 60 per cent. A high percentage of the elm trees in the district have died and been removed in the past 10 years and few healthy elm trees remain. New infections were observed in young stands developing in the Windsor area, and surveys of 29 English elm trees at Port Stanley showed that 15 were dead and that five others were infected.

SOUTHWESTERN REGION



LARCH SAWFLY

Locations where infestations were observed in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

TABLE 3

Summary of Dutch Elm Disease Surveys carried out at 140 Locations in the Southwestern Region in 1966

District	Stand type	No. of locations	Total trees	No. living trees infected	No. dead trees	Incidence infection by per cent
Lake Simcoe	Roadside	35	1524	261	296	37
	Swamp	9	530	132	238	70
	Field	1	60	21	39	100
Lake Huron	Roadside	11	425	197	55	59
	Swamp	19	1005	324	481	80
	Field	24	981	473	219	70
Lake Erie	Roadside	10	537	87	139	42
	Swamp	3	100	4	96	100
	Field	16	382	57	227	74

White Pine Blister Rust, Cronartium ribicola J. C. Fischer

No significant changes were recorded in the status of this disease in 1966. Heavy and medium infections recurred in Melancthon and Euphrasia townships respectively. Although the incidence of infection approximated 75 per cent in some areas stem mortality generally remained light. Pockets of moderate and light infection occurred in numerous white pine plantations in the Lake Simcoe and Lake Huron districts. Ribes spp. were generally prevalent in areas of infection.

Cytospora Canker of Spruce, Cytospora kunzei Sacc.
and the perfect stage, Valsa kunzei Fries

The rate of tree mortality lessened in a small Norway spruce plantation near Shelbourne due to this pathogen in 1966. Cumulative tree mortality approximated 40 per cent at the end of September, compared with 35 per cent in 1965. Studies of the development of stem cankers on white spruce trees in a 35-year old plantation at Midhurst were continued. Cankers outlined on ten sample trees in 1965 were remeasured and their current periphery marked. Since 1965, the cankers have increased 20 per cent in length and 34 per cent in width. Some sample trees were almost girdled. For example, one canker measured 19.5 inches radially on a tree 22 inches in circumference at breast height. These studies will be continued in 1967. Branch and stem cankers were common on all species of spruce in the region.

Black-knot of Cherry, Dibotryon morbosum (Schw.) Theiss. & Syd.

For the third consecutive year severe local infections occurred commonly in clumps of eastern choke cherry, particularly in Lake Simcoe and Lake Huron districts. Stem mortality approximated 75 per cent in Amabel, Ashfield, Collingwood, Nottawasaga and Toronto townships, and branch mortality was heavy at numerous locations elsewhere in the region.

Fomes Root Rot, Fomes annosus (Fries) Cke.

This root rot disease continued to cause tree mortality in a 30-year-old red pine plantation in Orr Lake Forest, Medonte Township where 18 trees died in 1966. Trees continued to die in an old infection centre at St. Williams Forest Nursery but no new tree mortality was observed at an old infection centre in Vivian Forest, Whitchurch Township. Widespread use of sodium nitrite solution painted on newly-cut stumps to control the disease was continued.

Hypoxylon Canker of Poplar, Hypoxylon mammatum (Wahl.) Miller

No noticeable change occurred in the status of this disease in 1966. Light, medium and heavy infections were common in trembling aspen stands and damage exceeded 75 per cent in some areas. Stem cankers either girdle and kill pole-sized trees in three to four years, or predispose them to windthrow.

This disease organism was previously known as H. pruinatum (Klotsche) Cke.

A Pine Rust, Peridermium sp.

Severe infections caused moderate branch mortality of numerous Scots pine trees in East Wawanosh, Glenelg, Colborne, Essa and Tosorontio townships. Light infections were common on Scots pine and jack-pine trees at one point in Arran Township.

Butt Rot of Conifers, Polyporus tomentosus Fries.

This organism continued to cause deterioration and mortality of white spruce trees at four known locations in the Barrie area. Two large trees died and several others showed advanced symptoms of infection in shelter rows in the Midhurst Nursery. In late September, sporophores attached to the roots of infected trees were common at points in Vespra, Innisfil, Tosorontio and Essa townships.

Deterioration of Roadside Maples

For the second consecutive year the per cent of trees affected by this condition along major highways remained very high. Counts were made at 25 widely-scattered points to determine the levels of incidence and the degrees of mortality. The overall incidence of infection was 71 per cent in the region. A notable increase occurred in Lake Huron District where 84 per cent of the trees at sampling points were affected, compared with 45 per cent in 1965. Little change in incidence occurred in the Lake Simcoe District (79 per cent) and in the Lake Erie District (43 per cent). Average mortality increased from seven to 17 per cent in 1966. Highest mortality 96, 67 and 30 per cent occurred in Yarmouth, Caledon and McKillop townships respectively.

Symptoms of disease such as leaf scorch and premature defoliation were abnormally late. This unusual delay was attributed to prolonged drought reducing the uptake and translocation of road salt which seems to play an important role in roadside maple decline. Although sugar maple trees are by far the most sensitive species to salt injury, silver maple, red maple and Norway maple are commonly affected. The results of observations made at 25 sampling points are summarized in the following Table.

TABLE 4

Summary of Sugar Maple Deterioration in the Southwestern Region in 1966

Location (township)	No. of trees	No. of infected trees	Per cent trees infected	Mortality by per cent
Lake Simcoe				
Vespra	30	30	100	23
Caledon	60	58	97	67
Tosorontio	20	20	100	0
Amaranth	30	30	100	0
E. Garafraxa	45	9	20	0
Lake Huron				
N. Dumfries	17	11	65	6
E. Zorra	22	11	50	0
E. Nissouri	45	42	93	7
E. Wawanosh	60	36	60	0
Goderich	36	36	100	3
Usborne	60	60	100	10
McKillop	20	20	100	30
Glanford	39	23	70	0
Nichol	54	52	96	0
Erin	29	27	93	4
Wellesly	15	14	93	7
Lake Erie				
Bertie	40	4	10	0
Caradoc	47	47	100	2
Gore of Camden	19	0	0	0
Grantham	20	0	0	0
Malahide	25	18	72	20
Plymton	13	3	19	0
Townsend	16	0	0	0
Warwick	22	3	7	4
Yarmouth	20	20	100	96

Drought Injury

Prolonged drought and high temperatures caused heavy tree mortality at numerous locations in 1966. In Lake Simcoe District up to 95 per cent mortality occurred in late spring pine and spruce plantings and up to 60 per cent in several one and two-year-old plantations in Simcoe County. Mortality of six per cent was recorded in a 5-year-old red pine plantation in Base Borden, and 13 per cent of the current shoots were severely damaged on living trees. Up to 60 per cent mortality of seedlings and transplants occurred in some nursery beds at Midhurst. Natural growing pole-sized white pine, white spruce, red cedar, white cedar, red oak, white oak, bur oak, sugar maple and other tree species growing on shallow soils were severely damaged in the Severn River - Georgian Bay area.

In Lake Huron District 75 to 90 per cent mortality of spring planted coniferous trees occurred commonly. In many instances, only those trees that were shaded by bordering stands survived. Approximately 50 per cent mortality of 6-year-old white pine and white spruce trees was recorded in a 15-acre plantation in Puslinch Township. White pine mortality was also observed at widely-scattered points elsewhere in the southern part of the district. Drought conditions were evident on Bruce Peninsula where white birch, trembling aspen and tamarack shed their foliage prematurely.

Scorch

Although this condition was widespread on a wide variety of deciduous hosts, it was less severe than in recent years. Severe foliar discolouration and premature leaf drop was observed on sugar maple, red oak, white elm and basswood trees at several locations.

Frost Injury

In 1966, frost injury was lightest on record since 1964.

Moderate damage to white ash trees was observed at several points in the region, and to sumac shrubs and red oak foliage at widely-scattered locations. Bud damage to white spruce and balsam fir averaged about five per cent in low-lying areas.

Salt Damage

Due to salt spray drift from paved highways, the foliage of several species of pine, cedar and spruce was severely damaged in several areas in the region. In Lake Simcoe District the condition was particularly prevalent along the east side of Highway 400.

In Lake Huron District the condition was especially noticeable in the central and northern parts. Influenced by prevailing winds, damage was generally heavier on the east side of highways and on trees growing near sharp curves and hills. Several other coniferous tree species suffered light to moderate damage.

Storm Damage

A severe wind storm on July 12 caused notable damage to trees along the Lake Erie shoreline in the southern part of Essex County. At Caboto's private park in South Colchester Township, 12 mature Manitoba maple trees were blown over and numerous silver maples suffered severe branch damage. In the immediate area mature walnut, honey locust and other ornamental trees were uprooted.

TABLE 5

Other Noteworthy Organisms in the Southwestern Region in 1966

Organism	Host(s)	Remarks
Caliciopsis pinea Pk.	wP	Common in one plantation in Adjala Township
Camarosporium robiniae (West.) Sacc.	Hon, Lo	Causing light and severe branch damage in Oakland and Mulmur townships respectively
Ciborinia whetzelii (Seaver) Seaver	tA	Heavy and moderate leaf damage in Scott and Flos townships respectively
Coccomyces hiemalis Higgins	pCh	Common in Charlotteville Township
Coleosporium asterum (Diet.) Syd.	rP, jP	Light and medium infections common on foliage on lower crowns
Cryptodiaporthe salicina (Curr.) Wehm.	W	Light and moderate branch damage in Amabel Township
Cytophoma pruinosa (Fries) Hoehn.	wAs	Associated with branch mortality in Orillia Township
Cytospora chrysosperma (Pers.) Fries	W, cPo, tA	Cankers associated with tree mortality at several locations
Dermea balsamea (Pk.) Seaver	bF	Common on dead branches of living trees at one point
Diaporthe eres Nit.	Do	Continued to cause light and moderate branch mortality at scattered locations
Diplodia pinea (Desm.) Kickx = Macrophoma sabinea (Fries) Petrak	rP, eL	Light infection in Adjala and Whitchurch townships
Dothichiza populea Sacc. & Briard.	lPo, sPo	Caused heavy mortality in the region
Endothia parasitica (Murr.) A. & A.	sChe	Light infections common
Eutypella parasitica Dav. & Lor.	sM, siM	Cankers common throughout the region
Exosporium tiliae Link	Ba	Common at one point in Medonte Township
Fomes pini (Thore) Lloyd	wS	Fruiting abundant on dead stem at one point
Fomes pinicola (SW.) Cke.	wS	Fruiting observed at one point in Uxbridge Township

TABLE 5 (continued)

Organism	Host(s)	Remarks
Fomes roseus (Alb. & Schw. ex Fr) Cke.	wS	Fruiting on dead stumps
Gymnosporangium claviforme (Pers.) D.C.	J	Heavy infections in localized pockets in St. Edmund Township
Gymnosporangium juniperi - virginianae Schw.	J	Heavy infections common in St. Edmund Township
Gymnosporangium sp.	rC, Haw	Light infections in several areas
Lenzites saepiaria Wulf. ex Fries	wS	Fruiting on dead stumps
Lophodermium juniperinum (Fr.) de Not.	J	Severe foliar damage at one point in Matchedash Township
Lophodermium pinastri (Schrad. ex Fr.) Chev.	scP, nP	Associated with severe tree damage in Mono and Vespra townships
Ophionectria cylindrospora (Sollm.) Berl. & Vogl.	mP	Fruiting abundant on dead branches at one point
Pestalotia funeria Desm.	eC	Heavy cast in Vespra and Melancthon townships
Pezicula ocellata (Pers.) Seaver	W	Fruiting common on dead stems in Ashfield Township
Pollaccia radiosa (Lib.) Bald & G.F.	tA, ltA	The heaviest infection was noted in Euphrasia Township where 75 per cent of the new shoots in the upper third of crowns of large tooth aspen were damaged. Light infections were common in trembling aspen stands elsewhere
Polyporus odustus Willd. ex Fries	nS	On dead trees in Melancthon Township
Polyporus hirsutus (Wulf.) ex Fries	wB, wAs	Infections observed at two points in Notawasaga Township
Polyporus perennis (L.) Fries	wS	Fruiting at one point in Essa Township
Poria obliqua (Pers. ex Fr.) Bres.	E	Conk at ground level on one living tree
Puccinia graminis Pers.	Barberry	Foliar rust and fruiting on foliage and branchlets in E. Gwillimbury Township
Rehmiellopsis balsamea Wat.	bF	Light in Glenelg Township
Rhizosphaera pini Corda (Mauble)	bF	Associated with needle cast in Medonte Township

TABLE 5 (continued)

Organism	Host(s)	Remarks
Scoleconectria scolecospora (Bref.) Seaver	wP	Infections severe on few ten-foot trees. Incidence less than 1 per cent
Septomyxa tulasnei V. Hoehn.	mM	Heavy damage to small branches at one location
Tubercularia vulgaris Tode	sM, cE	Fruiting common on dead and dying branches at scattered locations
Tympanis pinastri Tul.	rP	Fruiting common on recently killed branches at one point
Valsa friesii (Duby) Fckl.	bF	Commonly associated with branch cankers

STATUS OF INSECTS IN LAKE SIMCOE DISTRICT

A. A. Harnden

Black-headed Budworm, Acleris variana Fern

Light to medium infestations of this insect have persisted in white spruce plantations in Uxbridge Forest Headquarters Tract since 1959. The number of larvae counted on 20-tray beating samples ranged from 15 in 1962 to 75 larvae in 1961. Forty-six larvae were counted on one 20-tray sample in 1966.

Cedar Leaf Miners, Argyresthia thuiella Pack, and
Pulicalvaria thujaella Kft.

Little change in the status of these leaf miners was noted in 1966. Pockets of medium and heavy infestation caused conspicuous discoloration and premature shedding of the foliage of cedar in a large part of the district. Heavy infestations since 1962 in a 40-mile wide band through the central part of the district have caused severe branch mortality and some tree mortality.

Strawberry Root Weevil, Brachyrhinus ovatus Linn.

Root damage by larvae of this weevil is usually confined to seedlings. However, in a plantation in Mulmur Township the rootlets of 4-foot white spruce trees were severely damaged in 1966. Examination of the roots of small trees revealed that most of the rootlets were eaten. Heavy root damage resulted in drooping of the current year's shoots and tree mortality. Fifteen larvae were counted in a 4-square-foot soil sample taken from under a severely damaged tree.

Jack-pine Resin Midge, Cecidomyia reeksi Vock.

Moderate to heavy damage of jack pine shoots was caused by this insect at many points in older plantations in the district. In the townships of Whitchurch, East Gwillimbury, Innisfil, Essa, Vespra, Sunnidale and Tosorontio up to 75 per cent of the current shoots were killed and the remainder severely damaged. Heavy infestations in recent years have retarded and distorted the growth of infested trees.

A Midge on Red Pine, Cecidomyia sp.

A little-known midge caused medium to heavy damage to the current year's foliage of red pine trees in late summer in plantations in Vespra, Essa, Tosorontio, Sunnidale and Oro townships for the second consecutive year. Approximately 50 per cent of the needles were killed and prematurely shed in 1966 compared with 75 per cent in 1965. Noticeable thinning of the crowns of host trees has resulted.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Infestations of this insect occurred at three locations in the district in 1966. Infestations annually causing about 50 per cent defoliation of new foliage for the past 14 years in a 35-to-45-year old white spruce plantation in Uxbridge forest persisted. Egg surveys in the fall revealed an increase in numbers from 68 in 1964 to 200 and 332 clusters per 100 square feet of foliage in 1965 and 1966 respectively. Medium infestations recurred in younger adjacent compartments where defoliation increased from 40 per cent in 1965 to 55 per cent in 1966.

Population levels remained low in a 35-year old white spruce plantation at Midhurst. A medium infestation that occurred on blue spruce ornamentals along Highway 400 in West Gwillimbury Township in 1965 declined to light intensity, and defoliation dropped from 45 per cent to 15 per cent.

A new heavy infestation occurred in a 25-year old white spruce plantation in Tosorontio Township. Defoliation averaged approximately 75 per cent and typical discoloration of the foliage was evident.

Larch Casebearer, Coleophora laricella Hbn.

A heavy infestation of this insect declined to medium intensity in a small European larch plantation in Vivian County Forest in 1966. However, discoloration of the foliage was noticeable over the entire crown of infested trees. As in 1965, no larvae were found in plots at sample points in Vespra and Uxbridge townships. In Albion Township the average number of larvae counted per 18-inch branch tip increased from 2 in 1965 to 22 in 1966 (Table 6).

TABLE 6

Summary of Larch Casebearer Larval Counts in Lake Simcoe District in 1965 and 1966

Location (township)	Av. d.b.h. in inches in 1966	Av. no. of larvae per 18-inch branch tip	
		1965	1966
Medonte	4	1	2.2
Albion	5	2	22.2
Whitchurch	8	0	0.9

Pitted Ambrosia Beetle, Corthylus punctatissimus (Zimm.)

Infestations of this beetle persisted in sugar maple coppice growth at approximately the same levels as in 1965. Light infestations were common and medium to heavy infestations were observed at widely-separated points in the district. In a recently thinned stand in East Gwillimbury Township approximately 30 per cent of the reproduction was infested and most of the infested stems were killed.

Sample plots were established in 1962 to study the effects of infestations on sugar maple reproduction. Results revealed that stems with root-collar diameters between 2 and 17 millimeters were selected by the adult for brood trees. The incidence of attack was considerably lower in shaded areas than in the open. Conversely, accumulative mortality was higher in the shade where due to slow growth the trees were susceptible to attack for several years. Although infestations were heavier in the open areas, rapid growth shortened the susceptible stage and a high percentage of the trees escaped.

A Tortricid on Oak, Croesia semipurpurana Kft.

Following an interval of four years, heavy infestations of this insect occurred at several points in the district in 1966. Up to 70 per cent of the foliage of red oak trees was destroyed in the townships of Mulmur, Medonte and Whitchurch. A new medium infestation occurred at one location in Oro Township, and light infestations were common in the district.

Zimmerman Pine Moth, Dioryctria zimmermani Grt.

A noteworthy infestation of this insect persisted in the current shoots of red pine in a 25-year old plantation in Base Borden. Approximately five per cent of the shoots were mined and shed. Heavy infestations recurred in the trunks of 8-inch Scots pine trees at one point near Meadowvale.

Nursery Pine Sawfly, Diprion frutetorum (F.)

Population levels of this sawfly declined for the second consecutive year at most sample points in the district in 1966. Both first and second generation larval populations (see photograph) were generally very low in 1966 (see map).

TABLE 7

Summary of Nursery Pine Sawfly Larval Counts in Lake Simcoe District in 1965 and 1966

Location (township)	Tree species	Av. d.b.h. in inches	Total number of larvae per 15-tray sample	
			1965	1966
Pickering	scP	6	3	0
Reach	scP	6	27	2
Melancthon	scP	5	0	1
Mono	scP	7	3	2
Vespra	scP	5	14	3
Orillia	scP	5	11	2
Oro	wP	5	2	4
Caledon	scP	4	2	0
Markham	scP	4	5	2

European Spruce Sawfly, Diprion hercyniae (Htg.)

Populations of this sawfly declined to very low levels in 1966. The number of larvae per sample in Uxbridge Township declined from 21 in 1965 to four in 1966 (Table 8).

TABLE 8

Summary of European Spruce Sawfly Larval Counts in Lake Simcoe District in 1965 and 1966

Location (township)	Tree species	Total number of larvae per 15-tray sample	
		1965	1966
Vespra	nS	0	3
Medonte	wS	18	5
Mara	nS	6	1
Nottawasaga	wS	0	1
Uxbridge	wS	21	4

Introduced Pine Sawfly, Diprion similis (Htg.)

This sawfly (see photograph) fluctuated considerably in 1966, declining sharply in intensity at some locations and increasing at others, (see Table 9). The most noteworthy decline occurred at a sample point in Pickering Township where 7 larvae were counted on a 15-tray sample in 1966 compared with 67 larvae in 1965. The most notable increase occurred on young white pine trees at one point in Oro Township where 53 larvae were counted on a 15-tray sample in 1966 compared with 8 larvae in 1965. The northeastern boundary of known distribution advanced about 15 miles from a point in Oro township to Orillia in 1966 (see map).

TABLE 9

Summary of Introduced Pine Sawfly Larval Counts in Lake Simcoe District in 1965 and 1966

Location (township)	Tree species	Av. d.b.h. in inches	Total number of larvae per 15-tray sample	
			1965	1966
Markham	scP	6	0	2
Pickering	scP	6	67	7
Reach	scP	5	41	3
Melancthon	scP	4	0	4
Mono	scP	7	3	27
Vespra	scP	5	2	3
Oro	wP	5	8	53
Orillia	scP	4	0	2

Jack-pine Needle Miner, Exoteleia pinifoliella (Cham.)

Heavy infestations of this needle miner have persisted for several years in jack pine plantations in Flos, Vespra, Whitchurch, Uxbridge, Caledon, Adjala and Albion townships. At one point in Albion Township surveys showed 52 per cent of the current year's needles were killed by primary mining compared with 46 per cent in 1965. Approximately 75 per cent of the old needles were mined in the spring by the overwintering generation.

Birch Leaf Miner, Fenusa pusilla (Lep.)

Marked increases in the extent and intensity of infestations of this insect occurred for the second consecutive year. In recent years damage was largely confined to weeping birch and white birch ornamentals but in 1966, heavy infestations occurred in white birch stands over a large part of Nottawasaga Township where approximately 90 per cent of the foliage was heavily mined. Elsewhere in the district most ornamental birch trees were heavily infested and small pockets of heavy infestation occurred at numerous locations in forested areas.

Pales Weevil, Hylobius pales (Hbst.) and the Northern Pine Weevil, Pissodes approximatus Hopk.

These weevils continued to be major pests in Scots pine plantations wherever Christmas trees were harvested for three or more consecutive years and wherever tree mortality was high due to infestations of the root collar weevil, Hylobius radicis Buch. As in past years, the extent of branch damage by adult weevil feeding was related to the amount of brood material in the form of stumps that was available. In Uxbridge Township about 15 rows of young red pine trees bordering a 2-acre clear cut area were severely damaged or killed by P. approximatus adult feeding. A brush mowing machine was used to clear cut and chip the 10-year old trees in this area. The debris and 8-to-10-inch stumps resulting from this operation were highly attractive to adult weevils.

Experimental control measures were carried out against the adults of these weevils in the fall of 1964. Results were encouraging and a large scale control program using two parts of 25 per cent emulsifiable concentrate D.D.T. to three parts of water applied to the trees with a mist blower was undertaken in several Christmas tree plantations in September, 1965. Examination of the plantations in June, 1966, revealed little weevil feeding in the treated sections but severe damage occurred in untreated parts of the plantations.

Pine Root-collar Weevil, Hylobius radicis Buch.

Heavy infestations persisted in Scots pine plantations in seven townships between Thunder Bay Beach north of Penetanguishene and Highway 89 in Simcoe County. Severe mortality of Christmas trees, 55 per cent at one location in Tiny Township, occurred at widely-separated points. In addition, root-collar damage caused discoloration of the foliage and reduced the market value of many other trees.

Populations declined slightly for the second consecutive year in an unpruned 15-year old Scots pine plantation in Base Borden. An average of three larvae per tree were counted in 1966 compared with six larvae in 1965.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

A marked decline in numbers of colonies of this insect occurred in the district as a whole in 1966. For example, at sample points in Tiny Township the number of colonies counted along one mile of roadside declined from 141 to 23 in 1966 (Table 10). Parasitism and predation by birds, were major control factors.

TABLE 10

Summary of Eastern Tent Caterpillar Colony Counts in Lake Simcoe District in 1965 and 1966

Location (township)	Type of plot	Number of tents 1965	1966
Sunnidale	One mile	15	14
Tiny	" "	141	23
Medonte	" "	129	13
East Luther	" "	0	30
Baxter	" "	132	13
Flos	10th "	154	56

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Infestations of this insect declined for the third consecutive year. Light infestations in Tosorontio, Medonte and in the Severn River area declined to very light intensity. No egg bands were found in the fall on 18 trees examined at widely-separated points in previously infested areas in Simcoe County. Therefore, no infestations are expected to occur in the district in 1967.

Balsam-fir Sawfly, Neodiprion abietis Complex

Infestations of this defoliator have persisted on balsam fir trees in the district for several years. As in previous years, infestations were generally light with heavy defoliation confined to the upper six to eight feet of the crown (see photographs).

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Infestations of this insect (see photograph) declined to low levels in Matchedash and Orillia townships but pockets of heavy infestation persisted in Baxter and Mara townships (see map). In Mara Township a Polyhedral virus disease was used for the second year in the late larval stage to promote carry-over of disease. In spite of heavy larval mortality defoliation of infested trees was severe.

Two Jack-pine Sawflies, Neodiprion pratti paradoxicus Ross and N. pratti banksianae Roh.

A medium infestation of N. pratti paradoxicus (see photograph) which had persisted in Nottawasaga Township for two years declined to light intensity in 1966. Defoliation decreased from about 40 per cent in 1965 to 15 per cent in 1966. Parasites probably played a major roll in the decline since swarms of parasite adults were observed attacking colonies in the late larval stage. A medium infestation of N. pratti banksianae (see photograph) recurred on six jack pine trees at one point in Mara Township. A new light infestation occurred in a jack pine shelterbelt near Orillia and scattered colonies were found at widely-separated points in the district (see map).

Spring Cankerworm, Paleacrita vernata (Peck)

Infestations of this looper declined in extent and intensity for the second consecutive year. Small pockets of medium and heavy infestation, largely on fencerow elm trees in Vespra, Medonte and Oro townships caused between 40 and 80 per cent defoliation of host trees (see map). A sharp decline in populations occurred in the late larval period. No pupae were found in a 9-square-foot soil sample taken at one point in Vespra Township where defoliation averaged approximately 75 per cent.

Leaf-folding Sawflies, Phyllocolpa spp. on Poplar

Populations of this leaf-folding sawfly declined at most sample locations in the district in 1966 (Table 11). The heaviest infestation occurred on Carolina poplar at one sample point in West Gwillimbury Township where leaf folds per 100 leaves increased from 53 in 1965 to 80 in 1966.

TABLE 11

Summary of Leaf-folding Sawfly Counts in Lake Simcoe District in 1965 and 1966

Note: Counts were based on the examination of 100 leaves from four trees at each location

Location (township)	Tree species	Number of leaf-folds per hundred leaves 1965	1966
Orillia	tA	4	0
Albion	tA	31	14
Tosorontio	tA	24	12
W. Gwillimbury	cPo	53	80
Adjala	tA	-	22
Tecumseth	tA	-	12

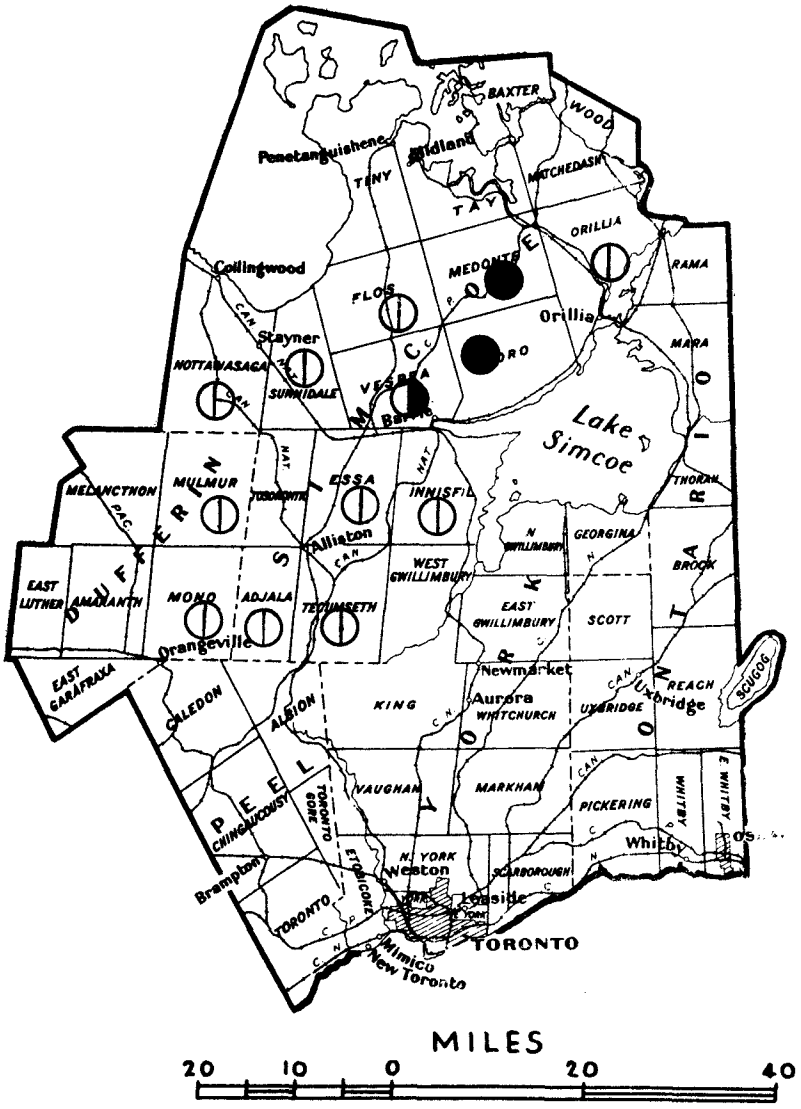
A Leaf Miner on Poplar, Phytagromyza populicola (Hal.)

Heavy infestations of this leaf miner occurred on Carolina and Lombardy poplar wherever examinations were carried out in the district in 1966. In Oro, Amaranth, West Gwillimbury, Tosorontio and Medonte townships as high as 90 per cent of the foliage was infested and 75 per cent of the leaf surface mined.

White-pine Weevil, Pissodes strobi Peck

The incidence of leader damage caused by this weevil varied considerably at sample points and in the district generally (Table 12). The most notable decline in leader damage occurred at one sample point in Whitchurch Township where 26 per cent of the leaders were killed in 1966 compared with 54 per cent in 1965. The incidence of leader attack increased at a sample point in Orillia Township from 11 per cent in 1965 to 45 per cent in 1966 (see map and photographs).

LAKE SIMCOE DISTRICT



SPRING CANKERWORM

Locations where infestations were observed in 1966

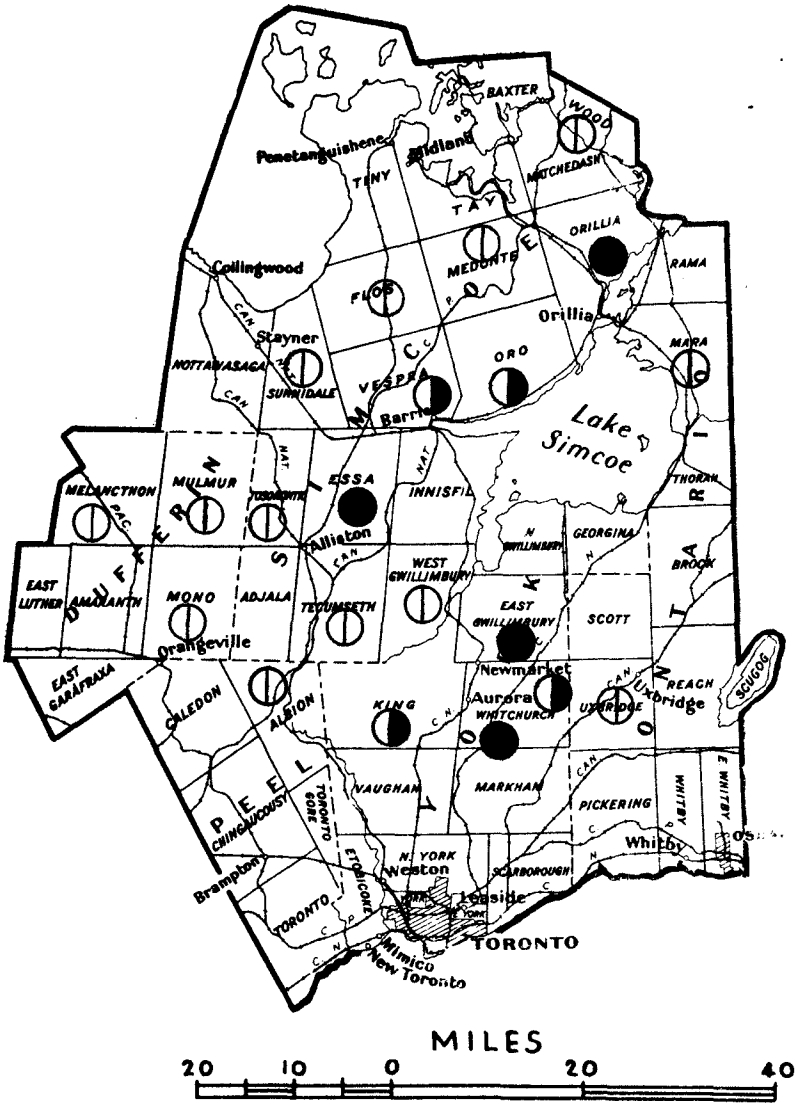
Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

LAKE SIMCOE DISTRICT



WHITE PINE WEEVIL

Locations where leader damage was observed in 1966

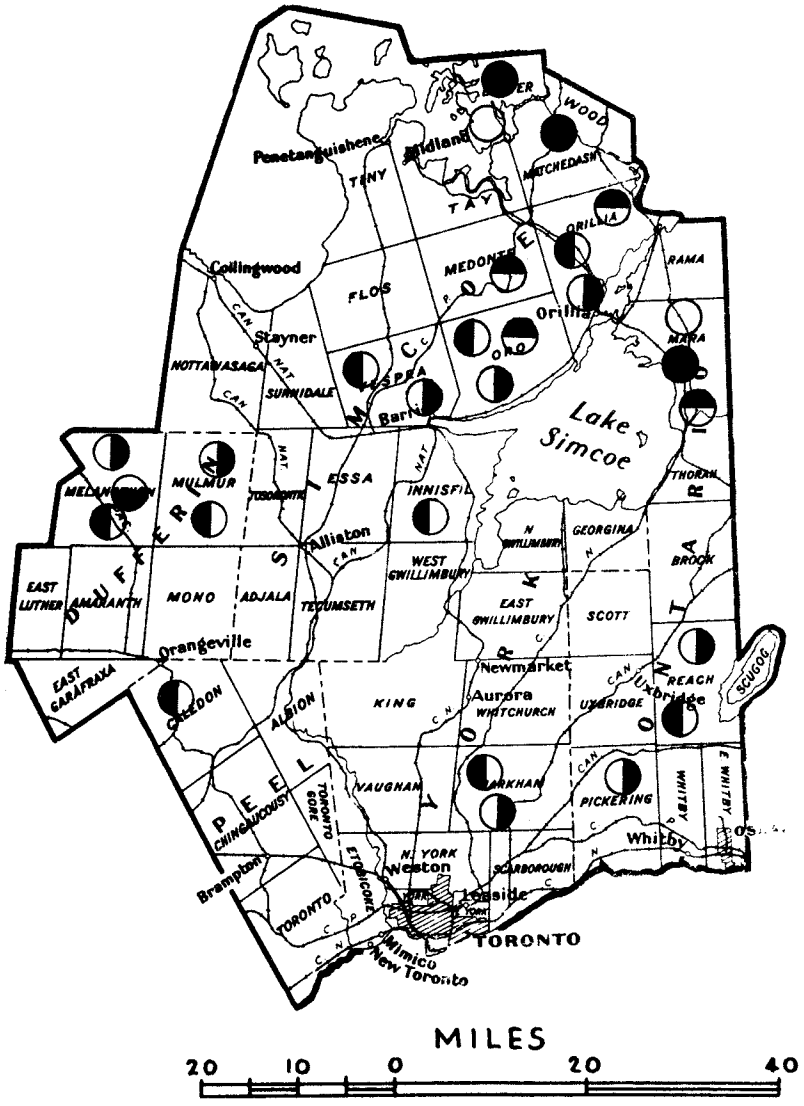
Legend

Light damage. . . . . ◐

Moderate damage . . . . . ◑

Heavy damage . . . . . ●

LAKE SIMCOE DISTRICT



PINE SAWFLIES

Locations where infestations of six species of pine sawflies were observed in 1966

Legend

Neodiprion lecontei (Fitch) . . . ●	Neodiprion virginianus complex . ○
Neodiprion pratti banksianae Roh . ◒	Diprion similis (Htg.) . . . . . ◐
Neodiprion pratti paradoxicus Ross ◒	Diprion frutetorum (F.) . . . . ◑

TABLE 12

Summary of Leader Damage by the White-pine Weevil in Lake Simcoe District in 1965 and 1966

Location (township)	Tree species	Per cent of trees weevilled 1965	1966
Whitchurch	wP	54	26
Matchedash	wP	9	1
Essa	wP	30	45
Orillia	wP	11	45
E. Gwillimbury	wP	65	60
Oro	wP	13	10
Whitchurch	nS	10	11
Vespra	nS	30	17
King	wP	24	19
Mara	wP	65	61

A Poplar Leaf Roller, Pseudexentera oregonana Wlshm.

Pockets of medium and heavy infestation of this leaf roller persisted for the seventh consecutive year in trembling aspen stands in Baxter, Matchedash, Wood, Orillia, Medonte, and Mara townships. Scattered medium infestations recurred in the central part of the district in Adjala, West Gwillimbury, East Gwillimbury, North Gwillimbury, Georgina and Scott townships. Light infestations were common throughout the north half of the district. Heavily infested trees did not refoliate.

Elm Bark Beetles, Scolytus multistriatus (Marsh.) and Hylurgopinus rufipes Eich.

Populations of the Smaller European Elm Bark Beetle, Scolytus multistriatus, increased in the southern part of the district in proportion to numbers of elm trees dying from Dutch elm disease infection (see photographs). Heavy infestations occurred in the area between Lake Ontario, Orangeville and Markham, declining in intensity northwards to a line between Midland and Hawkestone in Simcoe County and northeastward to Lake Simcoe, and to a line between Port Bolster and Cannington in Ontario County. In the southern part of the district competition with the Native Elm Bark Beetle, H. rufipes for brood material was keen. In the remainder of the district heavy infestations of the native species in dying elm trees were common.

TABLE 13

Summary of Miscellaneous Insects Collected
in Lake Simcoe District

Insect	Host(s)	Remarks
Adelges abietis Linn.	nS, wS	High numbers of galls on some trees
Adelges laraciatus (Patch)	wS	Galls common on many trees
Adelges strobilobius Kalt.	nS, eL	Heavy foliage damage of European larch at many points. Galls common on Norway spruce
Agrilus liragus Bary. & Br.	tA	Sucker growth mortality common in most areas
Alsophila pometaria (Harr.)	E, Ba	Light populations at a few points
Altica ulmi Woods	E	Heavy infestations in Baxter Township
Anacampsis innocuella Zell.	tA, ltA	Heavy populations at points in Flos, Mulmur and Medonte townships
Anoplonyx canadensis Hgtn.	eL	Light populations common
Aphrophora parallela Say	scP, wP	Small heavy infestations common, as many as six nymphs per mass
Archippus packardianus Fern	wS, blue	Light infestations along Highway 400
Argyrotaenia pinitubana Kft.	wP	Low numbers seen in the district
Choristoneura pinus Freem.	scP, jP	Light infestations in the flowers of some trees
Chrysopeleia ostryaella Cham.	I	Light infestations declined to low levels
Coleophora ulmifoliella McD.	E	Heavy infestations recurred in North Gwillimbury and Georgina townships
Dasyneura balsamicola (Lintn.)	bF	Heavy infestations recurred at points in Mulmur and Medonte townships
Datana integerrima G. & R.	Wa	Complete defoliation of several trees in Vaughan Township
Datana ministra Dru.	wB, W	Scattered colonies seen at widely separated points
Dendroctonus valens Lec.	rP, scP	Adults common in the lower stem of dying trees.
Dioryctria disclusa Heinr.	scP, jP	Seventy-six per cent of red pine cones infested at Midhurst, light to medium infestations common

TABLE 13 (continued)

Insect	Host(s)	Remarks
Elaphidionoides parallelum Newn.	rO, bO	Branch damage generally light
Epinotia nanana Treit	nS, wS	Light infestations recurred at Midhurst
Erannis tiliaria Harr.	Ba	Larvae rarely seen
Eriophyes populi Nal.	tA, bPo	Galls numerous at some points
Exoteleia dodecella Linn.	scP	Light infestations recurred
Fenusa ulmi Sund.	E	Small pockets of heavy infestation recurred in Chinguacousy, Vespra, and Nottawasaga townships
Gretchena delicatana Heinr.	I	Populations were very low
Hyphantria cunea Dru.	decid-uous	Slight increase to light infestation
Ips chagnoni Sw.	rP	Heavy infestations in dying trees at several locations
Ips pini Say	rP, wP	Heavy populations in dying trees
Leucoptera albella Cham.	bPo	Light infestations common
Lithocolletis aceriella Clem.	sM, rM	Light infestations general in the district
Lithocolletis ostryarella Cham.	I	Light infestations common in Simcoe and Dufferin counties
Lithocolletis salicifoliella Cham.	tA	Light infestations persisted
Macrophya punctum-album (L.)	Privet	Heavy infestations recurred in North York Township
Neodiprion virginianus Complex	jP	A heavy infestation on six trees in Mara Township declined to light intensity. Scattered colonies seen elsewhere (see map and photo-graphs)
Nymphalis antiopa Linn.	decid-uous	Colonies seen at widely scattered points
Oligonychus ununguis (Jac.)	nS	Heavy concentrations suspected of causing rapid tree decline through the south half of the district
Pamphilius ochreipes (Cr.)	Viburnum	Heavy infestations recurred at Midhurst. Life history being studied.
Petrova albicapitana (Busck)	jP	Pitch masses common at points in Whitchurch and East Gwillimbury townships
Phratora purpurea purpurea Brown	tA	Heavy infestations occurred in Uxbridge Township

TABLE 13 (continued)

Insect	Host(s)	Remarks
Pikonema alaskensis (Htg.)	wS	Small heavy infestation recurred in Mara Township. Light populations elsewhere
Pineus strobi (Htg.)	wP, rP	Light infestations persisted in Vivian and Uxbridge forests Medium infestations recurred on the current shoots of young red pine in Adjala Township
Pityogenes hopkinsi Sw.	wP	Heavy infestations in young dying trees
Pleroneura borealis Felt	bF	Although an infestation year populations were low
Phyllocoptes aceris-crumena (Rly.)	sM	Heavy infestations common
Pristiphora geniculata (Htg.)	Mo	Heavy infestations near Orillia, medium in Tiny and Mono townships, light near Caledon
Profenusa lucifex (Ross)	bO	First Ontario record
Recurvaria florae Free.	rP	Heavy infestations in the flowers of red pine trees recurred. Life history studies progressing
Rhyacionia adana Heinr.	rP	Heavy infestations declined to light in Nottawasaga Township
Rhyacionia buoliana (Schiff.)	scP	Light infestation near Orillia
Rhyacionia busckana Heinr.	jP	Light mining of current shoots
Rhynacaenus pallidior (Leng)	Al	Light infestations of this leaf-mining weevil (first Regional record, 1965) recurred in E. Gwillimbury and occurred at several other locations in 1966 Life history studies in progress
Saperda moesta Lec.	tA	Heavy infestations in stems of young trees recurred
Schizura concinna J.E. Smith	nM, bCh, tA, Ap	A few widely scattered colonies seen
Sternochetus lapathi (L.)	bPo, tA	Heavy populations in the stems of young trees in Uxbridge, Essa and Tosorontio townships
Taniva albolineana Kft.	blue spruce	Heavy infestations on ornamental trees along Highway 400 declined to medium intensity
Trisetacus grosmanni Keifer	bF	Infested buds numerous at points in Medonte, Essa and Vespra Townships
Xyela minor Norton	rP	New light infestations in the flowers at widely separated points in the district
Zeiraphera ratzeburgiana Ratz.	wS	Defoliation approximated 40 per cent at points in Tiny, Essa and Uxbridge townships. Light and medium pockets of infestation elsewhere
Zelleria haimbachi Busck.	jP	Light infestations generally

STATUS OF INSECTS IN THE LAKE HURON DISTRICT

R. L. Bowser

Ugly Nest Caterpillar, Archips cerasivoranus (Fitch)

A medium infestation occurred in several small clumps of eastern choke cherry one mile east of Morriston in Puslinch Township causing 50 per cent defoliation of infested trees. Occasional nests were observed elsewhere in the district and damage was generally confined to one or two branches.

Cedar Leaf Miners, (Argyresthia thuiella Pack., Argyresthia aureoargentella Brower, Argyresthia freyella Wlshm., Pulicalvaria thujaella Kft.)

This complex of leaf miners continued to cause severe discolouration of eastern white cedar at several points in the district (see photograph). Moderate to heavy branch tip mortality occurred locally in Grey, Bruce, Wellington, Halton, Waterloo and Huron counties. Usually two or more species were involved but a heavy infestation of one species, Argyresthia aureoargentella Brower, caused severe tip mortality and moderate stem mortality in the Greenough Point area of the Bruce Peninsula.

Jack-pine Resin Midge, Cecidomyia reeksi Vock.

High populations of this insect caused severe shoot mortality on occasional 15 to 20 foot trees in clumps of jack pine in Keppel and Normanby townships (see photograph). Moderate damage recurred in a private plantation west of Berkeley in Holland Township. Light infestations were observed at several other points in the central and northern parts of the district.

In the larval stage this midge feeds in pitch masses on the current shoots. Although damage is generally confined to leaders or occasional laterals the insect has been known to cause mortality of regeneration.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Light infestations occurred more commonly in Grey, Bruce, Wellington and Waterloo counties than in 1965. A light infestation persisted for the third consecutive year in the Grey Main Tract in Glenelg Township. The highest number of larvae was recorded in a white spruce plantation in the Macton Tract in the northern part of Wellesley Township. Small numbers were collected in beating samples from balsam fir trees in Glenelg and Artemesia townships.

Jack-pine Budworm, Choristoneura pinus Free.

Light infestations occurred in jack-pine plantations in Normanby and Keppel townships and in a red pine plantation in Blenheim Township for the second consecutive year. The insect was found in small numbers on jack, red and Scots pine plantings throughout the district.

Larch Casebearer, Coleophora laricella (Hbn.)

Following increases in 1965, larval populations of this insect declined generally in 1966. The most noteworthy decreases occurred at permanent sample points in Amabel, Blandford and South Dumfries townships (Table 6). A slight increase in numbers of larvae occurred in Glenelg Township following a downward trend for four consecutive years. Moderate defoliation recurred in a stand of European larch in the Sandy Hill Tract in Woolwich Township where 69 larvae were counted on two 18-inch branch tips. The total number of larvae on two 18-inch branch tips from European larch and tamarack trees at several other points in the district varied from 12 to 31. A light infestation east of Chatsworth in Holland Township increased to medium intensity.

TABLE 6

Summary of Larch Casebearer Larval Counts at Six Points in the Lake Huron District from 1964 to 1966

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

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. larvae per branch tip		
		1964	1965	1966
Lindsay	6	4.1	5.1	1.2
Amabel	5	11.2	21.4	13.2
Bentinck	5	3.3	7.0	6.1
Blandford	6	12.1	27.7	6.1
S. Dumfries	6	20.5	22.6	3.7
Glenelg	6	15.0	4.4	9.5

Walnut Caterpillar, Datana integerrima G. & R.

Larval populations increased generally in the district for the second consecutive year. Severe defoliation of black walnut trees occurred east of Grand Bend in Stephen Township, in the Thamesford area in East Nissouri Township, in the Tillsonburg area in Dereham Township, near Norwich in North Norwich Township, in the Hamilton-Oakville area and on a few trees in the western outskirts of Owen Sound. Moderate damage was recorded in North and East Oxford townships and in the Paris area in South Dumfries Township. One colony was found on several 20-foot trees west of Tara in Arran Township where a light to medium infestation occurred in 1965.

Yellow-necked Caterpillar, Datana ministra (Drury)

Notable increases in larval populations occurred at two points in the district. Several large white elm trees in the Thamesford area in North Oxford Township suffered 30 to 100 per cent defoliation compared with 10 to 35 per cent in 1965. Twenty-five to 30 per cent defoliation of numerous 20-foot elm trees was noted along Highway 97 in East Zorra Township. Colonies were observed commonly in the Grand Bend-Dashwood area and single colonies were found in Cape Croker, Amabel and Blenheim townships.

A Cone Worm, Dioryctria disclusa Heinr.

Moderate damage to red pine cones recurred in a private plantation near Hanover in Brant Township where thirty-five to 50 per cent of the second year cones were infested. Light damage was noted in red pine plantations in North Norwich and Ashfield townships, in jack pine plantations near Hepworth in Keppel Township and in the Derby Tract in Derby Township.

This moth appears to be more abundant in southern Ontario than elsewhere in the province. Young larvae feed in the staminate cones in the spring. When half-grown the larvae tunnel into second year cones forming a conspicuous entrance hole near the base. Damaged cones seldom produce viable seeds.

Nursery Pine Sawfly, Diprion frutetorum (Htg.)

Quantitative sampling showed minor decreases in numbers at four locations in 1966 (Table 7). Small numbers of larvae (see photograph) were found in white, red and Scots pine plantations within the known range of the insect. Unusually high numbers of pentatomid predators were observed at several sample points.

TABLE 7

Summary of Nursery Pine Sawfly Larval Counts Taken at Four Locations in the Lake Huron District from 1964 to 1966

Location (township)	Tree species	Av. d.b.h. in inches	Total no. larvae per 15-tray sample 1964	1965	1966
Keppel	scP	7	9	18	13
St. Vincent	scP	5	0	6	1
Euphrasia	scP	5	2	5	3
Woolwich	wP	6	1	9	4

European Spruce Sawfly, Diprion hercyniae (Htg.)

Larval populations of this sawfly showed little change at five of seven sampling stations (Table 8). However, a noteworthy increase occurred in St. Edmunds Township where the total number of larvae per 15-tray sample increased from 78 in 1965 to 147 in 1966. In contrast, the number of larvae decreased from 30 to 11 at a sample station in Holland Township. Random sampling of spruce trees at several other locations revealed 11 to 17 larvae per sample.

This European species was first found in Canada in 1922 near Ottawa. Although no serious outbreaks have occurred in Ontario the insect is capable of causing serious defoliation of spruce. For example, an outbreak in the Gaspe Peninsula in the 1930's caused up to 50 per cent mortality of host trees.

TABLE 8

Summary of European Spruce Sawfly Larval Counts Taken from White Spruce Trees at Seven Points in the Lake Huron District from 1964 to 1966

Location (township)	Av. d.b.h. of sample trees in inches	Total no. larvae per 15-tray sample 1964	1965	1966	Date sampled
Albemarle	6	13	62	62	Sept. 12
St. Edmunds	6	47	78	147	Sept. 12
Glenelg	6	9	3	11	Sept. 9
Holland	5	82	30	11	Sept. 9
Woolwich	5	10	5	1	Sept. 10
Euphrasia	6	43	27	33	Sept. 9
Minto	5	9	11	14	Sept. 10

Introduced Pine Sawfly, Diprion similis (Htg.)

Following a decline for two consecutive years, larval populations generally increased in 1966. The most notable increases occurred in white pine plantations in Artemesia and Woolwich townships where the total number of larvae per 15-tray sample increased from eight to 27 and 11 to 45 respectively (Table 9). The insect (see photograph) was found in small numbers at several other locations within its known range.

TABLE 9

Summary of Introduced Pine Sawfly Larval Counts Taken at Seven Locations in the Lake Huron District from 1964 to 1966

Location (township)	Tree species	Av. d.b.h. in inches	Total no. larvae per 15-tray sample 1964	1965	1966
St. Vincent	ScP	5	25	6	8
Artemesia	wP	5	7	8	27
Minto	wP	6	7	1	3
Keppel	ScP	7	26	16	17
Woolwich	wP	6	10	11	45
Beverly	wP	5	2	1	5
Euphrasia	ScP	5	14	6	13

White-pine Shoot Borer, Eucosma gloriola Heinr.

Damage caused by this shoot borer was generally higher than in 1965. The incidence of leader attack in a white pine plantation in Ashfield Township increased from 5 to 23 per cent (Table 10). A heavy infestation recurred in the Brant Tract, Brant Township. Although the number of attacks per tree increased slightly, leader damage decreased from 40 per cent in 1965 to 35 per cent in 1966. In Puslinch Township leader damage decreased from 15 to four per cent. Moderate shoot damage was noted at scattered points in Greenock and Beverly townships. Light infestations occurred commonly on various species of pine throughout the district.

TABLE 10

Summary of Shoot Damage by the White-pine Shoot Borer in Lake Huron District from 1964 to 1966

Location (township)	Host	Av. height of trees in feet	Per cent of trees infested 1964	1965	1966	Av. no. of attacks per infested tree 1964	1965	1966	Per cent of leaders attacked 1964	1965	1966
Ashfield	wP	14	85	80	100	4.0	4.0	12.0	3	5	23
Puslinch	wP	12	100	100	100	10.0	8.0	4.0	8	15	4
Brant	wP	10	-	100	100	-	12.0	14.0	-	40	35

Pine Bud Moth, Exoteleia dodecella Linn.

Light infestations, with bud damage not exceeding 10 per cent, persisted in the district for the third consecutive year (Table 11).

Since this serious pest of pine in Europe was first reported in the province in 1928 localized heavy infestations with up to 60 per cent of the buds damaged, have occurred periodically at scattered locations in southern Ontario. Scots and Mugho pine are the preferred hosts and fringe and open grown trees of all age classes are most susceptible to attack.

During the early larval period the insect mines the needles and damage is negligible. However, mid-to-late larvae feed in the buds of host trees and a single larva may destroy up to three buds.

TABLE 11

Summary of Damage Caused by the Pine Bud Moth to Scots Pine Buds at Three Points in the Lake Huron District from 1964 to 1966

Note: Samples were based on the examination of 500 buds selected at random from 10 trees at each point.

Location (township)	Total no. of buds examined in 1966	Per cent of buds infested		
		1964	1965	1966
Beverly	500	4.2	6.2	5
Glenelg	500	3.0	2.1	2
North Dumfries	500	9.1	12.0	10

Jack-pine Needle Miner, Exoteleia pinifoliella (Cham.)

Heavy infestations of this needle miner were recorded in jack pine plantings in the McIntyre Tract in Kinloss Township, the Ayton Tract in Normanby Township, the Chesney Tract in Blandford Township and in a private plantation near Orchard in Egremont Township. Infested trees suffered up to 75 per cent mining of the old foliage. Light infestations occurred more commonly than in 1965.

Fall Webworm, Hyphantria cunea (Drury)

Following two consecutive years of extremely low numbers webs of this insect were observed commonly in the district in 1966. Severe defoliation of several 8-foot white ash trees occurred near Copetown in Ancaster Township and moderate defoliation of scattered white elm trees was noted between Bright and Hickson in Blandford and East Zorra townships. Light infestations were recorded in the Galt-Paris, Hanover-Durham, Clifford-Harriston and Grand Bend areas.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

Light infestations were more numerous than in 1965, especially in the southern part of the district (see map). A heavy infestation occurred on roadside apple, hawthorn and eastern choke cherry trees on the western outskirts of Salford in Dereham Township where 137 tents were counted in two-tenths of a mile. Medium infestations were recorded in Brant, Amabel and Derby townships, but marked declines were recorded at sample points in Brant, Sullivan and Arran townships (Table 12).

TABLE 12

Summary of Eastern Tent Caterpillar Colony Counts at Seven Points in the Lake Huron District from 1964 to 1966

Location (township)	Number colonies per mile of roadside		
	1964	1965	1966
Brant	95	84	54
Albemarle*	0	0	2
Derby	16	24	38
Sullivan	39	23	6
Amabel*	21	12	23
Guelph	33	19	17
Arran	24	38	12

* square chain plot

Balsam-fir Sawfly, Neodiprion abietis (Harr.)

Following three consecutive years of light to medium infestation several pockets of heavy infestation developed on balsam fir trees in the central and northern parts of the district in 1966. Seventy-five to 100 per cent defoliation occurred commonly in the upper third of the crowns of infested trees. Light infestations persisted on balsam fir in the northern part of the Bruce Peninsula and small numbers were occasionally found on white spruce trees.

Two Jack-pine Sawflies, Neodiprion pratti banksianae Roh., and N. pratti paradoxicus Ross

Jointly these two sawflies (see photographs) have caused light and occasional moderate damage in jack pine plantations in Grey and Bruce counties since 1962. In 1966 light infestations occurred commonly but larval populations were slightly lower than in 1965 (Table 13). N. pratti paradoxicus was the more abundant of the two species in 1966.

TABLE 13

Summary of Colony Counts of Two Jack-pine Sawflies and Estimates of Defoliation of Old Foliage at Four Points in the Lake Huron District from 1964 to 1966

Note: Counts were taken on ten trees at each sample point.

Location (township)	Av. d.b.h. in inches	Av. height in feet	Av. no. colonies per tree			Estimated per cent defoliation
			1964	1965	1966	
Amabel	5	25	2.1	1.0	1.0	5
Holland	3	20	1.0	2.1	1.0	5
Artemesia	4	20	6.0	4.1	1.0	5
Derby	4	20	-	-	2.0	5

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

A light infestation of this sawfly occurred in a natural jack pine stand in the Cameron Lake Forest in St. Edmund Township where an average of five colonies per infested 20-foot tree occurred. This insect (see photograph) was last reported in the district in 1954 when a heavy infestation occurred in Lindsay Township

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Moderate defoliation of white spruce trees recurred in the Riddell Tract in Bentinck Township and a light infestation in the Grey Main Tract increased to medium intensity. The insect was generally found in small numbers at sample points elsewhere in the district (Table 14).

LAKE HURON DISTRICT

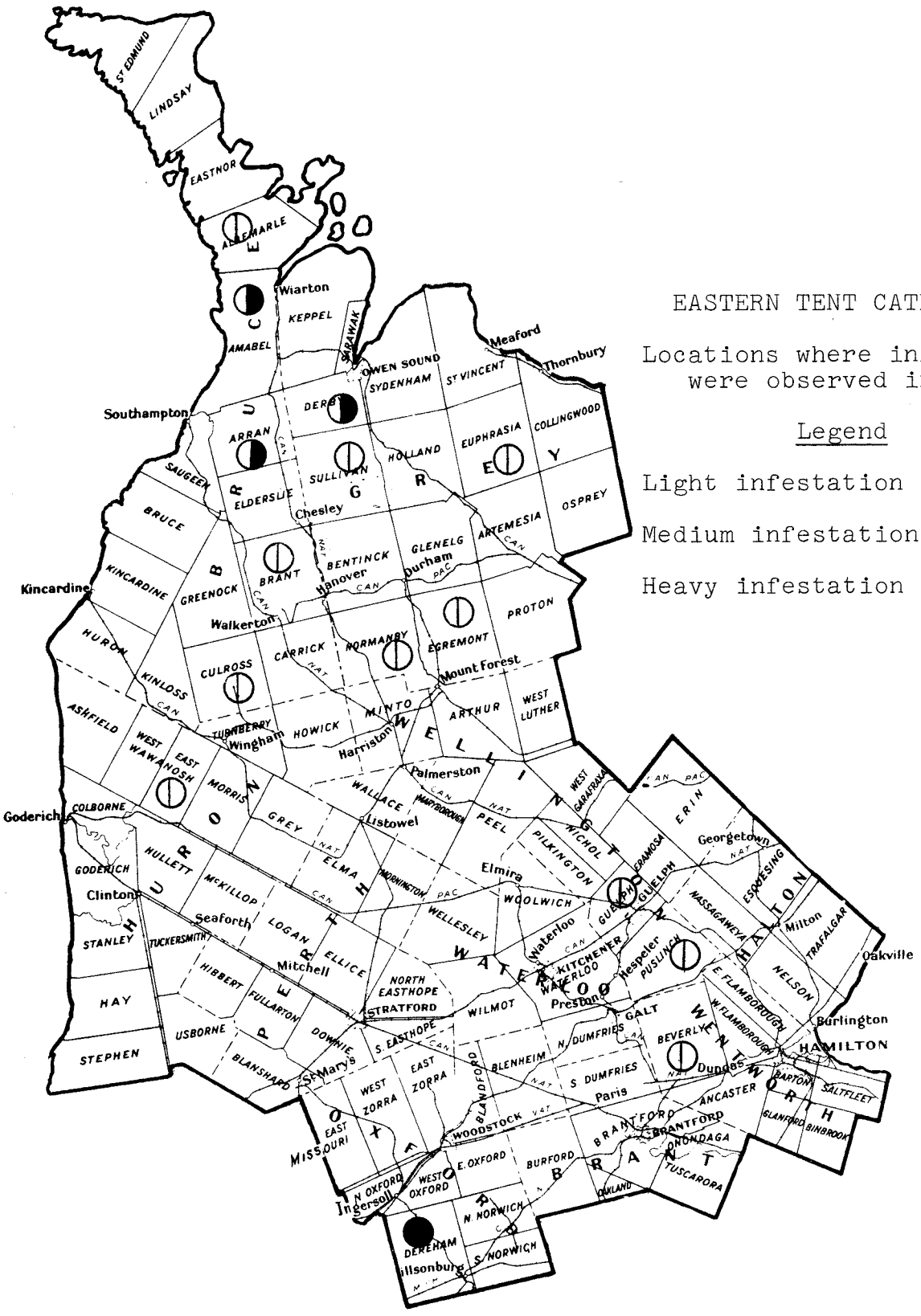


TABLE 14

Summary of Infestations of the Yellow-headed Spruce Sawfly at Eight Points in the Lake Huron District from 1964 to 1966

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

Tract	Township	Per cent of trees infested 1964	1965	1966	Degree of infestation in 1966
Rennie	Euphrasia	75	60	17	L
Rocklyn	Euphrasia	15	8	3	L
Riddell	Bentinck	90	95	50	M
Crawford	Bentinck	50	62	30	L
Main	Glenelg	75	50	35	M
Kenny	Glenelg	35	52	46	L
Minto	Minto	16	4	2	L
Victory	Arthur	4	0	3	L

White Pine Weevil, Pissodes strobi Peck.

Medium to high weevil populations persisted for the third consecutive year in the Riddell Tract in Bentinck Township. Leader damage varied from five to 40 per cent. Increases in the incidence of attack occurred in a section of the Grey Main Tract in Glenelg Township and in the Moir Tract in Cullross Township (Table 15). Light and moderate damage was observed commonly in white pine plantations in the southern part of Bruce County. Damage was generally light elsewhere in the district.

TABLE 15

Summary of Shoot Damage by the White Pine Weevil in Plantations at Two Points in the Lake Huron District from 1964 to 1966

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

Location (township	Av. d.b.h. of sample trees in inches	Per cent of trees infested 1964	1965	1966	Per cent of trees infested all years
Brant Private Plantation	6	3	4	2	65
Culross Moir Tract	4	5	15	24	26

Eastern Subterranean Termite, Reticulitermes flavipes Kollar

An isolated pocket of infestation was first discovered near the C.N.R. station in Kincardine in 1954. In 1966 single colonies were observed on July 5 and August 25 in scattered pieces of timber and slabwood partially buried in the ground. Approximately 100 insects were counted in each colony. Several specimens were preserved and identified at the Forest Research Laboratory in Sault Ste. Marie. Although no intensive surveys were conducted to determine its presence in adjacent buildings no damage was observed.

European Pine Shoot Moth, Rhyacionia buoliana (Schiff.)

A very destructive pest in the 1950's, larval populations of this insect have generally decreased to low levels in the district.

A medium infestation persisted in a four-acre Scots pine plantation near Roseville in North Dumfries Township for the third consecutive year. Light damage recurred in the Kiwanis plantation in Keppel Township and trace populations were observed in red pine plantations in the Bruce Peninsula. All trees were removed from a red pine plantation near Port Elgin where a medium infestation was reported in 1965.

Spruce Bud Moth, Zeiraphera ratzeburgiana Ratz.

Heavy infestations persisted in clumps of fringe and open-grown white spruce trees in St. Edmund Township where up to 90 per cent of the new growth was damaged in many instances. Elsewhere in the Bruce Peninsula light and medium infestations were noted commonly. Light infestations were observed at several locations throughout the remainder of the district.

TABLE 16

Summary of Miscellaneous Insects Collected in Lake Huron District

Insect	Host(s)	Remarks
Acleris variana Fern.	wS	Few larvae collected in beating samples at four locations
Anisota senatoria A. & S.	bO	Moderate defoliation of scattered trees in Blenheim Township. Light infestations occurred in the Ingersoll, Woodstock and Galt areas
Aphrophora parallela Say	jP, ScP, wP	Medium infestation on jack pine in Lindsay Township. Low populations common elsewhere
Argyresthia laricella Kft.	tL, eL	Low populations persisted in the district
Caulocampus acericaulis MacG.	sM	Light infestations occurred commonly in Grey County

TABLE 16 (continued)

Insect	Host(s)	Remarks
Coleophora betulivora McD	wB	Light infestation occurred in Amabel Township
Coleophora fuscedinella Zell.	wB	Found in small numbers in St. Edmund Township
Coleophora ulmifoliella MacD.	wE	Medium infestation in Saugeen Township. Low populations common
Elaphidionoides parallelum Newn.	rO	Light damage in Ancaster and N. Dumfries townships
Epinotia aceriella Clem.	sM	Light infestations common
Epinotia corylana McD.	Al	Light infestation infesting male catkins in Puslinch Township
Epinotia solandriana Linn.	wB	Light and medium infestations in St. Edmund and Lindsay townships respectively
Eucordylea ducharmei Free.	wS	Found on occasional lower branch of small trees in the Patterson Tract
Fenusa pusilla (Lep.)	wB	Small pocket of heavy infestation in Euphrasia Township. Light elsewhere
Fenusa ulmi Sund.	E	Heavy localized infestations in Grey County
Gonioctena americana (Schaeff.)	tA	Light infestation on small trees in Glenelg Township
Gracillaria syringella F.	Lilac	Medium infestations of this leaf miner in Bentinck Township
Monoctenus fulvus (Nort.)	eC	Light infestations common
Neodiprion nanulus nanulus Schedl.	jP, rP	A light infestation persisted in St. Edmund Township
Nymphalis antiopa Linn.	W, wE	Widely scattered colonies in the district
Olethreutidae	wB, yB	Commonly found boring in male catkins in Grey, Bruce and Wellington counties
Paraclemensia sp.	wB	Low population of this leaf cutter in St. Edmund Township
Pikonema dimmockii (Cress.)	wS	Scattered low populations
Pineus similis Gill.	wS	Heavy infestation on occasional trees in the Greenough Point area

TABLE 16 (continued)

Insect	Host(s)	Remarks
Pineus strobi (Htg.)	wP	Heavy infestation on occasional tree in mixed pine plantation
Pleroneura borealis Felt	bF	Bud damage did not exceed five per cent in Grey County
Podapion gallicola Riley	rP	Caused severe branch deformation to large, natural trees in St. Edmund Township
Pristiphora geniculata (Htg.)	Mo	Localized light and medium infestation occurred commonly
Profenusa sp.	bO	Light mining noted on several large trees in Beverly Township
Profenusa thomsoni Konow	wB	Heavy infestation on small trees in Amabel Township
Protoboarmia porcelaria indicataria Wlk.	bF, wS, jP	Found commonly in beating samples
Pseudexentera oregonana Wlshm.	tA	Light infestations occurred in Beverly Township
Pulicalvaria piceaella (Kft.)	wS, nS	Medium infestations in Eramosa, Ashfield and Normanby townships. Light elsewhere
Pulvinaria innumerabilis Rath.	siM	Localized heavy infestations
Recurvaria new sp.	wS	Low population of this needle miner in the Collins Tract, Grey Township
Recurvaria sp (new)	wB	Common in male catkins of this tree species at several locations
Rhabdophaga swainei Felt	wS	Caused light bud damage in Grey and Bruce counties
Scolytus multistriatus Marsh.	E	Adult feeding caused severe branch tip mortality of occasional trees
Tetrastichus sp	wS	Caused moderate and light bud damage in Glenelg and West Luther townships respectively
Tetrastichus strobilus Burks	bF	Light bud damage in Glenelg and Artemesia townships
Trisetacus grosmanni Keifer	bF	Light bud damage in Grey and Bruce counties

STATUS OF INSECTS IN THE LAKE ERIE DISTRICT

J. R. Trinnell

Ugly Nest Caterpillar, Archips cerasivoranus Fitch

A heavy infestation occurred at Fingal airdrome in Southwold Township, with over 50 tents in each of two pockets of eastern choke cherry shrubbery. Heavy infestations that occurred in Haldimand and Welland counties in 1965 declined to light intensity in 1966.

Moderate defoliation was observed at one point in Dawn Township and light infestations occurred at several points in the district. Medium infestations recorded in 1965 in Point Pelee National Park and John E. Pearce Provincial Park declined to light intensity in 1966.

Jack-pine Resin Midge, Cecidomyia reeksi Vock.

A medium infestation of this pitch midge occurred on several jack pine trees in Cayuga North Township. Over 250 branch tips on one 15-foot tree were killed by repeated attacks at this location. A medium infestation reported on a jack pine hedgerow west of Strathroy in Caradoc Township in 1965 declined to light intensity in 1966.

Larch Casebearer, Coleophora laricella (Hbn.)

Notable increases in population levels of this insect were recorded on European larch trees in Yarmouth Township. At the Kettle Point Indian reservation populations tripled compared with 1964. Counts were low at the other sample points in the district (Table 6).

Mass collections totalling over 150 larvae and pupae were submitted to the laboratory from Bosanquet, North Dorchester and Yarmouth townships for parasite studies.

TABLE 6

Summary of Larch Casebearer Counts in Lake Erie District from 1964 to 1966

Location (township)	Host	Av. d.b.h. in inches	Average number of larvae per 18-inch tip		
			1964	1965	1966
Bosanquet	tL	10	5.0	5.9	15.3
Caradoc	tL	9	0.9	7.5	1.8
Charlotteville	eL	10	1.0	0	0.5
N. Dorchester	tL	8	5.5	8.2	12.5
S. Walsingham	eL	10	0.4	0.2	0.9
Yarmouth	eL	12	0.7	1.5	16.4

Walnut Caterpillar, Datana integerrima G. & R.

Light to heavy infestations of the walnut caterpillar occurred on single and small groups of trees at many points in the district. (Table 7). Numerous walnut trees from Dogsnest to Selkirk were severely defoliated and medium to heavy infestations were observed commonly from Hemlock to Copenhagen in the central part of the district.

The incidence of attack on hickory trees was higher than in recent years, particularly in the Sombra area of Lambton County.

TABLE 7

Summary of Walnut Caterpillar Defoliation Estimates in Lake Erie District from 1964 to 1966

Note: Counts were based on estimates of defoliation of ten black walnut trees at each point.

Location (township)	Av. height in feet	Approx. per cent defoliation 1964	1965	1966
Dunwich	25	10	15	40
Enniskillen	45	5	15	10
McGillivray	15	55	80	20
Mosa	22	10	55	20
South Cayuga	20	0	3	0
Tilbury North	30	15	90	70
Wainfleet	22	1	20	25
Windham	25	3	10	1

Yellow-necked Caterpillar, Datana ministra (Drury)

Medium to heavy infestations of this insect occurred at many points in Lambton and Middlesex counties, particularly on hawthorn and white elm trees. Moderate defoliation was observed on white elm along roadsides in the Hagersville-Jarvis area. Populations were light in the remainder of the district.

Nursery Pine Sawfly, Diprion frutetorum Lec.

Populations of this sawfly were light throughout the district (Table 8).

TABLE 8

Summary of Nursery Pine Sawfly Larval Counts in Lake Erie District in 1965 and 1966

Location (township)	Host	Av. d.b.h. in inches	Total number of insects per 15-tray sample	
			1965	1966
Enniskillen	scP	5	26	8
Oneida	scP	3	3	0
Stamford	jP	5	5	3
Stamford	scP	4	58	8
Willoughby	scP	5	5	3

European Spruce Sawfly, Diprion hercyniae (Htg.)

Medium infestations reported at the St. Williams Nursery in 1965 declined to light intensity in 1966. Populations of this introduced insect were low at all sampling points in the district (Table 9).

TABLE 9

Summary of European Spruce Sawfly Larval Counts in Lake Erie District in 1965 and 1966

Location (township)	Host	Av. d.b.h. in inches	Total number of insects per 15-tray sample	
			1965	1966
Adelaide	wS	5	3	2
Gainsborough	nS	12	4	0
North Cayuga	wS	5	5	6
South Walsingham	wS	11	103	13
Woodhouse	nS	14	19	9

Introduced Pine Sawfly, Diprion similis (Htg.)

A medium infestation that occurred on a jack pine windbreak in Stamford Township in 1965 declined to light intensity in 1966. This was due, in part, to the severe branch pruning the previous winter, leaving only very small upper crowns. Small numbers of larvae were observed on nearby Scots pine trees (Table 10).

TABLE 10

Summary of Introduced Pine Sawfly Larval Counts in Lake Erie District in 1965 and 1966

Location (township)	Host	Av. d.b.h. in inches	Total number of insects per 15-tray sample 1965	1966
Stamford	jP	4	250+	30
Stamford	scP	4	126	145

White-pine Shoot Borer, Eucosma gloriola Heinr.

Population levels of this insect in Scots and white pine plantations increased in the district in 1966 compared with 1965. The incidence of leader attack was particularly high in white pine plantations in MacGillivray and Dunn townships (Table 11).

TABLE 11

Summary of Shoot Damage by the White-pine Shoot Borer in Lake Erie District from 1964 to 1966

Location (township)	Host	Av. height of trees in feet	Per cent of trees infested 1964	1965	1966	Av. no. of attacks per infested tree 1964	1965	1966	Per cent of leaders attacked 1964	1965	1966
Aldborough	wP	7	52	15	10	1.2	1.1	0.5	16	2	2
Charlotte-ville	wP	8	95	7	64	4.0	1.3	0.9	54	7	8
McGillivray	wP	8	-	31	96	-	3.4	4.6	-	9	48
Middleton S	ScP	8	100	85	90	10.8	7.6	3.6	40	23	20
Thorold	wP	10	31	35	52	1.3	1.5	0.9	0	6	16
Dunn	wP	7	-	-	80	-	-	2.0	-	-	32

Elm Leaf Beetle, Galerucella luteola (Schrank)

Heavy infestations of this pest recurred in the city of St. Catherines and medium infestations persisted on English elm trees at Port Stanley. Medium infestations observed in 1965 on white elm shade trees at the Court House in St. Thomas declined to light intensity in 1966. Severe defoliation was noted on several roadside white elms near South Woodslee in Maidstone Township, and on one 35-foot white elm at Fort Malden in the Town of Amherstburg.

Fall Webworm, Hyphantria cunea (Drury)

An increase in numbers of fall webworms occurred throughout the district in 1966, particularly in Lincoln and Welland counties.

Heavy infestations recurred on Pelee Island where eastern choke cherry and hackberry were preferred hosts. A mass collection of late stage larvae was made for Dr. Kelleher of the Belleville laboratory. Parasites obtained from this collection will be sent to the Soviet Union.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

High populations of this insect persisted along Highway 21 from Grand Bend to The Cut in Bosanquet Township. Numbers were also high at numerous points in the northern part of Norfolk County, on hawthorn shrubs in Brooke Township, and on apple trees near Bothwell in Zone Township (see map).

Medium to heavy infestations occurred on apple trees in Adelaide Township and low to medium numbers were observed on cherry shrubbery from Corunna to Petrolia in Moore Township, and on pin cherry near Cairo, Euphemia Township. Low populations were recorded at most sample points in the district, as shown in table 12.

TABLE 12

Summary of Eastern Tent Caterpillar Colony Counts in Lake Erie District in 1965 and 1966

Location (township)	Sample unit	No. of colonies per sample unit 1965	1966
Bosanquet	1 mile roadside	400+	200+
McGillivray	1 sq. chain plot	1	1
Moulton	1 mile roadside	1	2
S. Walsingham	1 mile roadside	1	1
W. Nissouri	1 sq. chain plot	4	6
Woodhouse	1 mile roadside	2	4
Zone	1 square chain plot	3	5

Spiny Elm Caterpillar, Nymphalis antiopa Linn.

The increase in populations recorded in 1965 continued in 1966. A 12-foot section of Chinese elm hedge in the Frechette section of the St. Williams Nursery was severely defoliated. Moderate defoliation occurred on four 20-foot willow trees near the Fort Erie race track, on one willow shrub on Walpole Island, and on one cottonwood tree in Rochester Township.

European Pine Shoot Moth, Rhyacionia buoliana (Schiff.)

An upward trend in population levels of this shoot moth occurred in the district in 1966. Medium to heavy infestations occurred in Scots pine plantings in Miller's Creek Park on the Niagara Parks Commission driveway, on 20 Scots pine trees on the MacDonald-Cartier Freeway, Westminster Township, on a red pine hedgerow near Strathroy in Caradoc Township and in a Scots pine plantation in Wainfleet Township.

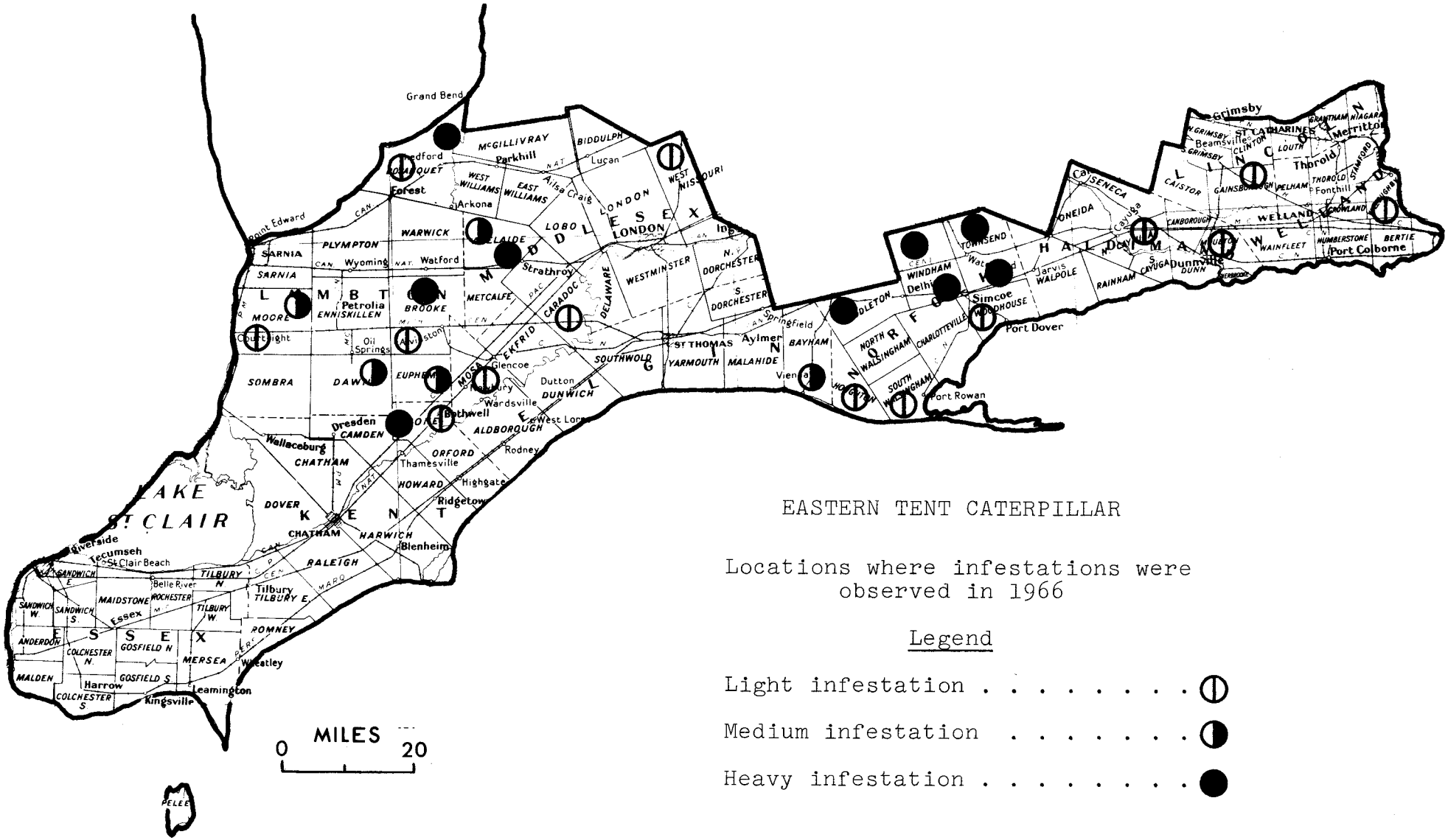
Low to medium numbers occurred on Scots pine in Bertie, Caradoc and Moore townships. A considerable decline was noted in the moderate populations which were recorded in Pelham Township in 1965 (Table 13).

TABLE 13

Summary of European Pine Shoot Moth Damage in Red Pine Plantations in Lake Erie District in 1965 and 1966

Location (township)	Av. d.b.h. in 1966	Per cent of bud clusters infested in the spring		Degree of infestation in 1966
		1965	1966	
Aldborough	2	0	0.6	L
Euphemia	2	0.5	0.8	L
Pelham	2	5.5	0.8	L
Romney	2	4.6	1.7	L
N. Cayuga	2	0.7	0	nil
Willoughby	3	1.1	0.9	L
Woodhouse	3	0.3	5.3	L

LAKE ERIE DISTRICT



EASTERN TENT CATERPILLAR

Locations where infestations were observed in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

TABLE 14

Summary of Miscellaneous Insects Collected
in Lake Erie District in 1965

Insect	Host(s)	Remarks
Acraspis erinacei But.	wO	Heavy on several trees at Burgoyne Woods, St. Catharines
Acronicta interrupta Gn.	pCh, wE, sMo	Light at six scattered points
Acronicta lepusculina Gn.	Co	Light at three locations
Alsophila pometaria Harr.	Ba, wE, wt	Infestations remain light throughout the district
Altica ulmi Wood	rE	Moderate at McKay Forest, Elgin County
Anoplonyx luteipes Cress.	eL	Moderate on lower branches of trees in county plantation, South Walsingham Township
Anchylopera burgessiana Zell	pCh, rU	Moderate in Aldborough Township, light in Charlotteville Township
Anisota rubicunda Fabr.	siM	Moderate on one tree in Dunn Township
Anisota senatoria A. & S.	bO, rO	Heavy on several trees at Pinery Park, Bosanquet Township, and one tree in Dawn Township. Moderate on lower crowns of mature trees at Glencoe; light elsewhere
Antheraea polyphemus Cram.	cE, Ba	Heavy on Chinese elm hedge at Port Rowan; small numbers at seven scattered locations in district
Arge sp.	rO, blO	Remain light to heavy on sporadic trees at Turkey Point Nursery and provincial park
Argyresthia laricella Kft.	eL	Caused light shoot damage at scattered locations in the district
Automeris io Fabr.	tA	One large colony, South Walsingham Township
Bucculatrix canadensisella Cham.	yB	Heavy infestations along MacDonald-Cartier Freeway at junction of highway 73, Middlesex County
Canarsia ulmiarrosorella Clem.	wE	Moderate on lower branches at Butler Burying Ground, Niagara-on-the-Lake
Citheronia regalis (F.)	bO	Rare insect found at Glencoe
Coleophora betulivora McD.	wB	Medium on one tree at park at St. Williams nursery
Coleophora ulmifoliella MacD.	wE	Very heavy on two trees on Queen Elizabeth Way; light at five other points

TABLE 14 (continued)

Insect	Host(s)	Remarks
Dendroctonus valens Lec.	wP	Moderate in one tree in Wright Tract, McGillivray Township
Dioryctria disclusa Heinr.	ScP, jP	Light and moderate cone damage at scattered locations
Dioryctria zimmermani Grt.	mP, scP	Medium on a mugho pine near Thamesville. Light infestations remain in the Newbury-Bothwell area, showing an eastward trend
Elaphidionoides parallelum Newn.	rO, wO	Light at Pinery provincial park, Lambton County, although trend is upward. Also light at Cayuga court house and Niagara-on-the-Lake
Epinotia aceriella Clem.	sM	Moderate on many trees at John E. Pearce Provincial Park, Elgin County
Epinotia sp.	hazelnut	Heavy infestations recurred in catkins, Vanessa conservation area.
Erannis tiliaria Harr.	wB, wE	Remain in very low numbers
Eriocampa juglandis (Fitch)	Bu	Severe defoliation of two trees at Point Pelee national park.
Eriophyes betulae Steb.	wB	Moderate on one tree at Kettle Point Indian reserve
Fenusa dohrnii (Tischb.)	e bl Al	Very heavy on hedgerows in western Charlotteville Township; heavy on two 25-foot trees at St. Williams nursery public park
Fenusa pusilla (Lep.)	wB	Heavy on one tree at Port Burwell; light at Kettle Point and Waterford conservation area
Fenusa ulmi Sund.	wE	Heavy on all lower branches of mature trees at St. Thomas court house
Glishrochilus quadrisignatus Say	-	Very common in central part of district in early July; feed on sap and decaying fruit
Ichthyura inclusa Hbn.	Co	Very heavy on shrub in Mersea Township; heavy on shrub in Rochester Township. Larvae are night feeders
Ichthyura sp. prob. strigosa	wPo	One large colony on shrub near fort at Niagara-on-the-Lake
Lithocolletis aceriella Clem.	rM	Heavy on lower crown of one tree near St. Williams; up to seven miners per leaf
Nematus hyalinus (Nort.)	W	Moderate on tree at Spooky Hollow

TABLE 14 (continued)

Insect	Host(s)	Remarks
Nematus salicisodoratus Dyar	tA	Moderate on one tree at Spooky Hollow nature trail
Nepticula sp. prob. sericopeza	nM	Caused considerable dropping of samaras of mature tree in Port Dover
Neuroterus quercus batatus (Fitch)	rO	Numerous galls on branch tips of 50-foot tree on Niagara escarpment at Grimsby. Considerable branch tip mortality and clusters of dead leaves
Orgyia leucostigma J.E. Smith	siM, mM	Heavy infestations on scattered trees in Essex County. Light elsewhere
Pantographa limata G. & R.	Ba	Medium to heavy on most understory at Point Pelee nature trail; light at Turkey Point private road
Papilio glaucus Linn.	tuliptree	Moderate defoliation on branches of ornamental at Lands and Forests district office, Aylmer West
Pareophora minuta MacG.	wAs	Moderate on tree at Byng conservation area, Dunn Township
Pissodes strobi (Peck)	wP	Scattered light damage in the district
Polygonia interrogationis Fabr.	wE	Moderate on two trees near Fort Erie; light at several other points
Pristiphora geniculata (Htg.)	M	Medium and heavy defoliation occurred in S. Walsingham, Southwold and Malahide townships. Light elsewhere
Pulvinaria innumerabilis Rath.	sM, siM	Heavy on ornamentals at Sparta and Port Dover; parasitism of nymphs heavy at the latter point
Recurvaria gibsonella Kft.	rJ	Medium to heavy on ornamentals at Port Dover
Semiothisa ocellinata Gn.	bl Lo	Moderate on hedgerow near Rhineland in Norfolk County; a beating mat sample
Spilochalcis melana Burks.	-	A first Canadian record of this parasite. Two chalcids reared from Pachyschelus sp. (Buprestidae) mines on trefoil.
Symmerista canicosta Francl.	rO	One colony at Turkey Point park
Tethida cordigera (Beauv.)	wAs	Moderate defoliation on one tree at Byng park, Dunn Township
Trichiocampus viminalis	lPo, Co	Medium to heavy defoliation on solitary or small groups of trees in Gosfield North, North Grimsby, and Walpole townships

SOUTH-CENTRAL FOREST REGION

1966

INTRODUCTION

STATUS OF TREE DISEASES (Regional)

INTRODUCTION

South-central Forest Region

The following report contains the status of forest insect and tree diseases in the Region in 1966. As in recent years, tree diseases are dealt with regionally and insect conditions are reported on a district basis. Organisms currently causing minor damage are listed alphabetically in tabular form.

Increases in the incidence of Dutch elm disease resulted in considerable mortality of white elm in the region. Other diseases of major importance included white pine blister rust and Hypoxylon canker of poplar. Conspicuous needle droop was widespread in red pine plantations in Division 93 of the Parry Sound District and Scleroderris canker of pine was found in the North Bay District.

Minor increases in extent and intensity of forest tent caterpillar infestations occurred in the vicinity of Lake Nipissing and the French River while populations decreased markedly in the Muskoka area. No major extensions of infestation are anticipated in 1967. High populations of the poplar leaf roller, Pseudexentera oregonana Wlshm. persisted at many locations through the region. Heavy infestations of the red-headed pine sawfly recurred in the Parry Sound District and caused severe mortality of red pine near High Falls in McAuley Township.

Extention and service work included 161 property inspections, participation in tree farm meetings and short courses of instruction on insects and diseases at 11 Junior Ranger camps in the region. A total of 715 collections were submitted to the Laboratories at Sault Ste. Marie and Maple. The assistance and co-operation extended by personnel of the Department of Lands and Forests is gratefully acknowledged by the writers.

L. S. MacLeod

STATUS OF TREE DISEASES

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

Although surveys in 1966 showed little change in the distribution of the Dutch elm disease in the region, the incidence in previously infected areas increased appreciably.

In the Parry Sound District extensive mortality was observed in numerous areas through the northern part of the district, particularly in Wilson, Pringle, North Himsworth and South Himsworth townships. In the southern part of the district, provincial and municipal agencies instituted control measures through sanitation programs, thereby reducing the numbers of dead elms and vector brood material in many areas.

In the North Bay District increases in the incidence of the disease were most pronounced in Sturgeon Falls, and North Bay, and in Widdifield, Mattawan and Calvin townships where sampling showed that from 3 to 21 per cent of the trees were infected.

The results of quantitative sampling at 27 locations where host trees were abundant are shown in Table 1.

TABLE 1

Summary of the Incidence of Dutch Elm Disease at Twenty-seven Points in the South-central Region in 1966

Location (township)	Av. d. b. h. in inches	No. of trees examined	Site type	Per cent trees infected
North Bay District				
Sturgeon Falls	14	100	Urban	16.0
Field	12	100	Riverbank	6.0
Widdifield	14	100	Swamp	12.0
North Bay	10	150	Urban	9.3
Dunnet	15	100	Riverbank	3.0
Kirkpatrick	16	100	Open Field	4.0
Mattawan	14	53	Riverbank	9.4
Calvin	14	100	Riverbank	21.0
Parry Sound District				
Morrison	14	25	Roadside	36.0
Morrison	12	25	Open Field	28.0
Morrison	15	25	Swamp	0.0
Humphry	14	30	Open Field	50.0
Chaffey	16	50	Swamp	26.0
South Himsworth	14	25	Swamp	25.0
North Himsworth	10	20	Open Field	30.0

TABLE 1 (continued)

Location (township)	Av. d.b.h. in inches	No. of trees examined	Site type	Per cent trees infected
Parry Sound District				
Stisted	16	100	Roadside	38.0
Strong	15	100	Roadside	31.0
South Himsworth	10	100	Open Field	15.0
Pringle	15	40	Swamp	10.0
Pringle	14	20	Open Field	10.0
Pringle	12	20	Rocky Field	20.0
Pringle	12	25	Roadside	25.0
Wilson	10	50	Roadside	20.0
Wilson	14	20	Open Field	25.0
Mills	10	25	Swamp	25.0
Mills	14	25	Open Field	25.0
Mills	14	20	Roadside	20.0

Needle Rust, Coleosporium asterum (Diet.) Syd.

Heavy infection on foliage occurred in red pine plantations near Hollow Lake in Sherbourne Township and near Gravenhurst in Muskoka Township, Parry Sound District. In the North Bay District light infections were observed in a jack pine plantation in French Township and in areas reforested with red pine in Firstbrook Township. The rust also occurred in varying degrees of intensity in jack pine stands along the West Arm area of Lake Nipissing.

White Pine Blister Rust, Cronartium ribicola J. C. Fischer

Branch and stem mortality caused by this rust was observed in all white pine stands examined in the region (see photograph). Centres of high infection occurred in Mowat and Boulter townships in the Parry Sound District and at many locations in the North Bay District. A summary of the incidence of the disease at different points is shown in Table 2.

TABLE 2

Summary of Incidence of the White Pine Blister Rust and Tree Mortality at Five Points in the North Bay District in 1966

Note: Counts were based on the examination of one hundred white pine trees at each location.

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees rusted living	rusted dead
Papineau	12	7	2
Mattawan	12	19	4
French	8	15	5
McLaren	11	8	1
Strathy	9	5	2
Totals		54	14
	Incidence %	10.8	Mortality % 2.8

Scleroderris Canker of Pine, Scleroderris lagerbergii Gremmen.

Prior to 1966, this destructive parasite of pine had been recorded only in the Swastika and Sault Ste. Marie districts. Intensive sampling of pine plantations and reforested areas in the region in 1966 revealed a small pocket of infection in French Township in the North Bay District. In two plots at this location 90 per cent of the red pine trees were infected and mortality was 16 per cent, in a jack pine plantation 61 per cent of the trees showed symptoms but mortality was not observed.

The disease was not detected in the Parry Sound District; however several other organisms were found commonly in plantations, viz:

Cenangium ferruginosum Fries

Coccomyces sp.

Ophionectria cylindrospora (Sollm.) Berl. & Vogl.

Phomopsis sp.

Sclerophoma pithyophila Hoehn.

Tympanis sp.

Valsa pini Alb. & Schw. ex Fries

A Needle Droop Condition on Red Pine

Prior to 1966 a condition characterized by severe drooping and browning was observed on young red pine trees in plantations. At that time damage was confined to the Lindsay District. Surveys carried out in 1966 showed the damage to be widespread through the Parry Sound District and on occasional trees at one location in Springer Township in the North Bay District (see photograph).

In May of 1966 severe damage was noted in a young red pine plantation near Bracebridge, Parry Sound District. The buds in most instances failed to develop and severe mortality of trees 12 inches in height or smaller occurred. Cast skins of the mite Setoptus jonesi (Keifer) were present in most samples submitted, however surveys carried out in September of 1966 in adjacent compartments showed the characteristic drooping of foliage but no evidence of the mite, which seems to preclude the possibility that Setoptus jonesi (Keifer) was responsible for the damage.

Entire trees from eight to twenty-four inches in height were submitted periodically to the Forest Pathology Laboratory at Maple and several pathogens were found on the stems and needles. However, at the present time, it is difficult to say whether any, or all, of these are responsible for this condition. Surveys to determine the cause of this problem will be continued.

TABLE 3

Other Noteworthy Diseases in the South-central Region, 1966

Organism	Host(s)	Remarks
Anthracnose (Gloesporium spp.)	sM, rM, bAs, Ba, rO	Common throughout the region
Apiosporina collinsii (Schw.) V. Hoehno	tA	Common on scattered trembling aspen at one location in the Parry Sound District
Aureobasidium pullulans (de Bary) Arnaud Bary	scP	Associated with needle browning on Scots pine at one location in the Parry Sound District
Bifusella crepiderformis Darker	bS	Severe discolouration and needle cast of old foliage at numerous locations in the North Bay District
Cenangium ferruginosum Fries	scP	Common on this host at one location in the Parry Sound District
Chrysomyxa ledi (Alb. & Schw.) de Bary	wS, lab. tea	Common on both hosts through the North Bay District
Ciborinia whetzelii (Seaver) Seaver	tA	Pockets of heavy infection at many points in the Parry Sound and North Bay districts; particularly severe in the Field-River Valley area of the North Bay District, and at occasional points in three other twps.
Coleosporium pinicola (Arth.) Arth.	jP	A few trees lightly infected at one location in Mattawan Twp., North Bay District

TABLE 3 (continued)

Organism	Host(s)	Remarks
Cronartium comptoniae Arth.	jP	A few trees with stem cankers at many locations in the North Bay District. Per cent trees infected were: McNish - 2, Haddo - 7, Afton - 4, Bucke - 3.
Cryptodiaporthe sp.	moM	Common through Gillies Limit, North Bay District
Cytospora chrysosperma (Pers.) Fries	tA, W, bPo	Branch cankers common in four twps., North Bay District and in three twps., Parry Sound District
Cytospora friesii Sacc.	bF	Common on occasional trees at one location in the Parry Sound District
Dibotryon morbosum (Schw.) T. & S.	Cherry	Common on all species of cherry in varying degrees of intensity throughout the region
Dothiorella quercina (C. & E.) Sacc.	rO	Common on occasional trees in Medora Twp., Parry Sound District
Dothiorella sp.	wO	Branches of one tree heavily infected near Footes Bay, Parry Sound District
Erwinia amylovera (Burr.) Winslow et al.	Mo	Increased prevalence in the North Bay District in 1966. Ornamentals in the city of North Bay particularly affected
Fusicoccum sp.	wAs	Common on trees infested by the forest tent caterpillar at one location near Port Carling, Parry Sound District
Hymenochaete agglutinans Ellis	cCh	Several young trees cankered at one location in Butler Twp., North Bay District
Hypodermella ampla (J.J. Davis) Dearn.	jP	Pockets of heavily infected trees in five twps., North Bay District, and on occasional trees at two locations, Parry Sound District
Hypoxylon mammatum (Wahl.) Miller	tA, lA	Common throughout the region
Lophodermium juniperinum (Fries) de Not.	juniper	Small trees heavily infected at one location in MacAuley Twp., Parry Sound District
Lophodermium sp.	bS	A few trees affected at one point in Gillies Limit Twp., North Bay District
Marssonina populi (Lib.) Sacc.	tA	Common on small aspens in Ridout Township, Parry Sound District

TABLE 3 (continued)

Organism	Host(s)	Remarks
Melampsora medusae Them.	tL	Needle rust common on several trees near Scotia, Parry Sound District
Peridermium sp.	jP	Numerous galls on small trees at one point in Mattawan Township, North Bay District
Phomopsis sp.	sM	Cankering common on twigs in area infested by forest tent caterpillar near Glen Orchard, Parry Sound District
Pollaccia elegans Serv.	bPo	Observed at widely separated points in the North Bay District
Pollaccia radiosa (Lib.) Bald. & Cif.	tA	Common on young aspens throughout the region
Scoleconectria scolecospora (Bref.) Seaver	jP	Numerous trees infected in a plantation in French Township, North Bay District
Steganosporium pyriforme Cda.	sM	Common on branches of small trees at many points throughout the region
Valsa abietis Fries	bF	Several trees infected at one point in Springer Township, North Bay District
Valsa cincta Fries	bF, cCh	Common at separate locations in Chapman and Stephenson twonships, Parry Sound District
Valsa sp.	jP	Light infection of needles in a plantation near Trout Creek, Parry Sound District
White birch deterioration	wB	Common in varying degrees of intensity throughout the region

STATUS OF INSECTS IN THE NORTH BAY DISTRICT

L. S. MacLeod

STATUS OF INSECTS

Spruce Budworm, Choristoneura fumiferana (Clem.)

In 1964, routine sampling of spruce and balsam-fir stands produced only one collection of the spruce budworm. In 1965 the insect was found at widely-separated points in five townships. Population levels increased appreciably in 1966 and larvae were observed in low numbers in most white spruce and balsam-fir stands examined. Light defoliation of the upper crowns of several balsam-fir trees occurred at one point in Casimir Township but at all other locations defoliation was negligible.

Jack-pine Budworm, Choristoneura pinus Free.

Populations of the jack-pine budworm remained at approximately the same level as in 1965. Groups of lightly infested trees were observed at several locations in Ratter, Badgerow, Hugel and Kirkpatrick townships and small numbers of larvae were found in most jack-pine stands examined in the southern and central parts of the district.

Larch Casebearer, Coleophora laricella Hbn.

For the past four years populations of the larch casebearer have remained at low levels in tamarack stands in the southern part of the district while an increase has been recorded at sample stations in the central and northern parts. This trend continued in 1966 (Table 4).

TABLE 4

Summary of Larch Casebearer Larval Counts at Seven Points in the North Bay District from 1963 to 1966

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

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of larvae per tip			
		1963	1964	1965	1966
Mattawan	4	1.9	0.3	0.1	1.0
Bonfield	4	2.4	4.2	0.0	1.6
Pedley	6	-	-	-	1.0
Widdifield	4	2.2	3.4	3.8	8.6
Olive	3	1.5	3.4	2.9	8.2
Strathcona	4	3.0	5.4	3.1	9.0
Gillies Limit	4	1.5	8.1	5.5	13.2

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

High numbers of these beetles persisted in parts of Briggs, Strathy and Strathcona townships along the Northeast Arm of Lake Temagami. Damage was mainly confined to mature and overmature red and white pine trees which were heavily infested at several locations.

European Spruce Sawfly, Diprion hercyniae (Htg.)

Quantitative sampling at six permanent sample stations showed a decline in population levels of this sawfly compared with 1965 (Table 5). Low populations occurred in white spruce stands at ten other locations where routine sampling is carried out annually.

TABLE 5

Summary of European Spruce Sawfly Larval Counts from White Spruce Trees at Six Points in the North Bay District in 1965 and 1966

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample	
		1965	1966
Widdifield	9	53	24
French	7	76	47
Springer	7	84	51
Ratter	7	128	48
MacPherson	10	144	28
Papineau	8	77	21

Birch Leaf Miner, Fenusa pusilla (Lep.)

Heavy infestations of this leaf miner caused severe discolouration of the foliage of small white birch trees at numerous locations in the district in 1966. Particularly severe mining occurred in cut-over pine tracts along the Sturgeon River and in the vicinity of Linger, Yorston, Acadia, and Bull lakes.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

High population levels of this caterpillar recurred in the southern part of the district in 1966 (Table 6). Roadside clumps of cherry and fruit and ornamental trees were heavily defoliated at many points in the Verner, Lavigne, Noelville, Sturgeon Falls, and North Bay areas.

TABLE 6

Summary of Eastern Tent Caterpillar Colony Counts Per Mile of Roadside at Five Points in the North Bay District from 1964 to 1966

Location (township)	Total no. of tents per mile of roadside		
	1964	1965	1966
East Ferris	10	15	37
Widdifield	16	24	41
Dunnet	10	15	50
MacPherson	22	58	77
Springer	4	16	21

Forest Tent Caterpillar, Malacosoma disstria Hbn.

No major expansion of the forest tent caterpillar infestation occurred in 1966. In the West Arm - Noelville area the extent and intensity of infestation remained approximately the same as in 1965. Little change occurred in the northern boundary of infestation except for a narrow band of severe defoliation north of Highway 17 between Sturgeon Falls and North Bay in the southern parts of Pedley, Beaucage and Commanda townships. This extension coalesced with the Widdifield - East Ferris infestation which spread slightly to the north and east in 1966 (see map).

Cocoon dissections were made at six locations to determine the degree of parasitism and disease in the infestation. Although the incidence of disease was insignificant more cocoons were attacked by parasites than in 1965 (Table 7).

TABLE 7

Summary of Forest Tent Caterpillar Cocoon Dissections at Six Points in the North Bay District from 1964 to 1966

Note: Based on the examination of 100 cocoons at each point.

Location (township)	Per cent emergence			Per cent parasitized			Per cent diseased			Other		
	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966
Martland	24	49	25	76	41	66	0	9	9	0	0	0
Caldwell	20	57	42	69	41	47	7	2	1	4	0	0
Kirkpatrick	41	47	17	55	41	82	0	9	1	4	3	0
MacPherson	71	65	39	27	28	61	0	7	0	2	0	0
East Ferris	-	-	47	-	-	52	-	-	1	-	-	0
Widdifield	-	-	42	-	-	57	-	-	1	-	-	0

Defoliation forecasts for 1967 (Table 8) are based on egg band surveys made inside and on the periphery of 1966 infestations. Those forecasts may be invalidated by abnormal spring weather conditions.

TABLE 8

Summary of Forest Tent Caterpillar Egg Band Counts and Defoliation Forecasts for 1967 in the North Bay District

Location (township)	Av. no. of egg bands per tree, 4-6 in. d.b.h.	Defoliation forecast for 1967
East Ferris	31	Severe
Bonfield	2	Light
Calvin	0	-
Phelps	0	-
Widdifield	9	Severe
Beaucage	17	"
Thistle	0	-
Bastedo	3	Moderate
Badgerow	5	Moderate
Crerar	0	-
Henry	1	Light
Dunnet	39	Severe
Loudon	22	"

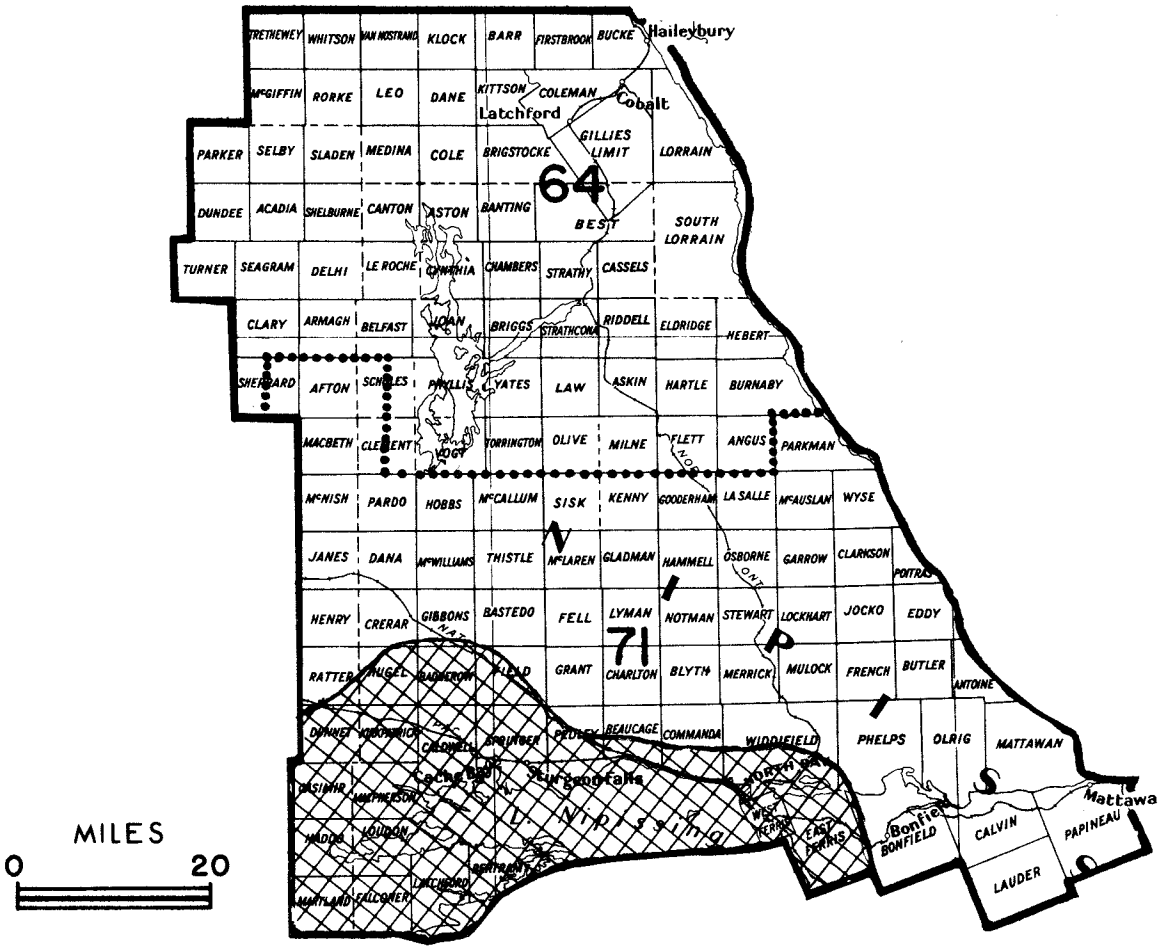
Balsam-fir Sawfly, Neodiprion abietis complex

Small, open-grown balsam-fir trees in Papineau, Lauder and Calvin townships were lightly defoliated by this sawfly in 1966. Counts averaged one colony per 1-inch d.b.h. tree at these locations. Large trees in three woodlots in Badgerow Township were also lightly infested. Single colonies were observed at several locations in Hugel and Mattawan townships.

Black-headed Jack-pine Sawfly, Neodiprion pratti banksianae Roh.

Population levels of this sawfly were approximately the same as in 1965 except in the extreme southwestern part of the district (Table 9). In this area small fringe trees were lightly defoliated at several points. Scattered colonies were observed in jack pine stands in the townships of Dunnet, McNish, Scholes, Afton, and Badgerow, and along shorelines and on islands in Obabika, Diamond, Rabbit, Cross, and Temagami Lakes.

NORTH BAY DISTRICT



FOREST TENT CATERPILLAR

Areas in which defoliation occurred in 1966

Legend

Moderate to severe defoliation . . . .

TABLE 9

Summary of Black-headed Jack-pine Sawfly Larval Colony Counts at Six Points in the North Bay District from 1964 to 1966

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

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees infested			Av. no. of colonies per infested tree		
		1964	1965	1966	1964	1965	1966
Afton	2	10	1	2	3	1	1
Joan	2	4	0	1	2	0	1
Cynthia	2	10	0	1	3	0	1
Briggs	2	5	0	1	1	0	1
Loudon	3	-	-	5	-	-	1
Haddo	3	-	-	4	-	-	1

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Pine plantations in Phelps and Widdifield townships were lightly infested by this sawfly in 1966 (Table 10). Scattered colonies were observed in red pine plantings in Mattawan and Springer townships and on islands in Temagami and Nipissing lakes.

TABLE 10

Summary of Red-headed Pine Sawfly Larval Colony Counts at Three Points in the North Bay District in 1966

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

Location (township)	Av. height of sample trees in feet	Per cent of trees infested	Av. no. of colonies per infested tree
Phelps	10	12	1.0
Widdifield (east)	12	11	1.5
Widdifield (west)	18	24	3.0

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

A general increase in population levels of the red-pine sawfly occurred in 1966 (Table 11). Colonies were found commonly in most stands examined and small trees were lightly defoliated at many locations, particularly on shorelines and islands in lakes Temiskaming, Nipissing, and Temagami.

TABLE 11

Summary of Red-pine Sawfly Larval Colony Counts at Six Points in the North Bay District in 1965 and 1966

Note: Counts were based on the examination of ten red pine trees at each point.

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees infested		Av. no. of colonies per infested tree	
		1965	1966	1965	1966
Cynthia	2	1	6	1	2
Ratter	3	1	5	1	2
McNish	3	2	6	1	1
Joan	3	0	7	0	1
Calvin	3	0	6	0	1

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

Small, heavy infestations of this sawfly persisted on two islands in Lake Temagami and Rabbit Lake. Repeated defoliation has caused heavy mortality of jack-pine trees on both islands. Few sawflies occurred on islands in Banks Lake where populations have declined steadily in recent years. Scattered colonies were observed along the West Arm of Lake Nipissing; in the Verner-Lavigne area, and on islands in Lake Temagami in Joan, Cynthia, Briggs, and Strathcona townships.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Colonies of this jack-pine sawfly were found commonly at many locations in the district in 1966. In most instances the number of colonies per tree was low (Table 12) and defoliation was confined to small trees along the fringes of stands on rocky sites.

TABLE 12

Summary of Red-headed Jack-pine Sawfly Larval Colony Counts at Five Points in the North Bay District, 1966

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

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees infested	Av. no. of colonies per infested tree
Barr	2	4	1
Gladman	4	3	3
Sisk	3	5	2
Haddo	2	6	1
Loudon	2	5	1

White Pine Weevil, Pissodes strobi (Peck)

The white pine weevil continued to cause extensive damage to white and jack-pine reproduction in the district (see photograph). Small pockets of heavy infestation persisted in the upper Sturgeon River area. Numerous white and black spruce trees were weeviled along Highway 11 between Latchford and North Bay.

TABLE 13

Summary of Leader Damage by the White Pine Weevil at Four Points in the North Bay District in 1966

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

Location (township)	Tree Species	Av. height in feet	Per cent of trees weeviled in 1966	Cumulative per cent of trees weeviled all years
French	jP	15	9	26
Widdifield	wP	8	36	38
Gillies Limit	jP	9	4	7
Kirkpatrick	wS	5	6	13

Balsam Shoot-boring Sawfly, Pleroneura borealis Felt

This sawfly was widely distributed through balsam-fir stands in the district in 1966. Fluctuations in population levels peculiar to the insect are shown in Table 14.

TABLE 14

Summary of Balsam Shoot-boring Sawfly Larval Counts at Six Points in the North Bay District from 1963 to 1966

Note: Counts were based on the examination of twenty 18" branch tips, four from each of five trees at each point.

Location (township)	Av. d.b.h. of sample trees in inches	Per cent of new shoots infested			
		1963	1964	1965	1966
East Ferris	3	2	25	2	18
Calvin	4	3	15	6	16
French	5	0	13	1	9
Hugel	4	0	14	4	13
Sisk	3	2	16	1	20
Gillies Limit	4	1	12	3	12

Larch Sawfly, Pristiphora erichsonii (Htg.)

No important change in population levels of the larch sawfly occurred in 1966. Several small larch stands in Loudon, Haddo, and Falconer townships were lightly defoliated. Scattered colonies were observed in the southern and central parts of the district but rarely in the northern part.

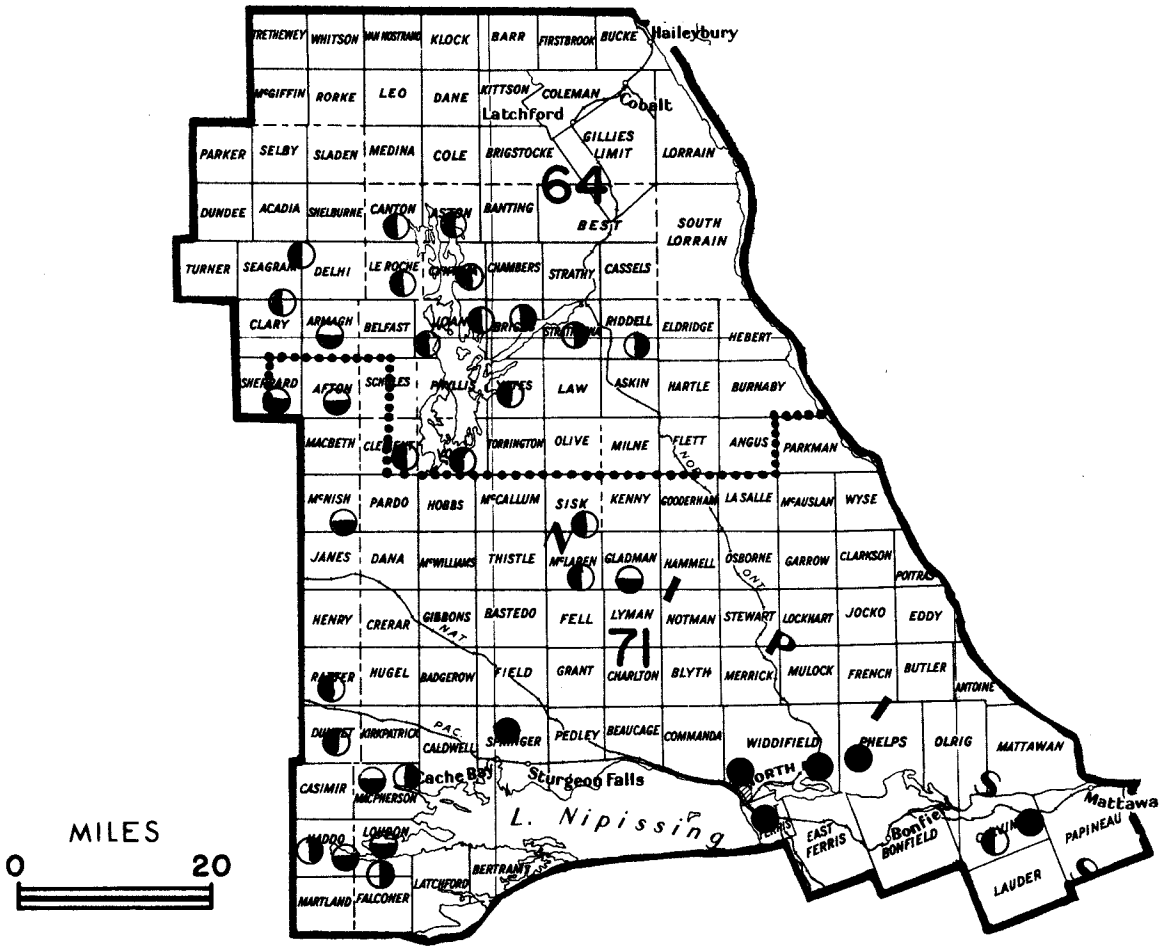
Birch Leaf Miners, Heterarthrus nemoratus (Fall.)
Profenusa thomsoni (Konow)

An increase in population levels of these leaf miners occurred in 1966. Both species were found in most white birch stands examined. At several points in McAuslan and Garrow townships small numbers of Profenusa thomsonii were found on yellow birch trees. Clumps of lightly infested white birch trees were observed in Gillies Limit, Field and Strathy townships.

Poplar Leaf Roller, Pseudexentera oregonana Wlshm.

For the third consecutive year, high populations of this leaf roller persisted in poplar stands in the district. Pockets of severe defoliation occurred at many locations in the Mattawa-Eau Claire-Bonfield and North Bay areas. (see photograph). Moderate defoliation was general in the Field-River Valley and Hagar areas interspersed with pockets of severe defoliation throughout. Generally, infestations were light elsewhere in the district except for isolated pockets of moderate defoliation in the central and northern sections.

NORTH BAY DISTRICT



PINE SAWFLIES

Locations where four species of pine sawflies were collected in 1966

Legend

Red-headed pine sawfly . . . . . ●

Black-headed jack pine sawfly. . . . . ◒

Red pine sawfly . . . . . ◐

Swaine sawfly . . . . . ◑

TABLE 15

Summary of Miscellaneous Insects Collected in the North Bay District

Insect	Host(s)	Remarks
Acleris variana (Fern.)	wS, bF, eH	Small numbers of larvae from Coleman, French, Bucke and Commanda twps.
Adelges abietis Linn	wS	Common in most stands examined
Agromyza ulmi Frost	wE	Widely distributed on this host.
Altica ulmi Wood	wE	Numerous on most elm examined
Anacampsis innocuella Zell.	tA, lA	Groups of lightly infested trees through northern part of district.
Archips cerasivoranus Fitch	Cherry	Heavy in the Desaulniers - River Valley area, 58 and 73 tents in two 1-square chain plots.
Argyresthia laricella Kft.	tL	Counts at sample points in 1966 were: Widdifield Twp. - 1 per cent infested shoots, Bonfield Twp. - 2 per cent, Mattawan Twp. - 2 per cent.
Argyresthia sp.	bS, wS	Low numbers through Gillies Limit, Sisk and Strathcona twps.
Bucculatrix canadensisella Cham.	wB	Lightly infested trees in Bucke, Coleman, Lorrain and South Lorrain twps.
Choristoneura rosaceana Harr.	Al, wB, W, bPo	Widely distributed through the district.
Dasyneura balsamicola Lintn.	bF	Small groups of trees heavily infested at many locations.
Depressaria groteela Rob.	Ha	Large numbers wherever this host occurred.
Dimorphopteryx sp.	yB	Moderate numbers on this species at several points in McAuslan and LaSalle twps.
Dioryctria reniculella Grt.	wS	Low numbers through MacPherson, Kirkpatrick and Caldwell twps.
Epinotia momonana Kft.	Al	Common through the northern and eastern parts of the district.
Epinotia solandriana Linn.	wB	Small groups of trees heavily infested at several points in Sisk, Bonfield, Calvin and South Lorrain twps.
Eriophyes populi Nal.	tA	Numerous through aspen stands in the central and northern parts of district.
Exoteleia pinifoliella (Cham.)	jP	Common through southern part of district. Heavy in one plantation in Widdifield Twp.

TABLE 15 (continued)

Insect	Host(s)	Remarks
Fenusa dohrnii (Tischb.)	Al	Heavy mining of foliage at several points in the northern part of district.
Gonioctena americana Schaeff.	tA	Clumps of lightly defoliated trees in Gibbons, Crerar, Bucke, Coleman, Firstbrook and Lorrain twps.
Gonioctena notmani (Schaeff.)	W	Lightly defoliated trees in Strathy and Best twps.
Hydromena divisaria Wlk.	wS, bF	Small numbers from Strathcona, MacPherson, French and Papineau twps.
Hyphantria cunea Dru.	tA, wE, Al, W	Slight increase in numbers compared with 1965. Colonies found in Butler, Olrig, McLaren and Bastedo twps.
Lithocolletis aceriella Clem.	sM	Light mining in Blyth and Notman twps.
Lithocolletis salicifoliella Chamb.	tA	Occasional mines observed.
Malacosoma pluviale (Dyar.)	Se, cCh	Several colonies through Barr, Firstbrook and Bucke twps. in the northern part of district. One colony from French Twp.
Monoctenus fulvus (Nort.)	eC, rJ	Quantitative samples in Blyth, Commanda, Strathcona and Coleman totalled 26, 30, 9 and 0 respectively. Low numbers of larvae were found on juniper in Loudon and Haddo twps.
Nymphalis antiopa Linn.	tA, W	Scattered colonies at widely-distributed points
Ocnerostoma sp.	rP	Numerous needle miners in Lake Temagami - Lady Evelyn area.
Paratetranychus ununguis (Jac.)	bF	Light defoliation of small fringe trees at one point in Strathcona Twp.
Petrova albicapitana Busck.	jP	Present in many jack pine stands. Numerous in plantations in Widdifield and French twps.
Phenacaspis pinifoliae Fitch	rP, jP	Clumps of lightly infested trees in Caldwell and Haddo twps.
Phyllocolpa populi (Marl.)	lA	Numerous on small trees at one point in Thistle Twp.

TABLE 15 (continued)

Insect	Host(s)	Remarks
Pikonema alaskensis (Roh.)	wS, bS	Open-grown trees heavily defoliated at several points in Sisk, Law, Askin, Gladman, Briggs and Joan twps.
Pineus pinifoliae Fitch	wP	Heavily infested trees observed at many points in the district.
Pristiphora geniculata (Htg.)	Mo	Present throughout district. Heavy on ornamentals in North Bay
Recurvaria sp.	tL	Small numbers from Bonfield, Pedley and Beaucage twps.
Rhabdophaga swainei Sw.	bS, wS	Found in most spruce stands. Black spruce was more heavily infested than white. Percentage of buds infested: Caldwell Twp. - 4.9; Bonfield Twp. - 5.4; French Twp. - 9.7; Gillies Limit Twp. - 13.3.
Rhyacionia adana Heinr. Rhyacionia busckana Heinr. Rhyacionia frustrana Comst.	rP, jP	Small numbers of these insects found at widely-separated points.
Schizura concinna A. & S.	Se, W	Colonies found throughout the district.
Semiothisa dispuncta Gn.	bF, wS	Numerous in samples particularly from the southern part of the district.
Toumeyella numismaticum P. McD.	jP	Several small trees heavily infested in Casimir and Springer twps. and single trees lightly infested in Mattawan, Calvin and Joan twps.
Zeiraphera fortunana Kft. Zeiraphera ratzeburgiana Ratz.	wS	Groups of lightly infested trees common through the southern part of the district. A few large white spruce heavily infested in Caldwell, MacPherson, Kirkpatrick, East Ferris and Bonfield twps.
Zellaria haimbachi Busck.	jP	Moderate numbers in several stands in Ratter, Hugel and Kirkpatrick twps.

STATUS OF INSECTS IN THE PARRY SOUND DISTRICT

C. A. Barnes

STATUS OF INSECTS

Larch Casebearer, Coleophora laricella Hbn.

A decline in population levels of this insect occurred in all but three sample plots in 1966 (Table 4). The decline was most pronounced at a sample point in Ridout Township, where only 4.2 larvae per 18 inch branch tip was recorded in 1966 compared with 14.8 larvae per tip in 1965. A threefold increase was recorded in larval counts in Chisholm Township, but defoliation did not exceed five per cent.

TABLE 4

Summary of Larval Counts of the Larch Casebearer in the Parry Sound District, 1964-1966

Location (township)	Tree species	Av. no. of larvae per 18-inch branch tip 1964	1965	1966
Ridout	eL	6.7	14.8	4.2
Wallbridge	tL	1.2	0.5	0.0
Chapman	tL	0.4	1.0	1.4
Perry	tL	0.4	0.2	0.1
McLean	tL	0.6	0.2	0.4
Gurd	tL	0.3	0.3	0.1
Chisholm	tL	1.5	0.8	3.5
Stephenson	tL	0.7	0.6	0.2

European Spruce Sawfly, Diprion hercyniae (Htg.)

Except in Joly and Ryerson townships, little change in population levels of this insect occurred in the district in 1966 (Table 5). Generally, larval counts were lower than in 1965. Defoliation was negligible at all sample points.

TABLE 5

Summary of European Spruce Sawfly Larval Counts Taken on White Spruce Trees in the Parry Sound District 1964-1966

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample		
		1964	1965	1966
Ryerson	8	24	43	27
Chapman	6	6	24	18
Gurd	10	11	51	63
McMurrich	7	5	19	10
Monteith	7	26	37	31
Perry	8	17	40	36
Croft	6	14	4	6
Joly	8	38	87	29
Machar	12	6	11	14
McLean	11	10	13	8

White-pine Shoot Borer, Eucosma gloriola Heinr.

Heavy infestations of this shoot-boring insect persisted for the third consecutive year in a Scots-pine plantation near Huntsville in Stisted Township. No appreciable change occurred in the medium infestation that has persisted for the past four years in a red and Scots pine plantation near Katrine in Armour Township. Elsewhere in the district populations declined to the lowest level in recent years (Table 6).

TABLE 6

Summary of Shoot Damage Caused by the White-pine Shoot Borer in the Parry Sound District, 1964-1966

Note: One hundred trees were examined at each location.

Location (township)	Host species	Av. height of trees in feet in 1966	Per cent of trees infested			Per cent of trees with leaders infested in 1966
			1964	1965	1966	
McLean	rP	10	9	2	3	0
Stisted	rP	19	6	3	0	0
Armour	scP	14	15	8	7	1

Jack-pine Needle Miner, Exoteleia pinifoliella (Chamb.)

Moderate to heavy infestations were observed in clumps of jack-pine near Parry Sound in McDougall Township and Pointe au Baril in Harrison Township and along the Brunel Road south of Huntsville, where up to 40 per cent of the 1965 foliage was infested. Light infestations were common in Boulter, Monteith and Mowat townships.

Birch Leaf Miner, Fenusa pusilla (Lep.)

Medium to heavy infestations of this leaf miner were common throughout the district in 1966. Heavy infestations were observed in pockets of white birch in Henvy, Mowat, Chapman and Strong townships. Severe mining of leaves occurred on ornamentals and native white birch in the towns of Huntsville, Parry Sound and Bracebridge. Light infestations were observed at numerous other locations in the remainder of the district.

Fall Webworm, Hyphantria cunea Dru.

Since 1960, population levels of the fall webworm have been relatively low in the district. In 1966, increases in larval colonies occurred along highways 69 and 103 in Freeman, Gibson and Medora townships. Numerous webs were observed on choke cherry, alder and white birch trees at several locations in these townships.

Eastern Tent Caterpillar, Malacosoma americanum F.

For the second consecutive year heavy infestations occurred along highway 69 from the Parry Sound - Lake Simcoe district boundary north to the French River. The highest colony count was obtained in Harrison Township, where 164 primary nests were recorded along a measured mile of roadside. Total defoliation of choke, pin and black cherry trees occurred commonly in this area. A decline in population levels occurred in the eastern part of the district where counts at sample points were generally lower than in 1965 (Table 7). A Polyhedral virus disease was observed in larval populations near Footes Bay in Medora Township.

TABLE 7

Summary of Eastern Tent Caterpillar Colony Counts
in the Parry Sound District 1964-1966

Location (township)	Sampling area	No. of primary tents		
		1964	1965	1966
Franklin	square chain plot	8	3	0
McAulay	" " "	3	7	4
Chisholm	" " "	1	2	1
Boulter	" " "	2	3	2
McLean	mile of roadside	28	31	3
Brunel	" " "	7	2	1
Stephenson	" " "	14	2	2
Wood	" " "	29	27	41
McDougall	" " "	17	14	22
MacKenzie	" " "	8	6	11
Harrison	" " "	-	181	164

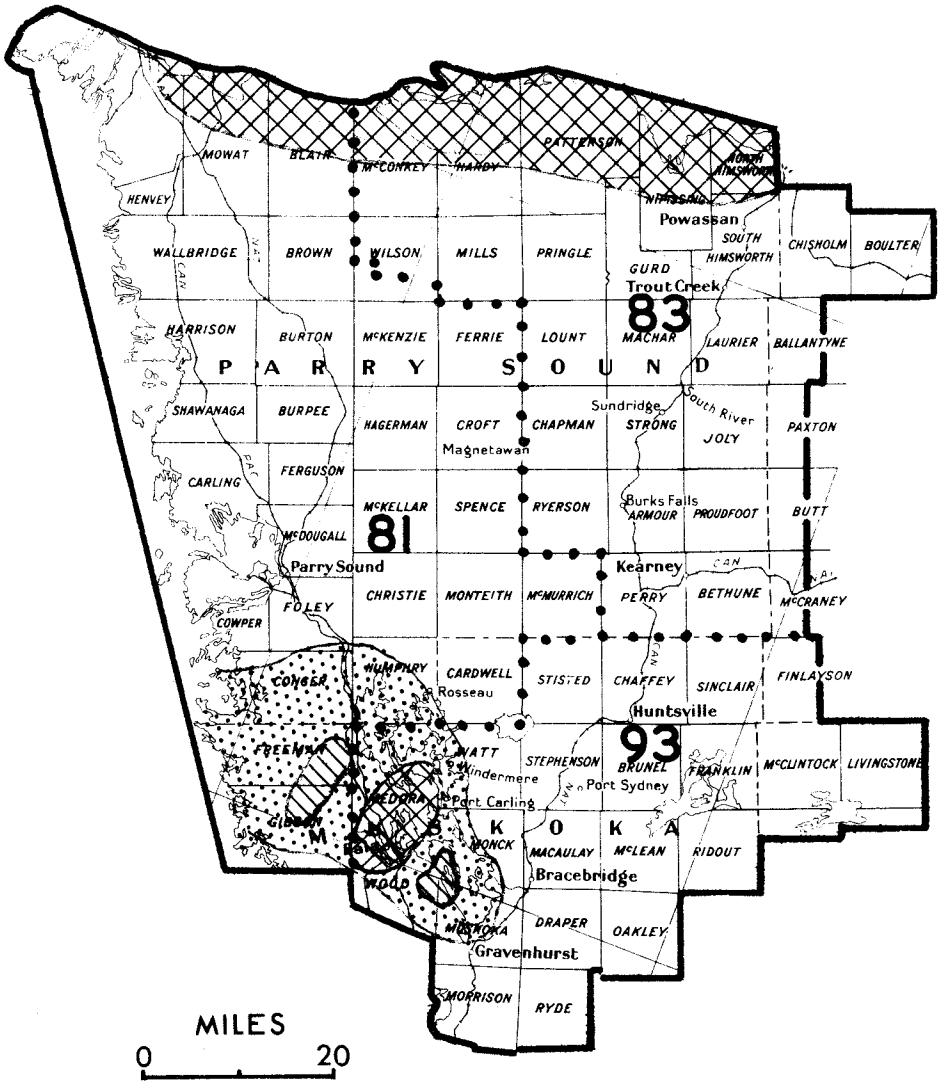
Forest Tent Caterpillar, Malacosoma disstria Hbn.

Population levels of this insect on trembling aspen, sugar maple, red oak and white elm trees increased in intensity in the northern and decreased in the southern part of the district. In the northern part of the district, a band of heavy infestation extended from Highway 69 eastward to North Himsworth Township, covering an area of approximately 550 square miles (see map).

Population levels declined in parts of the Muskoka infestation. However, pockets of moderate to heavy infestation persisted along Highway 103 in Gibson and Freeman townships, near Gravenhurst in Muskoka Township and near Footes Bay in Medora Township. The heavy infestation that had persisted for four years near Port Carling, declined in intensity and only small pockets of light to moderate infestation were observed in 1966. Early hatch and late development of foliage caused a high degree of mortality in early instar larvae in this area. Seventy-six per cent of a mass collection of late instar larvae were infected by an Entomothera fungus and a Polyhedral virus and five per cent were parasitized.

Mass collections of cocoons were made to determine the percentage of parasitism, predation, disease and moth emergence (Table 8).

PARRY SOUND DISTRICT



FOREST TENT CATERPILLAR

Areas in which defoliation occurred in 1966

Legend

Light defoliation . . . .

Moderate defoliation . . .

Severe defoliation . . . .

TABLE 8

Summary of Dissections of Forest Tent Caterpillar Cocoons
in the Parry Sound District 1965-1966

Location	Per cent adult emergence		Per cent parasitized		Per cent dead from other causes	
	1965	1966	1965	1966	1965	1966
Nipissing	16	26	84	67	0	7
*Medora	-	-	63	5	3	76
North Himsworth	-	24	-	56	-	20
Mowat	-	33	-	54	-	13
Medora	-					

* Collected in larval stage.

On the basis of egg band counts, heavy infestations are expected to persist in a band from Highway 69 to North Himsworth Township (Table 9). Except in Wood and Medora townships, the Muskoka infestation should decline to light intensity in 1967.

TABLE 9

Summary of Egg Band Counts of the Forest Tent Caterpillar
in the Parry Sound District, 1965-1966

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees sampled	Total no. of egg bands		Defoliation forecast
		1966	1965	1966	1967
Nipissing	6	3	24	30	Severe
French River	5	3	30	21	"
Mowat	5	3	3	1	Light
Medora	6	3	27	4	"
Wood	6	1	22	15	Severe
Boulter	6	3	1	0	Nil
North Himsworth	4	1	-	27	Severe
Gibson	6	3	32	0	Nil
Ridout (light trap)	5	3	0	0	"

A light trap has been operated in Ridout Township since 1961 to capture forest tent caterpillar adults. Results show that the number of moths reached a peak in 1962, then declined each year until 1965. However, a marked increase was recorded in the number of adults recovered in 1966 (Table 10).

TABLE 10

Summary of Malacosoma disstria Hbn. Moths Recorded in a Light Trap in the Parry Sound District for the Years 1961-1966

Location (township)	Total no. of female and male moths					
	1961	1962	1963	1964	1965	1966
Ridout	13	71	56	31	19	207

Cedar Sawfly, Monoctenus fulvus Nort.

This insect was collected in small numbers throughout the district. However, a decline in numbers was recorded at three of four quantitative sample locations (Table 11).

TABLE 11

Summary of Cedar Sawfly Counts in the Parry Sound District from 1964 to 1966

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample		
		1964	1965	1966
Machar	4	28	24	11
Humphrey	5	11	9	8
McKonkey	6	4	7	18
Shawanaga	4	54	41	21

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Heavy infestations of this sawfly persisted for the third consecutive year in red and Scots pine plantations in Ridout, Stevenson, Gibson, McAulay and Freeman townships. Total defoliation of red pine trees occurred in the plantations in Ridout and McAulay townships causing heavy tree mortality. A Polyhedral virus caused considerable mortality of late instar larvae in the McAulay infestation but occurred too late to prevent severe defoliation.

Medium infestations were observed commonly on hedgerow and individual red and jack-pine trees along roadsides in Ballantyne, Wilson, Machar, McLean and Pringle townships. Light infestations were observed at numerous other locations.

Colony counts based on the examination of 100 trees at each location are summarized in Table 12.

TABLE 12

Summary of Red-headed Pine Sawfly Colony Counts
in the Parry Sound District in 1965 and 1966

Location (township)	Tree species	Av. height of sample trees in feet	No. of trees infested 1966	Av. no. of colonies per infested tree 1965	1966
Henvy	rP	7	6	1.0	1.0
Mowat	jP	20	3	0.0	1.0
Wilson	rP	11	5	1.4	1.0
Ridout	rP	10	100	1.2	2.5
Livingstone	rP	7	11	1.2	1.0
Wood	rP	21	7	4.7	1.1
Stephenson	scP	7	51	1.2	2.2
McAulay	rP	9	100	-	1.7

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

With one exception, little change in population levels of this insect occurred at sample points in the district in 1966 compared with 1965 (Table 13). For the first time in the past three years no colonies were observed at the sample point in Perry Township.

TABLE 13

Summary of Red-pine Sawfly Colony Counts in
the Parry Sound District in 1965 and 1966

Note: Ten trees examined at each location.

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees infested 1965	1966	Av. no. of colonies per tree 1965	1966
McDougall	5	3	3	1.0	1.0
Franklin	5	4	5	1.7	1.0
South Himsworth	6	5	8	1.0	1.1
Perry	-	3	0	1.0	0.0

Black-headed Jack-pine Sawfly, Neodiprion pratti banksianae Roh

No appreciable change in population levels of this insect occurred in the district in 1966 compared with 1965 (Table 14). Defoliation did not exceed five per cent at sample points.

TABLE 14

Summary of Black-headed Jack-pine Sawfly Colony Counts
in the Parry Sound District in 1965 and 1966

Note: Ten trees examined at each location.

Location (township)	No. of trees infested		Av. no. of colonies per infested tree	
	1965	1966	1965	1966
Monck	0	1	0.0	1.0
Draper	3	3	1.0	1.0
Ryerson	10	10	1.4	1.4
McDougall	1	2	1.0	1.5
McLean	2	0	1.5	0.0
Medora	4	7	1.0	1.1
Monteith	10	10	2.2	1.4

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Population levels of this insect remained at a low level in 1966 (Table 15). Since 1959 only small numbers of colonies have been found in the district.

TABLE 15

Summary of Red-headed Jack-pine Sawfly Colony Counts
in the Parry Sound District in 1965 and 1966

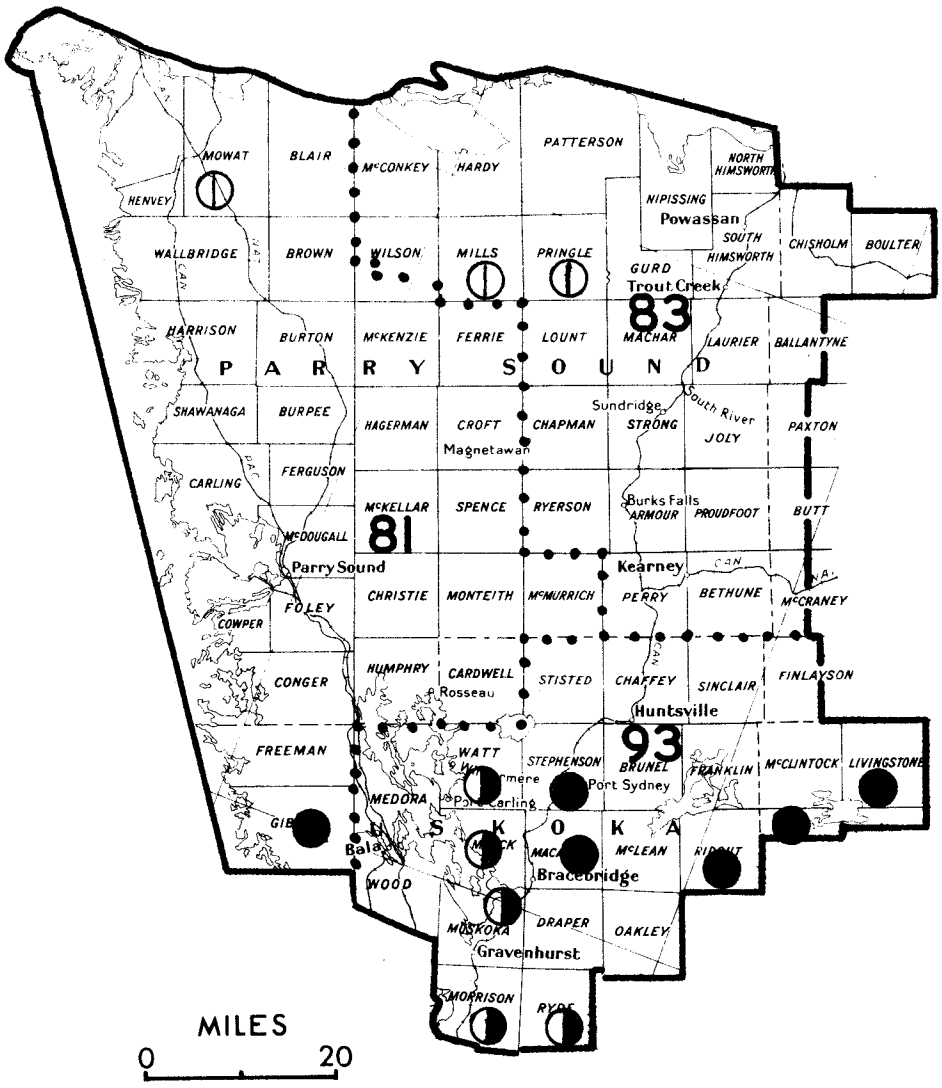
Note: Ten trees examined at each location.

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of colonies per tree	
		1965	1966
Pickerel River	4	0.0	0.1
French River	5	0.9	0.8
Henvy	5	2.1	2.7
Shawanaga	5	0.5	0.3

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

Only one colony of this insect was collected in the district between 1960 and 1965. In 1966, light infestations were observed in the French, Pickerel and Still river areas. Counts based on the examination of ten trees at each location are summarized in Table 16.

PARRY SOUND DISTRICT



RED-HEADED PINE SAWFLY

Locations where infestations were observed in 1966

Legend

Light infestation . . . . .

Medium infestation . . . . .

Heavy infestation . . . . .

TABLE 16

Summary of Swaine Jack-pine Sawfly Colony Counts in the Parry Sound District in 1965 and 1966

Location (township)	No. of trees infested 1966	Av. no. of colonies per infested tree 1965	1966
Pickerel River	2	0.0	1.0
French River	3	1.0	1.0
Still River	1	0.0	1.0

Bruce Spanworm, Operophtera bruceata Hlst.

Infestations of this insect on sugar maple increased from light to heavy intensity near Fletcher Lake in McClintock and Livingstone townships where defoliation approximated 70 per cent (see photograph). Light infestations were observed in Sinclair and Finlayson townships.

White-pine Weevil, Pissodes strobi Peck

A sharp decline in population levels of this insect occurred at all but one sample point in 1966 (Table 17). However, populations increased in a stand of white-pine regeneration near Huntsville, where 20 of 100 trees examined were infested. Elsewhere, control measures kept populations at a low level.

TABLE 17

Summary of Damage by the White-pine Weevil in the Parry Sound District in 1965 and 1966

Location (township)	Tree species	Per cent trees infested 1965	1966	Per cent cumulative damage all years 1965	1966
McLean	jP	0	0	41	41
McLean	rP	0	0	18	18
McMurrich	jP	2	0	56	56
McAulay	jP	0	1	57	58
Armour	scP	12	2	53	55
Chaffey	wP	22	20	43	63

Balsam Bud-mining Sawfly, Pleroneura borealis Felt.

In 1966 infestation intensities were expected to approximate those of 1964, but populations declined to the lowest level recorded in recent years. Counts based on the examination of 20, 18-inch branch tips at seven locations are summarized in Table 18.

TABLE 18

Summary of Balsam Bud-mining Sawfly Larval Counts in the Parry Sound District in 1964 and 1966

Location (township)	Av. height of sample trees in feet	No. of new buds examined	Per cent buds infested	
			1964	1966
Joly	23	217	5.8	0.6
McLean	25	305	17.0	1.2
MacKenzie	30	289	8.1	0.0
Ferguson	26	332	7.1	0.6
Chaffey	35	391	7.8	1.3
Franklin	30	290	13.7	0.3
Laurier	35	311	11.3	0.0

Larch Sawfly, Pristiphora erichsonii Htg.

Population levels of this sawfly on tamarack and European larch have declined since 1962. In 1966 light infestations persisted at numerous locations throughout the district. Defoliation of host trees did not exceed ten per cent at any location.

Mountain-ash Sawfly, Pristiphora geniculata Htg.

Light to moderate infestations persisted at several locations in the district in 1966. The most noteworthy of these were located in Gurd, McClintock, Perry, Muskoka and McDougall townships. Defoliation of host trees did not exceed 25 per cent. Light infestations were common on roadside trees at numerous other locations.

A Poplar Leaf Roller, Pseudexentera oregonana Wlshmn.

Heavy infestations persisted for the fourth consecutive year in the northwest part of the district where defoliation of trembling aspen trees ranged from 50 to 70 per cent. In the remainder of the district infestations declined to moderate or light intensity.

TABLE 19

Summary of Miscellaneous Insects Collected in the Parry Sound District

Insect	Host(s)	Remarks
Abbotana clemataria A. & S.	eH	Small numbers
Acronicta dactylina Grt.	Al	Small numbers
Adelges abietis Linn.	wS	Heavy infestations in Ridout, Sherbourne and Chisholm twps.
Adelges lariciatus (Patch)	wS	Small numbers on one tree in Perry Twp.
Altica populi Brown	bPo	Light infestation in Perry Twp.
Anomogyna elimata Gn.	bF	Small numbers at one location
Aphrophora parallela Say	wP	Moderate infestation at one location in Franklin Twp.
Arge sp.	Se	One colony on roadside trees in Stephenson Twp.
Argyresthia laricella Kft.	tL	Small numbers in McLean Twp.
Campaea perlata Gn.	wP	Small numbers in beating tray samples.
Caripeta divisata Wlk.	bF	Small numbers from balsam fir plot 632.
Caripeta divisaria Wlk.	bF	Small numbers from balsam fir plot 632.
Cenopis acerivorana MacK.	sM, rM	Moderate infestation north of Port Carling in Medora Twp., and on occasional red maple in Cardwell Twp.
Choristoneura fumiferana Clem.	wS	Collected in small numbers at one location.
Coccidae	sM	Heavy infestation on sugar maple at one location in Peck Twp.
Coleophora fuscedinella Zell.	wB	Casebearers collected in small numbers in Machar Twp.
Corthylus punctatissimus Zimm.	sM	Common on regeneration throughout the district.
Dasyneura balsamicola (Lintn.)	bF	Observed commonly throughout the district.
Epinotia corylana McD.	Al	Alder catkins moderately infested at one location in Croft Twp.
Epinotia solandriana Linn.	wB	Common in Shawanaga, Machar and Laurier twps.
Eucosma tocullionana Heinr.	wP	White pine cones lightly infested in Ridout Twp.
Euura hospes (Walsh)	W	Heavy infestation at one location in McLean Twp.
Fenusa dohrnii (Tischb.)	Al	Small numbers at several locations.

TABLE 19 (continued)

Insect	Host(s)	Remarks
Feralia jocosa Gn.	eH, bF	Small numbers at four locations in the district.
Galerucella decora Say.	W	Heavy infestation along Aspdin Road in Cardwell Twp.
Gonioctena americana Schaeff	tA	Moderate to heavy infestations on trembling aspen saplings in Laurier, Franklin and Stephenson twps.
Gracillaria alnivorella Cham.	Al	Common on alder at one location in Perry Twp.
Halisidota maculata (Harr.)	Al	Small numbers at two locations.
Lapara bombycoides Wlk.	wP	Small numbers.
Melanagromyza schineri (Gir)	tA	Common on this host at one location in Boulter Twp.
Nematus limbatus Cress	W	Occasional colonies observed at several locations throughout the district.
Neurotoma inconspicua (Nort.)	pCh	Common at one location in Muskoka Twp.
Nymphalis antiopa Linn.	W	Colonies common on this host in Shawanaga and McClintock twps.
Ocnerostoma sp.	rP	Needle mining common at one location in Perry Twp.
Pamphiliidae	rP	Common at one location near Hollow Lake in Sherbourne Twp.
Papilio glaucus Linn.	W, Mo	Small numbers at two locations.
Phratora purpura purpura Brown	tA	Common on small aspen near park boundary in Ballantyne Twp.
Phyllocolpa sp	tA	Moderate to heavy infestations common on understory aspen at several locations throughout the district.
Pikonema alaskensis Roh	wS	Collected in small numbers at three locations.
Pikonema dimmockii (Cress)	wS	Small numbers at three locations.
Pineus floccus Patch	rS, bS	Red spruce trees at Swan Lake heavily infested.
Pineus similis Gill.	wS, bS	Common at several locations in McAulay and Franklin twps.
Profenusa thomsoni (Konow)	wB	Common on smaller trees in Mowat and Cardwell twps.
Pseudexentera cressoniana Clem	rO	Moderate infestation at one location in Humphrey Twp.
Schizura concinna A. & S.	W, tA	Common in Strong, Carling, Wilson, Mowat, Patterson and Chaffey twps.

TABLE 19 (continued)

Insect	Host(s)	Remarks
Sphinx chersis Hbn.	wAs	Small numbers at one location.
Thera juniperata L.	juniper	Light infestation near MacTier in Freeman Twp.
Trisetacus alborum Keifer	wP	Found commonly in new twigs of white pine at several locations throughout the district.
Vasates quadripes Shim	rM, sM	Heavy infestations observed at several locations throughout the district.
Zale helata Sm.	wP	Small numbers.
Zeiraphera diniana Gn.	tL	Moderate infestation near Alderdale in Chisholm Twp.
Zeiraphera fortunana Kft.	wS	Small numbers.
Zeiraphera ratzeburgiana Ratz.	wS	Found in varying degrees of intensity at three locations in the district.

CENTRAL FOREST REGION

1966

INTRODUCTION

STATUS OF INSECTS (REGIONAL)

STATUS OF TREE DISEASES (REGIONAL)

STATUS OF INSECTS (DISTRICT)

INTRODUCTION

Central Region

The following report deals with the status of forest insects and tree diseases in the Central Region in 1966. Major insect problems and all diseases are presented on a regional basis, and other data are recorded on a forest district basis.

One staff change occurred in 1966 with W.E. Ingram replacing R.A. Trieselmann in the Gogama District.

The forest tent caterpillar continued to be the major forest insect pest in the southern part of the region. The discovery of the European pine sawfly on the Manitoulin Island in 1965, prompted intensive surveys in this area. The entire regional staff was involved in this work at various periods during the summer. Extensions of the previously known range of the birch leaf miner were recorded. Other noteworthy insects were Bruce's spanworm and the wandering sawfly.

The most interesting development in the field of forest pathology was the discovery of infections of the fungus Scleroderris lagerbergii Gremmen on both red pine and jack pine in all districts in the region. Additional distribution records of the Dutch elm disease were obtained in the Sudbury District.

Duties other than those directly related to forest insect and disease surveys were carried out during the field season. Technicians from the Sudbury and White River Districts assisted personnel of the National Film Board during the field season. Short courses of instruction on forest insects and tree diseases were given to all junior forest ranger groups and several days were devoted to assistance at conservation schools. The examination of plantations, forest stands or ornamentals at the request of companies and private owners constituted an important part of technician field duties in 1966.

Personnel of the Central Region again express appreciation for co-operation and assistance extended by the Department of Lands and Forests and other agencies in 1966.

H. G. McPhee

Forest Tent Caterpillar, Malacosoma disstria (Hbn.)

No significant change in the total area of forest tent caterpillar infestation occurred in the region in 1966 (see map). In Sault Ste. Marie District a band of heavy infestation approximately 20 miles in width persisted in the southern part of Division 66 and a 150-square mile area of heavy infestation recurred between Echo Bay and Rock Lake.

In Sudbury District the location and extent of areas of infestation shown on the accompanying map were the same as those reported in 1965 but population levels were higher. As a result aspen stands and deciduous understory in many areas were stripped of foliage well before larval development was complete. Mass migrations occurred and in some instances considerable defoliation of unusual host trees such as white spruce was observed.

Light infestations occurred outside the areas of heavy infestations in the southern parts of Sault Ste. Marie and Sudbury districts. In Chapleau District a pocket of light infestation reported near the Town of Chapleau in 1965 virtually disappeared.

Larval and cocoon samples revealed an increase in natural control agents. A heavy epidemic of disease occurred in larval populations in sugar maple stands in the Matinenda and Gordon Lakes areas in the Sault Ste. Marie District. Dissection of cocoons revealed an increase in parasitism compared with 1965, particularly at sample points in Sudbury District. However, moth emergence and oviposition at all sample points was sufficient to maintain heavy infestations in 1967 (Table 1).

TABLE 1

Summary of Forest Tent Caterpillar Cocoon Mortality in the Central Region in 1965 and 1966 Based on the Dissection of One-hundred Cocoons at Each Location

Location (township by district)	Emerged		Parasitized		Disease		Predation		Unsuccessful emergence	
	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966
Sudbury										
Bigwood	50	44	45	52	0	3	5	0	0	1
Graham	34	17	65	82	0	1	0	0	1	0
Rayside	68	27	32	72	0	1	0	0	0	0
Dill	61	16	37	81	0	3	2	0	0	0
Merritt	49	39	50	59	0	0	1	1	0	1
Appleby	-	12	-	88	-	0	-	0	-	0
Sault Ste. Marie										
Scarfe	49	33	48	60	2	7	1	0	0	0
Cobden	40	37	57	56	3	7	0	0	0	0
Meredith	49	31	45	63	5	5	1	0	0	1
Johnson	41	35	58	58	1	3	0	2	0	2
Patton	34	66	54	33	4	1	8	0	0	0
149	50	27	40	68	10	1	0	3	0	1
Proctor	70	48	29	48	1	2	0	0	0	0
Day	-	51	-	42	-	5	-	2	-	0

A summary of egg surveys shown in the following table reveals that heavy infestations are likely to persist in the same areas as in 1966. However, a marked decline in numbers of egg bands in the French River, Espanola and Sudbury infestations and in the Matinenda and Gordon Lake areas in Sault Ste. Marie District indicate that defoliation of host stands will be less severe.

TABLE 2

Summary of Forest Tent Caterpillar Egg Band Counts
in the Central Region in 1965 and 1966

Location (township by district)	Tree species	Av. d.b.h. of trees in inches	Average no. of egg bands per tree 1965	1966	Forecast for 1967
Sudbury					
Graham	tA	4	15	33	Heavy
Bigwood	tA	5	62	26	"
Dill	tA	4	42	28	"
Merritt	tA	4	37	26	"
Burwash	tA	5	1.7	2	Light
Shedden	tA	4	1	4	Medium
Hagar	tA	6	0	.01	Light
Appleby	tA	6	-	39	Heavy
137	tA	5	-	.01	Light
129	tA	6	1.7	2.6	Light
Rayside	tA	4	-	29	Heavy
Sault Ste. Marie					
Meredith	sM	4	18	35	Heavy
Johnson	sM	4	67	11	Heavy
Plummer	tA	4	1	5	Medium
Proctor	tA	5	34	66	Heavy
Scarfe	tA	4	131	6	Medium
Patton	tA	5	17	26	Heavy

Larch Sawfly, Pristiphora erichsonii (Htg.)

Increases in population levels of this sawfly occurred at several locations in the Chapleau and Sault Ste. Marie districts in 1966. In the Chapleau District pockets of heavy infestation were observed in 11C, 11D and 12C townships and in Thessalon and Parke townships in the Sault Ste. Marie District. In the Sudbury District a medium infestation in the Spanish River Reserve south of Massey declined to light intensity. In the remainder of the Region light infestations occurred commonly but severe defoliation was confined to small, open-grown trees.

Mountain-ash Sawfly, Pristiphora geniculata Htg.

Significant changes in the status of this insect were observed in two districts of the Region. In the White River District, a heavy infestation was reported for the first time at Quebec Harbour on Michipicoten Island where 80 to 100 per cent defoliation of mountain ash trees occurred. The only previous collection of the insect in the district was made in 1960 when a few larvae were found in Township 30 Range 25. A marked decline in infestation intensity was observed in the Sudbury District. Light defoliation occurred on scattered

mountain ash trees in the western part of the district where moderate to severe defoliation was reported in 1965. In the remainder of the region population levels showed little change.

White Pine Weevil, Pissodes strobi (Peck)

Damage appraisals in 1966 showed that the degree of attack in young stands was generally at the same level as that recorded in 1965. However, decreases were evident at sample points in white pine stands in the Chapleau District and in jack pine stands in the White River District. Localized increases in numbers of infested shoots were noted on Scots pine plantations in the Sudbury District. (Table 3).

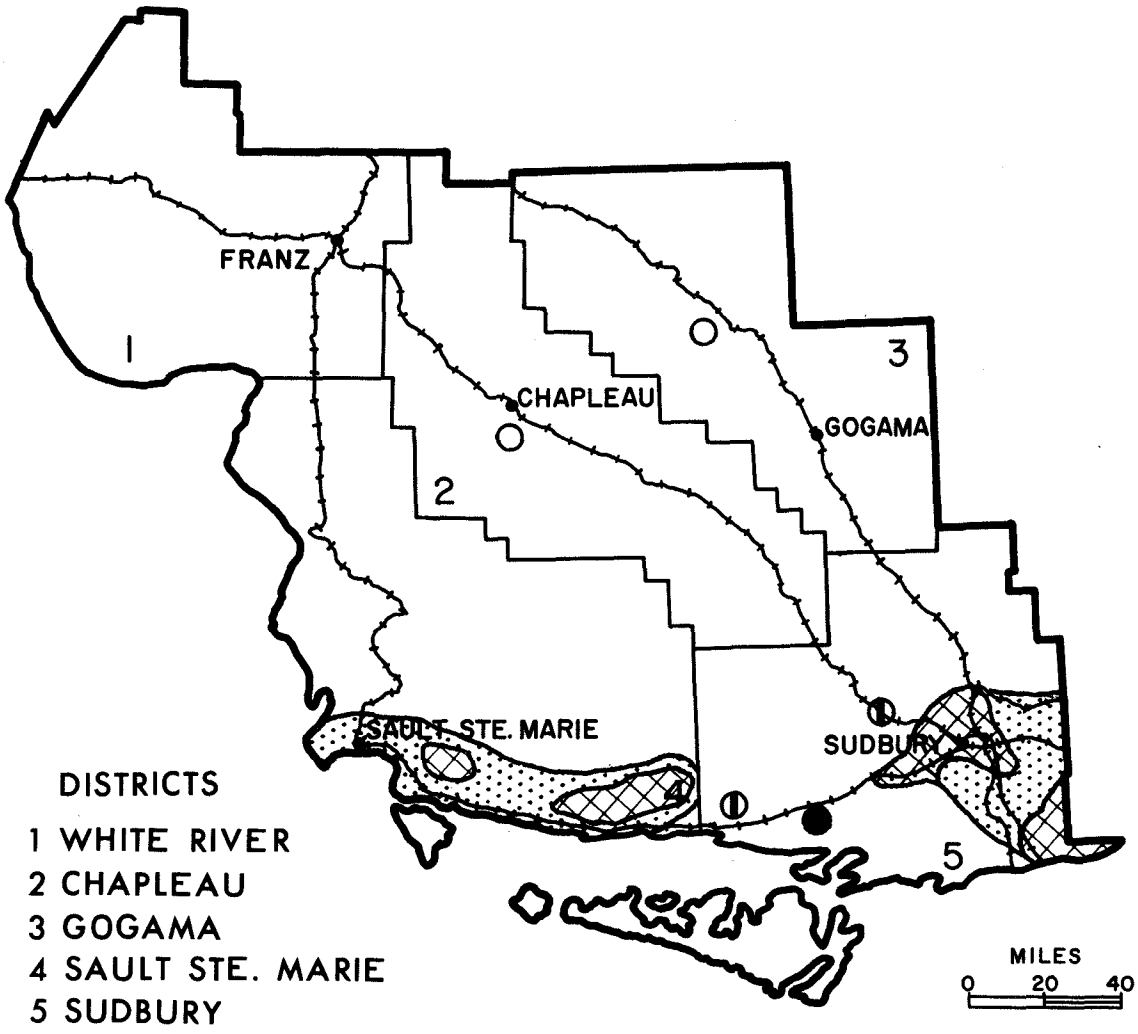
Chemical insecticides used on plantations in the Espanola area provided almost 100 per cent control. Control measures in parts of the Kirkwood Management Unit in the Sault Ste. Marie District using both aerial and ground operated equipment were also satisfactory.

TABLE 3

Summary of Damage by the White Pine Weevil in the Central Region in 1965

District	Host species	No. of sample areas	Av. no. of trees examined per sample	Range in percentage of trees weevilled
Sault Ste. Marie	wP	19	100	2 - 14
	jP	12	"	5 - 18
	ScP	5	"	4 - 41
	rP	1	200	5
	wS	2	100	3 - 9
	bS	2	100	2 - 7
Sudbury	jP	4	100	0 - 8
	ScP	1	"	40
Chapleau	jP	12	100	2 - 17
	wP	1	200	7
	rP	2	200	1 - 3
Gogama	jP	6	100	0 - 6
	wP	4	"	0 - 23
	ScP	1	"	0
	bS	1	"	1
	rP	2	"	0 - 1
White River	jP	1	500	3
	wS	1	500	11
	bS	1	500	11

CENTRAL FOREST REGION



FOREST TENT CATERPILLAR

Areas and locations where defoliation occurred in 1966

Legend

Light defoliation ◐ or ▨

Moderate to severe defoliation ● or ▩

Locations where insects were found in small numbers . . . . . ○

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

This disease was recovered from a few new distribution points: Billings and Sandfield townships on Manitoulin Island, Baldwin Township near Espanola, and in Scollard Township in the southeastern corner of the district. As in 1965, incidence was low with only one or two trees infected at each location. The record in Scollard Township was the first in the eastern part of the district even though the organism was found in an adjacent area of North Bay District in 1964 and 1965.

Ink Spot Disease of Poplar, Ciborinia whetzelii (Seav.) Seav.

Little change in incidence and severity of this disease was observed in the region in 1966, except in Gogama District where heavy infections reported in 1965 declined to light intensity. Small areas of heavy infection persisted in pole-sized aspen stands at numerous points in the remainder of the region and light leaf damage was observed frequently.

Hypoxylon Canker of Poplar, Hypoxylon mammatum (Wahl.)

Little change in the status of this disease occurred in poplar stands throughout most of the region. However, in Sudbury District, incidence increased in sample plots in Burwash and Hallam townships from 41 and 11 per cent in 1964, to 60 and 12 per cent in 1966, respectively.

Leaf and Twig Blight of Aspen, Pollaccia radiosa (Lib.) Bald. & Cif.

Trembling aspen regeneration was severely infected by this pathogen in Chapleau, Borden, Margaret, and 9D townships of Chapleau District. A heavy infection occurred in Township 28 Range 24 in the White River District, while high incidence was reported at various locations in Sault Ste. Marie and Sudbury districts.

Scleroderris Canker of Pine, Scleroderris lagerbergii Gremmen

This disease had only been recorded in two areas in the southern part of Sault Ste. Marie District up to 1965. Mortality of young red pine had been observed in these areas for at least 10 years but the causal organism was not determined until 1965.

Heavy infections occurred in 1965 at nurseries in the Sault Ste. Marie and Swastika districts. (see Information Reports, Forest Insect and Disease Survey, 1965 O-X-14 and O-X-21). Since stock from both nurseries had been planted at various locations in the region prior to 1965, intensive surveys were undertaken in 1966 to determine the distribution of the disease in the Region.

New distribution records were obtained in Salter Township, Sudbury District, where red pine stock from the Swastika nursery was planted in 1964, and in Township 1A of the Sault Ste. Marie District, where red pine stock from Kirkwood was used. The survey showed that the disease was prevalent in both planted and natural jack pine stands, and in red pine plantations that had been stocked from various nurseries.

TABLE 4

Summary of Incidence and Mortality in Stands Infected by the Scleroderris Canker of Pine in the Central Forest Region in 1966

District	Host	No. sampled trees	No. dead trees	No. living trees	No. infected trees	No. healthy trees
Sault	Scp	100	2	98	12	86
	rP	500	95	405	219	186
Sudbury	rP	500	19	481	20	461
Chapleau	jP	100	2	98	74	24
	rP	472	42	430	264	166
G ma	rP	200	2	198	31	167
White	jP	597	24	573	272	301
River	rP	3908	1808	2100	2040	60

Frost Injury

Frost injury was evident at several locations in the Region. Damage occurred mainly on white spruce and balsam fir. Moderate injury was observed in the Espanola area, and light damage occurred in Curtis, Haughton, Bridgland, and 2A townships in Sault Ste. Marie District, in low-lying areas in the townships of Garabaldi and Garvey in Gogama District, and in Township 30, Range 23 in the White River District.

Winter Drying

In 1966, damage due to winter drying was much lighter than the previous year. In an area north of Camp 53 in the Ontario Paper Company limits, the lower limbs on jack pine regeneration suffered severe winter drying, while in Hallam and Burwash townships in the Sudbury District, red pine plantations were seriously affected. Browning of red pine foliage was evident in Gogama District, but trees recovered toward the end of the growing season.

Salt Injury

Moderate to severe salt injury to jack pine regeneration was observed along Highway 17 from White River west to Marathon. Red and white pine shelterbelts were severely damaged from Sault Ste. Marie east to Massey and along Highway 69 at Burwash.

Needle Droop Condition on Red Pine

Severe damage to red pine was observed in two plantations in Sudbury District in 1966. In Hallam Township 60 per cent of the trees in a 10-acre plantation were affected and four per cent were killed. In Salter Township 96 per cent of the trees were affected in a 5-acre plantation and six per cent were killed. The trees at these locations ranged from two to eight feet in height.

The condition was first detected in early May. Damage was confined to 1965 foliage and was characterized by the browning and drooping of needles and constriction of the needles within the sheaths (see photo). The buds at the end of affected shoots died, resulting in the death of some of the smaller trees.

A mite, Setoptus jonesi (Keifer) was found in damaged material submitted to the Insect Laboratory in May. However, examination of affected needles in September failed to reveal the presence of mites. The Forest Pathology Laboratory found several disease organisms which have not been determined to date.

Other Noteworthy Diseases in the Central Region in 1966

Organism	Host(s)	Remarks
Apiosporina collinsii (Schw.) (Hoehn.	Se	Heavy in 13H, light in 29 and 11E twps., Chapleau District. Shrubs severely affected at widely separated locations in the Sudbury District
Armillaria mellea (Fr.) Kummer	jP,rP	Light mortality observed throughout White River and Gogama districts, and in 13H and Panet twps. in Chapleau District
Chrysomyxa pirolata Wint.	wS	Light infection on new cones in Gertrude Twp. and along Michipicoten High Falls Road in White River District
Coleosporium asterum (Diet.) Syd.	jP, rP	Pockets of heavy infection occurred in Burpee Twp. on Manitoulin Island and in the Spanish River Indian Reserve in Sudbury District. Light infection at one location in Gogama District and occasionally found in Sault Ste. Marie District.
Coleosporium solidaginis (Schw.) Thum.	jP	Light infection in 11D Twp. in Chapleau District
Cronartium comptoniae Arth.	jP	Basal stem canker on young trees. Occasionally found in two twps. in Gogama District and the Little White River Area of Sault Ste. Marie District. Incidence of sporulating canker declined from 32 per cent in 1965 to 15 per cent in 1966 at a sample plot in Sudbury District. No mortality was evident

Other Noteworthy Diseases (continued)

Organism	Host(s)	Remarks
Cronartium ribicola J.C. Fischer	wP, Ribes	The organism was found in wP stands throughout the Central Region but no significant status changes were recorded
Cytospora chrysosperma (Pers.) Fr.	tA, W	Caused severe damage to individual or small clumps of host trees at scattered points in Sudbury District and in Chester Twp., Gogama District
Cytospora kunzei Sacc.	nS	Severe damage to plantation in Lorne Twp. in Sudbury District Approx. 25 per cent of trees attacked
Dibotryon morbosum (Schw.) Theiss. & Syd.	pCh, ecCh	Common throughout Central Region on prunus spp. Small pockets of heavy infection occurred on domestic plum on St. Joseph Island in Sault Ste. Marie District
Dothichira populea Sacc. & Braird	lPo	Group of trees severely damaged in Kehkummah Twp. on Manitoulin Island, Sudbury District
Fomes pinicola (Sw. ex Fr.) Cke.	bS	Host trees lightly infected in 29 and Borden twps. in Chapleau District
Gymnosporangium sp.	Mo	Pockets of heavy infection along the shoreline of Lake Superior in Sault Ste. Marie District
Hypodermella ampla (J.J. Davis) Dearn.	jP, rP	Heavy infections occurred in Margaret Twp., Chapleau District, 119 Twp., Sudbury District, and in pole size trees at scattered points in White River District. Light pockets occurred at other points throughout the Central Region
Keithia thujina Durand	eC	Heavy infection in Hallam Twp. in Sudbury District
Lophium mytinellum (Pers.) Fr.	jP	Collections made from Little White River Area in Sault Ste. Marie District
Melampsora epitaea Thuem.	W	This rust is widespread in Chapleau District
Melampsora medusae Thum.	tL	Light infection of this foliar rust in Chapleau Twp., Chapleau District, and in Bryant and Hunt twps., White River District
Melampsorella caryophylla Schroet.	bF	Light incidence at two locations in White River District and at one location in each of Gogama and Chapleau districts

Other Noteworthy Diseases (continued)

Organism	Host(s)	Remarks
Pollaccia elegans Serv.	bPo	Heavy infection along Hemlo Road in White River District. Light infection in McNaught Twp., Chapleau District and spotty in Sudbury District
Poria obliqua (Pers. ex Fr.) Karst.	wB	Occasional trees infected in 10E Twp., Chapleau District
Puccinia bolleyana Sacc.	El	Orange rust infecting petioles and leaves in 11D Twp., Chapleau District
Pucciniastrum geopaltianum	wS	Heavy fruiting of foliar rust observed on wS hedge in Gogama
Rhytisma acerinum Pers. ex Fr.	W, rM, mM	Common throughout Gogama District
Rhytisma punctatum Pers. ex Fr.	mM	Heavy infection on mM foliage throughout Gogama District
Rhytisma salicinum Pers. ex Fr.	W	Heavy infection in Knowles Twp. in White River District. Light infection observed frequently in patches throughout Gogama District
Sclerphoma pithyophila (Corda) Hoehn.	jP	Prevalent in several areas in association with branch tip mortality in Sudbury District
Septoria musiva Peck.	bPo	Severe wilting of foliage in Cecil and Hunt twps. in White River District
Steganosporium pyriforme (Hoffm. ex Fries) Corda	sM	Light branch mortality in stands on Manitoulin Island in Sudbury District and on St. Josephs Island in Sault Ste. Marie District
Taphrina robinsoniana Geis.	Al	Common on alder throughout Gogama District
Thyronectria balsamea (Cke. & Pk.) Seavel	bF	Light infection observed along Ranger Lake Road in Sault Ste. Marie District and in Jack Twp. in Gogama District
Tubercularia vulgaris Tode. ex Fr.	pCh, aMo	Stem and branch mortality resulting from this disease was noted throughout the Gogama District

Diseases and Organisms of Forest Flora

Organism	Host	Remarks
Nyssopsora clavellosa (Berk.) Arth.	Aralia	Occasional infection on host species in 11D Twp. in Chapleau District
Puccinia asteris Duby	Aster	Heavy infection in Peakes Twp. in White River District and light infection in Nimitz Twp. in Chapleau District
Puccinia caricina D. C.	Ribes	Found on two species of Ribes in Brutus Twp. in Chapleau District
Puccinia dioicae P. Magn.	Aster	Found throughout Chapleau District and in Stetham Twp. Gogama District
Puccinia coronata Cda.	Buckthorn	Light infection in Chapleau and McNaught twps., Chapleau District
Puccinia linkii Klotzsch	Bitter Current	Light infection in Twp. 30 Range 26 in White River District
Puccinia porphyrogenita Curt. ex Thum.	Bunchberry	Host heavily infected in Rumsey's plantation in White River District
Puccinia pyrolae Cooke	Fringed Milkwort	Rust attacking this host in 10E Twp., Chapleau District
Puccinia mesomajalis Berk. & Curt. ex Pk.	Clintonia	Light infection in Cochrane and 11D twps. in Chapleau District

STATUS OF INSECTS IN THE SAULT STE. MARIE DISTRICT

H. G. McPhee

Green-striped Mapleworm, Anisota rubicunda (Fabr.)

Decadence of sugar maple occurred in a 10-acre area of Township 31, Range XVIII near Buckshot Lake in association with a heavy infestation of A. rubicunda that had persisted for a number of years.

In 1966 only single larval colonies were found on the periphery of the previously infested area.

Although most twigs in the crown were dead in 1965 the cambium in the trunk region was living and epicormic branches along the stem had produced foliage. By 1966 the cambium throughout the trunk was dead in most trees in the affected area.

Larval colonies of this insect were found more frequently than in recent years on fringe and open-grown red maple and sugar maple along the North Channel, particularly on St. Joseph Island

Larch Casebearer, Coleophora laricella Hbn.

Low populations of this insect were found commonly in larch stands throughout the southern half of the district. Virtually no change in numbers was observed at permanent sample points (Table 5).

TABLE 5

Summary of Larval Counts of the Larch Casebearer at Five Points in the Sault Ste. Marie District from 1964 to 1966

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

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of larvae per 18-inch branch tip		
		1964	1965	1966
Kirkwood	5	1.25	2.60	3.1
Wells	3	1.15	2.25	4.2
Parke	4	1.80	1.30	2.1
Ryan	5	0.40	0.50	0.30
Garden River I. R.	5	3.60	3.40	3.50

A Tortricid on Oak, Croesia semipurpurana Kft.

Small, scattered pockets of moderate to severe defoliation recurred in red oak stands on hilltops and ridges in the City of Sault Ste. Marie, and in the townships of Prince and Tarbutt Additional. One small pocket of moderate defoliation was observed on Indian Reserve No. 12 near Thessalon.

Jack-pine Budworm, Choristoneura pinus Free

Sharp increases in numbers of this insect occurred locally in the district, apparently as a result of a heavy flight of adult moths into the Sault Ste. Marie area in July of 1965. Pockets of severe defoliation occurred in young jack-pine stands in Parke and Kirkwood townships. At the latter location red pine and white pine trees were also attacked. Larvae were collected commonly from jack pine, red pine and white pine trees along the North Channel from Sault Ste. Marie east to Thessalon and were very numerous on ornamental pines in residential areas of the City of Sault Ste. Marie, in some instances causing severe defoliation, particularly of mugho pines.

An indication of larval density was obtained from beating samples in representative pockets of infestation (Table 6).

TABLE 6

Summary of Jack-pine Budworm Larval Counts at Thirteen Locations in the Sault Ste. Marie District in 1966

Note: Counts were taken by beating four 30-inch branch tips from each of four trees at each sample point.

Location (township)	Host	Av. d.b.h. of sample trees in inches	Av. no. larvae per mat sample	degree of defoliation
Rose (Rose Lake)	jP	5	31	M to H
" (Randolph Lake)	jP	2	3	T
St. Joseph	scP	2	1.5	T
Bridgland L.8C.5	jP	4	8	T to L
Haughton L9C1	jP	5	18	M
Haughton L10C1	jP	3	8	L
" Tunnel Lake	jP	4	8	L
Kirkwood L11C4	jP	3	27	H
" L10C7	jP	4	22	H
" L10C7	wP	5	26	H
" L10C7	rP	7	8	L to M
" L10C7	jP	4	29	H
Parke	rP	5	13	L to M

Wandering Sawfly, Dimorphopteryx pinguis (Nort.)

Infestations of this sawfly have occurred previously in yellow birch stands north of Batchawana Bay on Lake Superior in 1958 and 1961. In 1966 the most extensive and severe outbreak yet observed occurred in the same general area. Rearing records indicate that this sawfly goes into prolonged resting periods and it is postulated that very specific weather conditions are required to bring about further development.

Severe defoliation of yellow birch stands occurred in 1966 in Palmer, Ryan and Kincaid townships, and in Township 27, Range XIII. Small pockets of moderate to severe defoliation were noted along the Lake Superior shoreline from Batchawana Bay north to the Montreal River (see map).

European Spruce Sawfly, Diprion Hercyniae (Htg.)

Population levels of this sawfly remained very low in 1966. General sampling of first generation larvae and quantitative sampling of the second generation showed no significant change from 1965.

TABLE 7

Summary of European Spruce Sawfly Larval Counts on White Spruce Trees in the Sault Ste. Marie District in September 1965 and 1966

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. larvae per tray sample 1965	1966
Bright	22	0.40	0.30
Wells	9	0.10	0.20
Kirkwood	20	1.50	0.45
Garden River I. R.	5	1.10	0.50

White Pine Shoot Borer, Eucosma gloriola Heinr.

This insect was found commonly in plantations along the North Channel. Population declines observed in 1965 continued in 1966 (Table 8).

TABLE 8

Summary of Damage by the White Pine Shoot Borer in the Sault Ste. Marie District in 1965 and 1966

Location (township)	Host Species	Av. height of sample trees in feet	No. infested trees per per 100-tree sample		No. infested leaders per 100-tree sample	
			1965	1966	1965	1966
Haughton	jP	8	11	7	9	5
Bridgland	jP	7	7	3	7	1
Parkinson	jP	6	19	13	16	11
Kirkwood	rP	7	-	8	-	2
Thessalon	rP	7	-	11	-	3

Eastern Tent Caterpillar, Malacosoma americanum F.

Medium to heavy infestations of this insect occurred on open-grown and fence-row cherry and wild apple in a narrow band along the North Channel from Echo Bay to the Serpent River. Population levels were slightly higher than those recorded in 1965 (Table 9).

TABLE 9

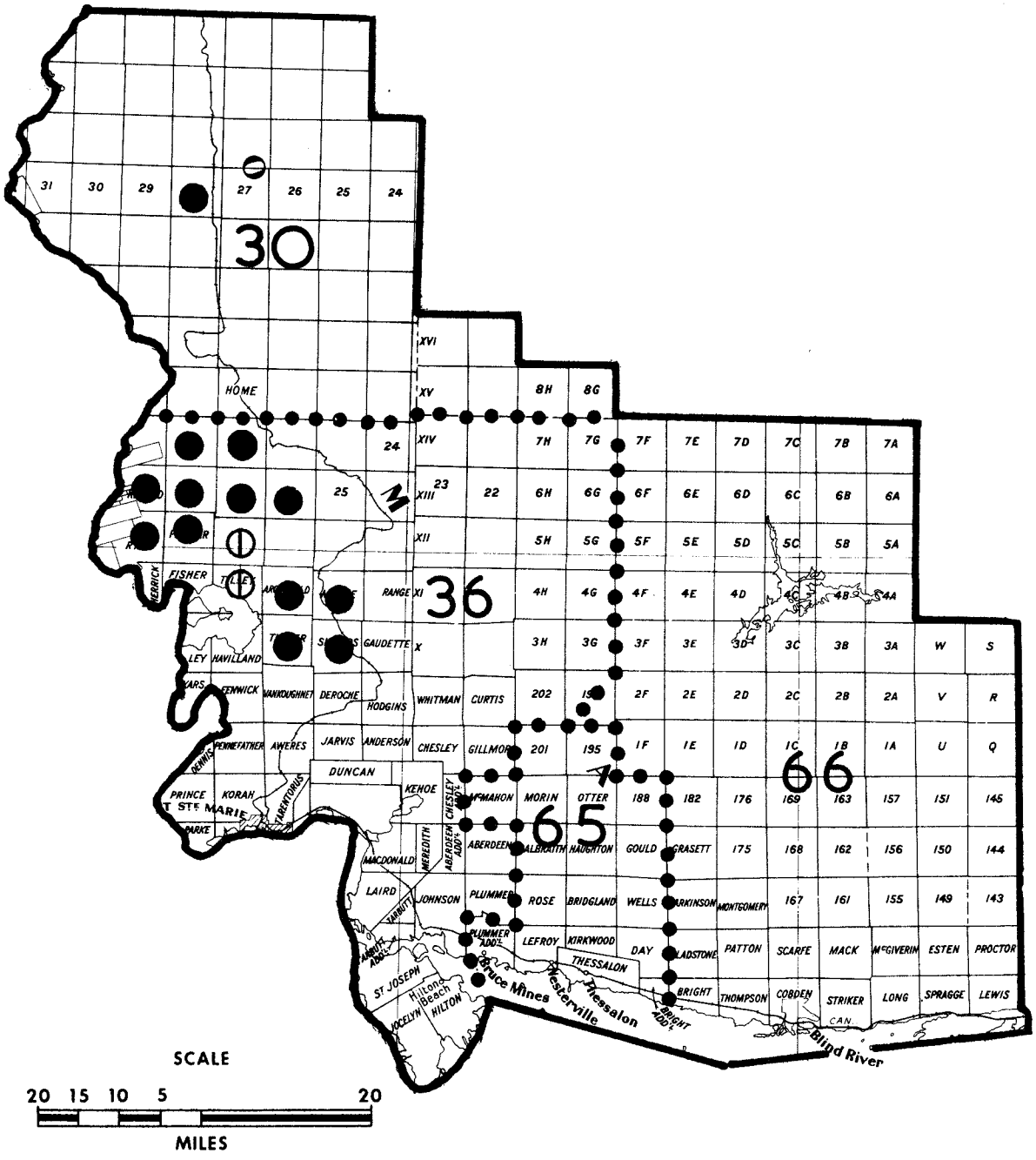
Summary of Eastern Tent Caterpillar Colony Counts at Eight Points in the Sault Ste. Marie District in 1965 and 1966

Location (township)	Sample Unit	No. of tents per sample unit	
		1965	1966
Cobden	1 mile of roadside	38	46
Scarfe	"	32	48
Thompson	"	17	31
Spragge	"	21	30
Gould	square chain plot	13	21
Plummer	1 mile of roadside	16	27
Rose	"	23	31
Wells	"	19	22

Western Tent Caterpillar, Malacosoma pluviale Dyar

The upward trend in population levels of this insect observed in 1965 continued in 1966 (Table 10). Colonies were found frequently throughout the district, and small pockets of medium to heavy infestation occurred in open areas and along roadways.

SAULT STE. MARIE DISTRICT



A BIRCH SAWFLY

Locations where pockets of defoliation occurred in 1966

Legend

Light defoliation . . . . . ◐

Moderate to severe defoliation . . . . ●

TABLE 10

Summary of Western Tent Caterpillar Colony Counts at Seven Points in the Sault Ste. Marie District in 1965 and 1966

Location (township)	No. of tents per mile of roadside 1965	1966
3D	7	9
5E	13	22
4E	16	17
6E	11	13
4D	20	36
Gaudette	15	18
Rose	14	22

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Small pockets of heavy infestation persisted on highway shelter belts and in small plantations along Highway 17 East, on St. Joseph Island and in the Garden River Indian Reserve (Table 11). Complete defoliation of red pine trees up to 12 feet in height occurred along highways in the Iron Bridge-Elliott Lake area.

Chemical control measures were used to prevent defoliation of young red pine in Ojibway Park on the Garden River Indian Reserve. Good control was obtained on treated trees, however about 25 per cent of the infested trees were missed during spraying operations and those trees were severely defoliated.

TABLE 11

Summary of Red-headed Pine Sawfly Colony Counts and Defoliation Estimate at Four Points in the Sault Ste. Marie District in 1966

Note: Samples were taken on 100 red pine trees at each sample point.

Location (township)	Av. ht. in feet	Per cent of trees infested	Av. no. colonies per infested tree	Per cent defoliation
Gladstone	8	85	20	90
Thompson	14	70	26	95
Cobden	15	65	31	95
*Garden River Indian Reserve	6	90	5	75

* Sample taken on unsprayed trees

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

A general decline in numbers of this sawfly was evident in 1966 in the Kirkwood Management Unit where population increases have been recorded since 1963. A medium infestation persisted in lots 10 to 12 in Concessions V and VI of Kirkwood Township where the average number of colonies per tree declined from 25 in 1965 to 14 in 1966. Larval colonies were found commonly on jack pine and red pine plantations elsewhere in the district.

Bruce Spanworm, Operophtera bruceata (Hulst.)

Heavy infestations of this insect persisted in much the same areas as in 1965 in the townships of Ryan, Kincaid, Palmer, 26, 27, 28 Range XII and XIII. Sugar maple was the principal host, however, defoliation also occurred on other deciduous species.

Defoliation was generally lighter than in 1965 when host stands were stripped. Damage in 1966 was readily apparent from the ground, but could not be detected from the air.

Northern Pine Weevil, Pissodes approximatus Hopk.

High populations of this weevil occurred in the Kirkwood and Searchmont Management Units where a high percentage of red pine trees were weakened or killed by the fungus Scleroderris lagerbergii Gremmen. The decadent trees provided attractive brood sites for the weevils.

TABLE 12

Summary of Miscellaneous Insects Collected in the Sault Ste. Marie District

Insect	Host(s)	Remarks
Acleris variana Fern.	wS	Occasional larvae in beating samples
Anacampsis innocuella Zell.	tA	One of a complex of leaf rollers found commonly on aspen
Aphrophora parallela Say	scP, wP wS, bF	High numbers on fringe trees of plantations along North Channel
Archips cerasivoranus Fitch	ecCh	Small clumps of heavy infestation along North Channel
Ceratomia undulosa Wlk.	wAs	Small numbers of larvae in beating samples
Cenopis pettitana Rob.	Ba	Found in small numbers in Day Twp.
Choristoneura rosaceana Harr.	Ba, tA	Found in small numbers in Day Twp.
Compsolechia niveopulvella Chamb.	tA	Found commonly in small numbers
Conophthorus coniperda Sw.	wP cones	High incidence of attack on cones on Indian Reserve No. 8
Depressaria betulella Busck.	wB	Found commonly in Kirkwood Management Unit
Epinotia solandriana Linn.	wB, tA	Found commonly on young fringe trees throughout district
Eucosma tocullionana Heinr.	wP cones	Infested cones found commonly along North Channel

TABLE 12 (continued)

Insect	Host(s)	Remarks
Eupithecia filmata Pears.	bF	Occasional larvae in beating samples
Fenusa dohrnii (Tischb.)	Al	Found wherever host was examined
Fenusa pusilla (Lep.)	wB	Small pockets of heavy infestation occurred frequently on sucker growth regeneration
Gracillaria syringella F.	Lilac	Heavy infestations on ornamentals
Hydriomena divisaria Wlk.	wS	Commonly found in beating samples
Hyphantria cunea Dru.	ecCh, Al W, wB	Less common than in 1965. Occasional colonies observed
Lithocolletis salicifoliella Chamb.	tA	Small pockets of moderate to severe mining on young fringe trees
Melissopus latiferreanus Wlshm.	Beech	Heavy infestations on St. Joseph Island
Nematus limbatus Cress.	W	Colonies unusually abundant on roadside trees on St. Joseph Island and along North Channel
Nematus hyalinus (Nort.)	W	Numerous on large trees along Mississagi River east of Iron Bridge
Neodiprion abietis complex	bF, wS	This sawfly was very scarce in 1966, occasional single larva taken in beating samples
Neodiprion sp. prob. nigroscutum	scP	Few larvae in beating samples Kiwanis Tree Farm, St. Joseph Island
Neodiprion pratti paradoxicus Ross	jP	Occasional colonies observed
Neodiprion virginianus complex	jP	Abundant on open-grown trees at Mileage 17, Ranger Lake Road
Nymphalis antiopa Linn.	wE, tA, W	Occasional colonies on St. Joseph Island and along North Channel
Nyctobia limitaria Wlk.	bF	Collected commonly in small numbers in beating samples
Orthotomicus caelatus Eich	rP	High populations in stems of young trees weakened by disease in Searchmont Management Unit
Petrova albicapitana Busck.	jP	Light infestations on fringe trees of J.S. Smith Tree Farm at Blind River
Pikonema alaskensis (Roh.)	wS	Heavy defoliation of single open-grown trees observed occasionally along the North Channel
Pikonema dimmocki (Cress.)	wS, bS	Small numbers of larvae collected in beating samples
Pineus strobi (Htg.)	wP	Found in small numbers
Pristiphora lena Kincaid	wS	Single larva collected occasionally in beating samples
Profenusa thomsoni Konow	wB	Population very low in 1966
Phyllocoptes aceris crumena (Rly.)	rM	Small pockets of heavy attack on St. Joseph Island and in Rose Twp.
Phyllocolpa sp.	tA	Found commonly on young fringe trees

TABLE 12 (continued)

Insect	Host(s)	Remarks
Rhabdophaga swainei Felt	wS, bS	Populations very low in 1966
Schizura concinna A. & S.	W, ecCh, wild apple	Found commonly but less numerous than in 1965
Semiothisa dispuncta	wS	Numerous in beating samples
Trisetacus alborum Keifer	wP	Small pockets of twig damage on Garden River Indian Reserve
Zellaria haimbachi Busck.	jP	Populations very low in 1966

STATUS OF INSECTS IN THE SUDBURY DISTRICT

J. R. McPhee

Spruce Budworm, Choristoneura fumiferana (Clem.)

A marked increase occurred generally in the population levels of this insect. A heavy infestation occurred on the upper crowns of mature balsam fir trees in a woodlot in Cosby Township on the eastern boundary of the district. Light infestations were observed in a mixed stand of balsam and white spruce in Balfour Township and on large open-grown white spruce in Allan Township on Manitoulin Island. In the remainder of the district larvae were found commonly, particularly in balsam stands in the northwestern part of the district. A summary of larval counts in beating samples is shown in Table 5.

TABLE 5

Summary of Spruce Budworm Larval Counts in the Sudbury District in 1966

Location (township)	Host	Av. d.b.h. of host trees in inches	Total no. of larvae per 15-tray sample
Allan	wS	8	71
Balfour	wS	8	31
Balfour	bF	4	102
Nairn	bF	6	7
Hallam	bF	5	3
Salter	wS	8	8

Larch Casebearer, Coleophora laricella Hbn.

Population levels of this insect remained low. Minor changes in numbers occurred at sample points in Dill and Hallam townships (Table 6)

TABLE 6

Summary of Larval Counts of the Larch Casebearer in the Sudbury District from 1964 to 1966

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

Location (township)	Av. d.b.h. of trees in inches in 1966	Av. no. of larvae per 18-inch branch		
		1964	1965	1966
Dill	4	4.1	4.0	5.2
Hallam	4	2.5	5.5	1.5
Cascaden	3	3.0	0.5	0.8
Delamere	3	0.5	0.7	0.1

European Spruce Sawfly, Diprion hercyniae (Htg.)

Surveys revealed a general increase in population levels of this sawfly except in Bigwood and Hagar townships where numbers declined compared with 1965 (Table 7).

TABLE 7

Summary of European Spruce Sawfly Larval Counts in September on White Spruce Trees in Sudbury District from 1964 to 1966

Location (township)	Av. d.b.h. of trees in inches in 1966	Total no. of larvae per 15-tray sample 1964	1965	1966
Hallam	6	15	3	31
Billings	6	10	28	52
Salter	8	17	4	27
Denison	5	7	5	10
Balfour	6	13	7	38
Bigwood	8	140	205	160
Hagar	5	4	50	48

White Pine Shoot Borer, Eucosma gloriola Heinr.

The incidence of attack on leaders of jack pine by this shoot borer was comparable to 1965. Light shoot damage recurred in young plantations and on regeneration at several locations. Counts of damaged leaders at sample points are given in Table 8.

TABLE 8

Summary of Terminal Shoot Damage by the White Pine Shoot Borer in Sudbury District from 1964 to 1966

Note: 100 jack pine trees were examined at each location.

Location (township)	Av. d.b.h. of trees in inches in 1966	Per cent of leaders infested 1964	1965	1966
Merritt	2	8	13	8
Hart	1	4	0	1
Norman	2	23	4	4
119	2	2	6	10
Moncrieff	2	-	-	7

Birch Leaf Miner, Fenusa pusilla (Lep.)

A marked increase in population levels of this leaf miner was observed in 1966. Severe leaf damage occurred on young open-grown white birch trees along roads, in old fields and on rocky sites throughout the southern part of the district. In many instances leaf mining exceeded 75 per cent (Table 9). Damage to the foliage of larger trees was negligible in all areas examined. Scattered pockets of light to severe leaf mining were observed in the northern part of the district where the insect has rarely been found in recent years.

TABLE 9

Summary of Birch Leaf Miner Counts on White Birch Trees in Sudbury District in 1966

Note: 100 leaves from three trees were examined at each location.

Location (township)	Per cent of leaves mined
Dill	96
Killarney	100
Blezard	84
Gilbert	23
Salter	90
B	42

Aspen Blotch Miner, Lithocolletis salicifoliella Cham.

Heavy infestations that had persisted in the northern part of the district from 1961 to 1964 and declined to scattered pockets of medium to heavy infestation in 1965, subsided in 1966. Only a few mined leaves were observed on aspen reproduction at widely-separated locations.

Eastern Tent Caterpillar, Malacosoma americanum (F.)

This caterpillar occurred commonly in the southern part of the district. It was most abundant in Bigwood, Appleby and Merritt townships and on Cloche and Manitoulin islands where clumps of cherry were heavily infested. (Table 10).

TABLE 10

Summary of Eastern Tent Caterpillar Colony Counts on Host Shrubs in Sudbury District in 1965 and 1966

Location	Host	Sampling Unit	No. of colonies per sampling unit	
			1965	1966
Bigwood Twp.	pCh	sq. chain plot	40	18
Bidwell Twp.	cCh	one mile of roadside	20	24
Appleby Twp.	pCh	one mile of roadside	24	44
Merritt Twp.	pCh	one mile of roadside	10	18
Cloche Island	cCh	one mile of roadside	-	50

Western Tent Caterpillar, Malacosoma pluviale (Dyar)

Little change occurred in the status of this insect. Colony counts along roadsides showed a small increase in Hanmer Township and a decline in Telfer Township (Table 11). Elsewhere in the district population levels remained very low.

TABLE 11

Summary of Western Tent Caterpillar Colony Counts on Pin Cherry in Sudbury District in 1965 and 1966

Note: Counts based on number of colonies counted in one measured mile of roadside at each location

Location (township)	No. of colonies per sampling unit 1965	1966
Telfer	10	4
Hanmer	6	14
Scadding	-	4
G	2	2

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Small increases in numbers of colonies of this sawfly occurred but infestation intensities were about the same as in 1965. Red pine windbreaks along Highway 17 between Walford and Webbwood were attacked more frequently and an increase in numbers of heavily infected trees was observed in a 75-acre red pine plantation on Cockburn Island. Severe defoliation of red pine recurred in a small plantation in the Spanish River Indian Reserve south of Massey. Counts of larval colonies are summarized in Table 12.

TABLE 12

Summary of Red-headed Pine Sawfly Colony Counts on Red Pine in Sudbury District in 1965 and 1966

Location	No. of trees examined	Av. height of trees in feet in 1966	No. of trees infested 1965	No. of trees infested 1966	Av. no. of colonies per infested tree 1965	Av. no. of colonies per infested tree 1966
Cockburn Island	100	5	50	50	3	3.5
Hallam Township	20	10	10	10	8	7.7
Spanish River Reserve	50	6	37	45	2.7	2.5

Red Pine Sawfly, Neodiprion nanulus nanulus Schedl.
and
Black-headed Jack-pine Sawfly, Neodiprion pratti banksianae Roh.

High population levels of these sawflies persisted in several areas. Moderate to severe defoliation of exposed jack-pine trees recurred along lakeshores and roads in the K.V.P. West Branch Spanish River Limits and in the Onaping and Wanapitei lake areas. Light infestations and scattered colonies were observed in jack-pine stands at numerous other locations. Neodiprion nanulus nanulus caused light defoliation of large individual red pine trees at several points in the northwestern part of the district and in red pine plantations in Nairn and Burwash townships.

The two species were found on jack pine at all sample points except Cloche Island where only Neodiprion nanulus nanulus was observed (Table 13).

TABLE 13

Colony Counts of Jack and Red Pine Sawflies on Ten Jack Pine Trees at Each Location in Sudbury District From 1964 to 1966

Location	Av. d.b.h. of trees in inches in 1966	Av. no. of colonies per tree		
		1964	1965	1966
Nairn Township	6	6.0	6.0	4.0
Hanmer Township	5	3.0	2.4	3.0
Rathburn Township	4	0.3	0.8	0.5
Cloche Island	4	2.0	1.5	1.8
Shakwa Lake	5	3.5	3.8	4.8

European Pine Sawfly, Neodiprion sertifer (Geoff.)

Intensive surveys in June revealed an increase in population levels and a spread in the range of this sawfly on Manitoulin Island, the most northerly known area of distribution in Ontario. Infestations reported in Scots pine plantations in Carnarvon and Dawson townships in 1965 increased in intensity. New infestations were detected in a 75-acre Scots pine plantation in Gordon Township and in a 5-acre plantation in Sandfield Township. Although counts of larval colonies at these locations averaged less than one per tree the insect was well distributed throughout the plantations (Table 14).

Experimental control using a virus disease initiated by the Insect Pathology Research Institute in co-operation with the property owner was successful in preventing serious defoliation. However, discovery of the sawfly in untreated areas indicates that it will recur on the Island in 1967. The danger of a northward spread to jack pine growing areas still exists.

The suggestion that this sawfly was introduced to Manitoulin Island on infested nursery stock was substantiated in June when hatched eggs and larvae were found on young trees planted a month previously.

TABLE 14

Summary of European Pine Sawfly Colony Counts on Scots Pine on Manitoulin Island, Sudbury District in 1966

Location (township)	Av. height of trees in feet	No. of trees examined	Total no. of colonies	Av. no. of colonies per tree
Carnarvon	6	500	3104	6.2
Dawson	5	725	650	.89
Sandfield	5	1000	16	.02
Gordon	5	5500	287	.05

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Population levels of this insect remained about the same except near Burnt Island where a heavy infestation reported on jack pine in 1965 subsided. An unusually heavy infestation persisted for the fourth consecutive year in a small jack pine plantation in Burpee Township on Manitoulin Island. A larval count averaged 25 colonies per tree on 10 trees averaging four inches d.b.h. Many trees were completely stripped of old foliage. A heavy infestation recurred for the second year in a jack pine windbreak along Highway 17 near Webbwood where an average of 7.6 colonies per tree was counted on 10 trees averaging three inches d.b.h. Severe defoliation was observed in individual open-grown trees at several other points in the district.

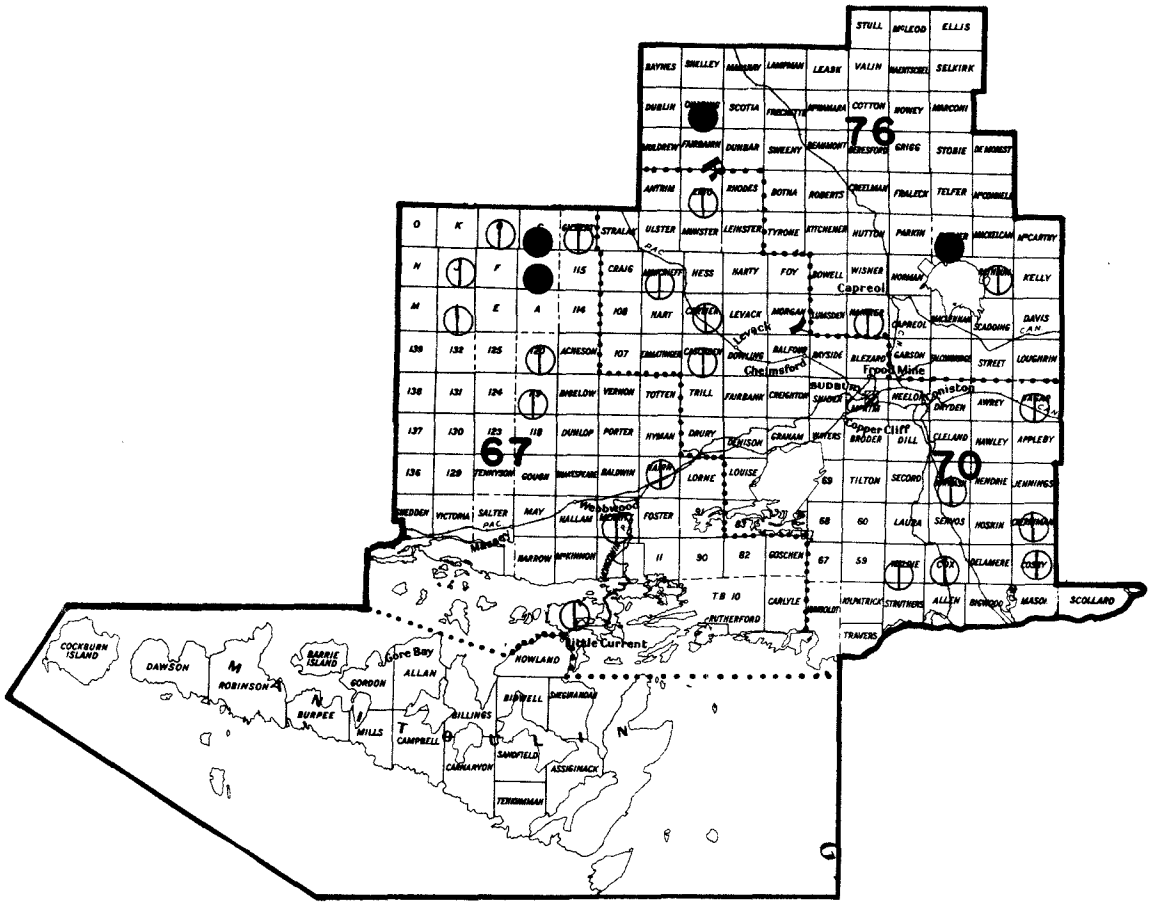
Yellow-headed Spruce Sawfly, Pikonema alaskensis Roh.

Population levels of this pest of open-grown spruce were comparable to 1965. Moderate-to-severe defoliation occurred on scattered trees in white spruce plantations in Merritt, Burwash and Burpee townships and on Cockburn Island. Single or groups of small open-grown white and black spruce trees frequently suffered severe damage along roads, lakeshores and in old fields. Elsewhere, the insect occurred on most spruce sampled but damage was light or negligible.

Balsam Shoot Boring Sawfly, Pleroneura borealis Felt

Population levels of this bud mining insect were low for the second consecutive year, interrupting the biennial occurrence of infestations that had been observed in recent years. This interruption probably resulted from late spring frosts in 1964 that severely damaged the new shoots of balsam and greatly reduced larval populations. Quantitative sampling results were negative at sample points except in Hallam Township where four per cent of the new shoots were mined.

SUDBURY DISTRICT



RED PINE SAWFLY

and

BLACK-HEADED JACK-PINE SAWFLY

Locations where pockets of defoliation occurred in 1966

Legend

Light defoliation . . . . . ①

Moderate to severe defoliation . . . . ●

Poplar Leaf Roller, Pseudexentera oregonana Wlshm.

A sharp decline in infestations of this leaf roller occurred in 1966. Numerous heavy infestations reported on pole-sized aspen stands in the southern part of the district in 1965 declined to light intensity. Although the insect occurred commonly in the southern part of the district, infestations were generally restricted to small pockets or clumps of aspen on the fringe of stands. Larval parasitism was extremely high in Nairn, Dowling and Hallam townships where heavy infestations had persisted since 1963.

TABLE 15

Summary of Miscellaneous Insects Collected in Sudbury District

Insect	Host(s)	Remarks
Adelges abietis Linn.	wS	Heavy infestation on small scattered trees in a plantation on Cockburn Island, in Carnarvon and Burpee twps. on Manitoulin Island and in the Espanola area
Adelges strobilobius Kalt.	bS	Single tree in plantation at Burwash severely attacked
Agrilus liragus Bart. & Br.	Hybrid Po	Sucker growth severely attacked in plantation in Burpee Twp., Manitoulin Island
Anisota rubicunda Fabr.	sM	Scattered colonies on Cockburn Island
Aphrophora parallela (Say)	scP	Heavy infestations in plantations on Manitoulin Island
Archips cerasivoranus (Fitch)	cCh	Heavy infestation on clumps of cherry on west end of Manitoulin Island
Caulocampus acericaulis MacG.	sM	Pocket of heavy infestation in Billings Twp., Manitoulin Island
Cecidomyidae	rP	Light infestation on wind break along Highway 17 in Hallam Twp.
Cecidomyia balsamicola Vock.	bF	Numerous pockets of light infestation in northern part of district
Choristoneura pinus Free	jP	Scattered trees in Scots pine plantations on Manitoulin Island heavily infested. Light infestations observed in many jack-pine stands in remainder of district
Conophthorus resinosae Hopk.	rP	Light damage to new shoots of trees along Highway 17 near Cutler. Average of 15 infested shoots per tree counted on 10 trees averaging 30 feet in height

TABLE 15 (continued)

Insect	Host(s)	Remarks
Croesia semipurpurana (Kft.)	rO	Pocket of heavy infestation in Gordon Twp., Manitoulin Island
Epinotia solandriana Linn.	wB	Pockets of medium infestation in Balfour and Hallam twps., light infestations in Cosby and Gordon twps.
Eriophyes sp	tA	Pockets of heavy infestation in Merritt and Graham twps; also prevalent at numerous other locations
Exoteleia pinifoliella Cham.	jP	Light needle mining persisted on Cloche Island and in Carnarvon Twp., Manitoulin Island
Fenusa dohrnii (Tischb.)	Al	Light leaf mining at several scattered points
Gonioctena americana Schaef.	tA	Pockets of moderate to severe defoliation of roadside reproduction observed in Aylmer and Dowling twps. Light defoliation occurred at numerous points in northwestern part of district
Hyphantria cunea Dru.	Elm, wB	Scattered colonies in Howland Twp., rarely found elsewhere in district
Hylobius sp. (prob. radicis)	Sc P	Numerous trees attacked in plantation in Balfour Twp.
Leucanthiza dircella Braun	Leatherwood	Severe leaf mining on shrubs on Cockburn Island
Monoctenus fulvus (Nort.)	eC, juniper	Quantitative sampling in Robinson and Billings twps., Manitoulin Island showed totals of 3 and 2 larvae respectively on 15 beating tray samples at each location
Nymphalis antiopa Linn.	W, tA	Scattered colonies along Massey Tote Road in Twp. 129. Single colonies observed at several other locations
Neodiprion abietis complex	bF	Rarely found in district, single colony in Moncrieff Twp.
Neodiprion swainei Midd.	jP, rP	A light infestation reported on a small island in the south end of Onaping Lake in 1965 increased to heavy intensity in 1966 and spread to scattered trees along shorelines of the mainland

TABLE 15 (continued)

Insect	Host(s)	Remarks
Operophtera bruceata Hlst.	sM, rO	Heavy infestation reported on Great Duck Island in 1965 subsided
Orgyia leucostigma A. & S.	Elm, mM, Mo	Heavy infestation on ornamental and shade trees in City of Sudbury and Town of Espanola
Phyllocolpa sp.	tA	Heavy infestation on reproduction in Nairn Twp. Light infestation prevalent in most of remainder of district
Pineus similis Gill.	wS	Scattered trees heavily infested in plantation in Burwash and Dawson twps. Light damage to small groups of trees at several other points
Pineus sp.	scP	Heavy infestation on scattered trees in plantation in Gordon Twp., Manitoulin Island
Profenusa thomsoni (Konow)	wB	Less prevalent in district than in 1965. Scattered leaves mined at a few locations
Pulicalvaria piceaella (Kft.)	wS	Light needle mining in Burwash and Hagar twps.
Pulicalvaria thujaella (Kft.)	eC	Light infestation observed frequently through southern part of district
Recurvaria sp.	eH	Light needle mining in Curtin Twp.
Rhyacionia adana Heinr.	scP	Light infestation in small plantation in Delamere Twp. Av. of 3 infested shoots per tree counted on 10 trees averaging 3 feet in height
Rhyacionia buoliana (Schiff.)	rP	Infestations on Cockburn and Manitoulin islands declined to small numbers
Schizura concinna J.E. Smith	W, tA, Ap	Moderate-to-severe defoliation of individual hosts at scattered points in the southern part of the district

TABLE 15 (continued)

Insect	Host(s)	Remarks
Sparganothis directana Wlk.	c, Ch	Heavy infestation on clumps of cherry in Allan Twp., Manitoulin Island
Sternochaetus lapathi (Linn.)	W	Prevalent on shrubs at numerous locations
Toumeyella numismaticum P. McD.	jP, scP	Light infestation in Scots pine plantation in Merritt Twp. Individual hosts attacked at several other points
Trisetacus alborum Keifer	wP, rP	Small white pines heavily infested in Cox, Servos and Moncrieff twps. Severe damage on one large red pine in Servos Twp.
Zeiraphera ratzeburgiana Ratz.	wS	Heavy infestation persisted on open-grown white spruce on Manitoulin Island and in Balfour, Cosby, Graham and Secord twps. Small numbers observed frequently elsewhere

STATUS OF INSECTS IN THE CHAPLEAU DISTRICT

Deter Ropke

Birch Skeletonizer, Bucculatrix canadensisella Chamb.

Infestations of this insect collapsed in the district in 1966. Early instar larvae occurred at many locations but free-feeding late instar larvae were rarely seen.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Numbers of this insect increased for the second consecutive year and larvae were collected at several widely separated locations. The most noteworthy increase occurred in a block of six townships in the central portion of Division 69 where balsam fir and white spruce were lightly infested (see map). Defoliation at 14 sampling stations ranged from 0.5 to 8.5 per cent and averaged 2.1 per cent of the current year's foliage. Egg sampling in the fall at three locations in the area of infestation gave negative results.

The female moth oviposits in late July and August. The eggs hatch in 8 to 12 days and the tiny larvae overwinter under bark scales and in crevices. The following spring larval activity coincides with the bursting of the buds. Young larvae prefer to feed on pollen in the staminate flowers. As the season advances and the larvae increase in size they feed on the new foliage. Pupation takes place in a silk web concealed in the twigs (see photograph).

Jack-pine Budworm, Choristoneura pinus Free.

Few collections of this insect have been made in the district in recent years. In 1966 however, the insect occurred commonly in townships D and H in Division 29 and in small numbers in Nimitz, 10E, Panet and Smuts townships (see map).

In a 30-day period at the time of the moth flight, 98 adults were recovered from a light trap. Surveys in 1967 will determine the significance of this concentrated moth flight.

Larch Casebearer, Coleophora laricella (Hbn.)

Population levels of this insect declined in 1966. This trend was particularly evident at a sample point in Chapleau Township where the number of larvae per 18-inch branch tip declined from 12.5 larvae to 0.6 larvae in 1966 (Table 5).

TABLE 5

Summary of Larch Casebearer Counts in Chapleau District from 1965 to 1966

Location by township	No. of 18" branch tips sampled	Average no. of larvae per 18-inch branch tip	
		1965	1966
Hoey	16	-	3.0
Chapleau	16	12.5	0.6

A Scolytid Beetle of Jack Pine, Conophthorus sp.

Numbers of these tiny, twig-boring beetles declined for the third consecutive year. As shown in Table 6, most counts were negative in 1966.

TABLE 6

Summary of Damage by Conophthorus sp. on Jack Pine Trees in Chapleau District from 1963 to 1966

Location by township	Average height in feet	Total no. of damaged shoots on ten trees			
		1963	1964	1965	1966
Panet	18	56	37	5	0
28	17	81	19	13	7
11B	22	161	14	0	0
12F	18	243	27	2	0
Halsey	17	251	37	8	6
11G	16	-	20	0	0

Birch Leaf Miner, Fenusa pusilla (Lep.)

This introduced leaf-mining sawfly was first recorded in North America in 1923. Since then the insect has invaded Ontario and spread towards the northwest. In 1966, first records of Fenusa pusilla were obtained in Chapleau District. The miner was collected in 10 widely separated townships in the southern portion of the district. A sample at one location in Township L on the Chapleau-Sudbury district boundary revealed that 58 per cent of the white birch foliage was mined.

The adult sawfly oviposits in the developing leaves in May and early June. The eggs hatch in about 8 days and the larva molts 5 times before entering the pupal stage. Feeding is usually completed within one to two weeks. The full grown larva drops to the ground and builds a pupal cell just below ground level. After a pupal period of 4 to 7 days, another generation of adults appears.

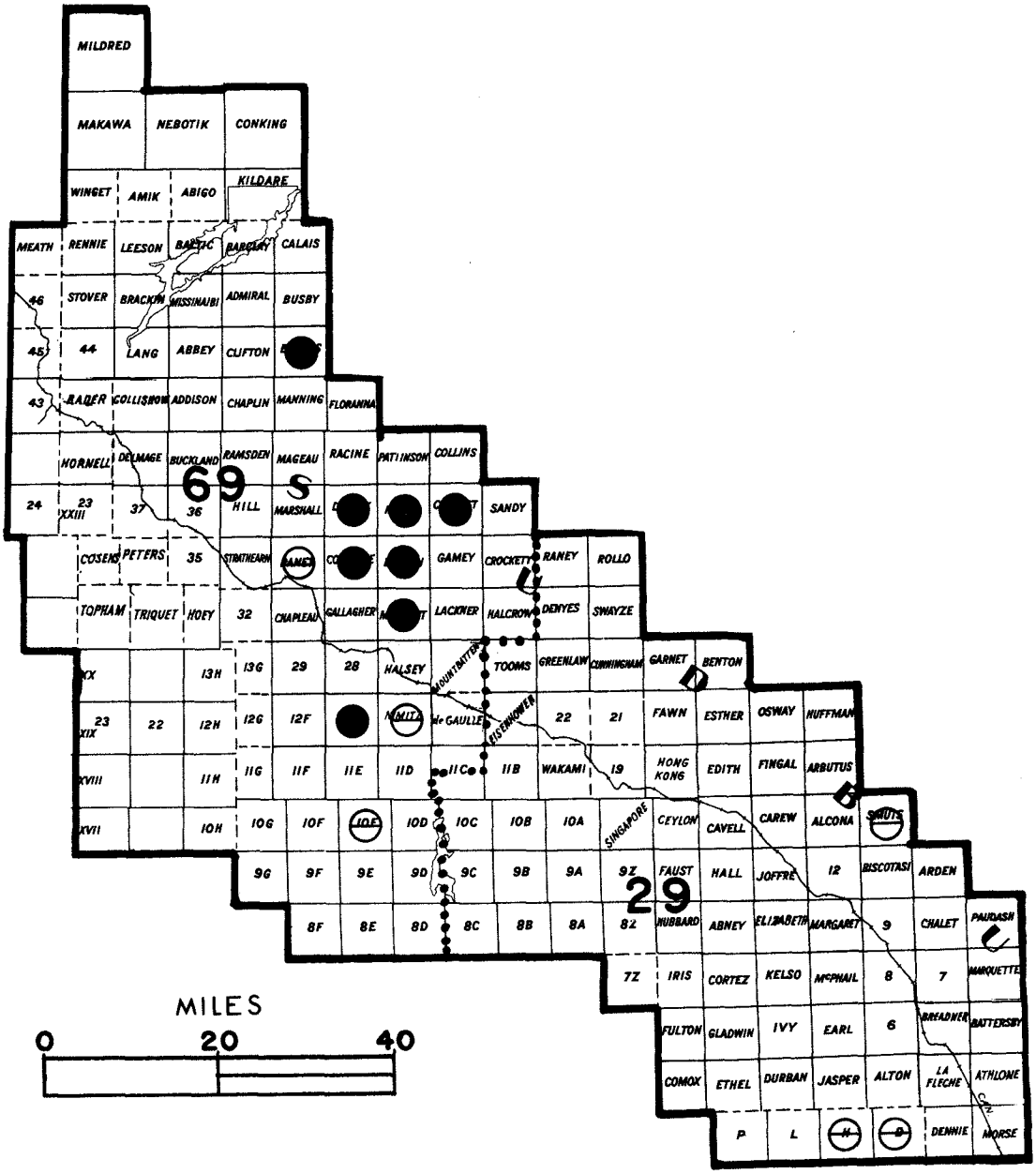
In Ontario there may be as many as three generations in a season. Oviposition occurs largely in the tender tissues of young leaves. Therefore, in the spring any of the leaves may be mined, but later in the year developing terminal leaves only are attacked.

American Poplar Leaf Beetle, Gonioctena americana (Schaeff.)

A notable increase in population levels of this beetle occurred in 1966 and larvae were abundant throughout the district.

Trembling aspen reproduction in Joffre and Margaret townships along the Biscotasing road was heavily infested. Defoliation of a small pocket of largetooth aspen in this area was light. Moderate to severe defoliation was also observed in Township 19 near Sultan and in the vicinity of Borden Lake in Cochrane Township. Understorey and roadside reproduction in Floranna, Racine, 11G, 11D and McPhail townships displayed light to moderate defoliation.

CHAPLEAU DISTRICT



BUDWORMS ON CONIFERS

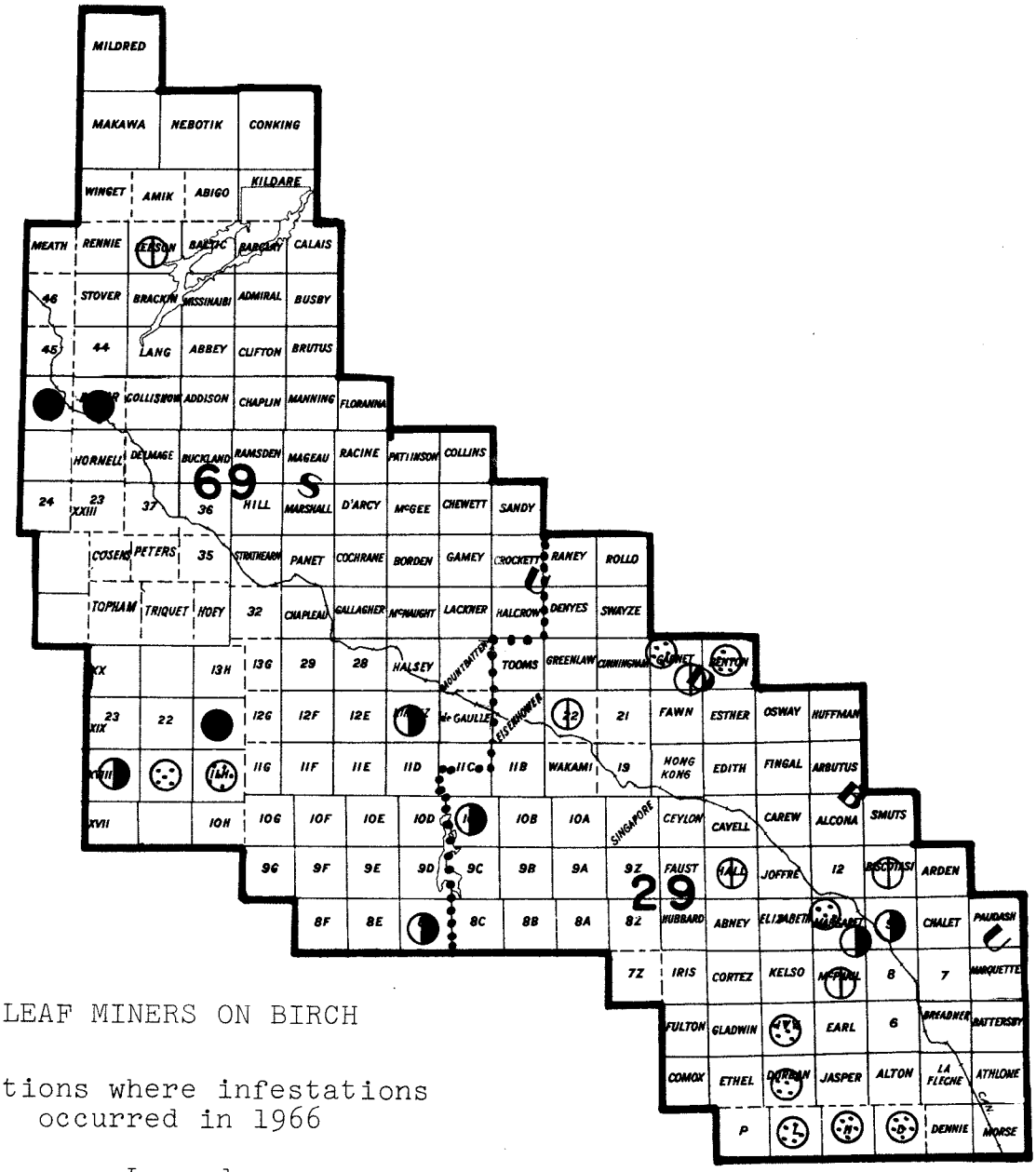
Areas of light infestation in 1966

Legend

Spruce budworm . . . . . ●

Jack-pine budworm . . . . . ⊖

CHAPLEAU DISTRICT



LEAF MINERS ON BIRCH

Locations where infestations occurred in 1966

Legend

Fenusa pusilla, locations . . . . ◎

Profenusa thomsoni

areas of light infestation . . . ◐

areas of medium infestation . . . ◑

areas of heavy infestation . . . ●

MILES

0 20 40

A Root Weevil, Hylobius warreni Woods

Damage by this destructive weevil was observed throughout Division 69, particularly in townships 11G, 12F, Racine, Stover, Busby and Lloyd.

The larval stage extends from 2 to 4 years and laboratory rearing of material collected in the field has been unsatisfactory. However, at the end of August, 2 adult weevils were found at the base of infested jack pine trees in Stover Township. These adults were concealed in pupal chambers composed of resinous matter and soil particles (see photograph). Two-inch jack pine trees showing only slight foliar discolouration were so weakened by girdling that pressure against the trunk would frequently result in breakage of the stem just below ground level.

Observations indicate that the insect favours pine up to 3 inches d.b.h. Many stands of this nature occur on old burns, particularly in Division 69. Damage in the district was confined to single and small groups of trees.

Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

In 1965 heavy infestations were observed at numerous locations in the district. Due to heavy parasitism few insects reached the adult stage. Consequently, most of these infestations collapsed in 1966 and high population levels occurred in only a few areas in the district. It is noteworthy that no moths emerged from samples taken at 8 sampling stations (see Table 8).

TABLE 7

Summary of Aspen Blotch Miner Counts in Chapleau District from 1964 to 1966

NOTE: Counts were based on examination of 100 leaves from three trees at each location.

Location by township	Per cent of leaves mined			Average no. of mines per leaf		
	1964	1965	1966	1964	1965	1966
Cochrane	16	84	4	0.19	2.62	0.04
12F	96	93	54	4.71	2.59	1.90
Manning	6	4	6	0.06	0.04	0.06
Fawn	14	14	14	0.15	0.15	0.15
Osway	67	14	0	2.82	0.15	0
9D	-	27	69	-	0.34	0.71
10C	19	51	0	0.42	1.16	0
Halsey	-	64	0	-	2.41	0

TABLE 8

Summary of First Instar Larval Mortality and Adult Emergence of the Aspen Blotch Miner in the Chapleau District from 1965 to 1966

Location by township	Total no. of mines in sample		*No. of dead first instar larvae		No. of emerged adults	
	1965	1966	1965	1966	1965	1966
Cochrane	262	4	77	0	0	0
12F	259	190	51	41	10	0
Manning	4	6	1	5	1	0
Fawn	15	15	11	12	0	0
Osway	15	0	13	0	0	0
9D	34	71	8	60	0	0
10C	116	0	26	0	4	0
Halsey	241	0	31	0	3	0

* Mines up to 3 mm diameter.

Western Tent Caterpillar, Malacosoma pluviale (Dyar)

Population levels declined for the second consecutive year. In 1965 an overall decline of 40 per cent occurred and the number of tents observed in 1966 revealed a further reduction by 70 per cent as shown in Table 9.

TABLE 9

Summary of Western Tent Caterpillar Larval Colony Counts per Measured Mile in Chapleau District from 1963 to 1966

Location by township	Number of tents per mile of roadside			
	1963	1964	1965	1966
Manning	13	9	5	2
L	12	8	2	1
Panet	6	6	5	1
8D	7	21	4	3
Chewett	34	12	5	0
Blamey	16	0	5	3
Floranna	-	32	26	6
11C	-	-	3	1

Red-pine Sawfly, Neodiprion nanulus nanulus (Schedl.)

This sawfly was observed at numerous locations in the central and southern portions of the district. Damage to jack pine trees was light, but defoliation of red pine in townships H and D was light to moderate. Colony counts shown in Table 10 are indicative of population levels in the district.

TABLE 10

Summary of Red-pine Sawfly Larval Colony Counts
in Chapleau District from 1964 to 1966

NOTE: Ten trees having a d.b.h. of one to three inches were examined at each location.

Location by township	Host	Average d.b.h. in inches	Average no. of colonies per tree 1964	1965	1966
Panet	jP	8	0.1	2.1	1.8
Chapleau	jP	2	0.1	1.5	1.0
Margaret	jP	7	-	-	2.6
Gallagher	jP	8	0	0.6	1.4
Smuts	jP	5	-	-	1.2
Busby	jP	2	-	-	0.1
L	jP	2	-	-	0.2

Black-headed Jack-pine Sawfly, Neodiprion pratti banksianae (Roh.)

No significant change in the status of this defoliator was observed in 1966 (Table 11). The upper crowns of jack pine trees in the Mozhabong Lake area in Township H were severely defoliated. The insect appears to favour trees on shallow, dry sites on rock outcrops that occur on most of the lake shores in this area. Larval colonies were numerous in townships D and L. Occasional colonies were observed in townships Margaret and Biscotasi. The insect was not found in Division 69.

TABLE 11

Summary of Black-headed Jack-pine Sawfly Larval Colony Counts
in Chapleau District in 1966

NOTE: Ten trees were examined at each location

Location by township	Average d.b.h.	Average no. of colonies per tree
Margaret	1.5	0.1
L	2	1.2

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

The general decline in numbers of larvae that occurred in 1966 is reflected in Table 12. However, groups of 6-foot jack pine in Benton Township were completely defoliated for the second consecutive year. Heavy defoliation of individual trees or small groups of trees also occurred at Flame Lake in Township 8D and near Nagasin Lake in 13G Township.

TABLE 12

Summary of Red-headed Jack-pine Sawfly Larval Colony Counts in Chapleau District from 1964 to 1966

NOTE: Ten trees having a d.b.h. of 1" to 3" were examined at each location.

Location by township	Average no. of colonies per tree		
	1964	1965	1966
11G	-	0.2	0
9E	-	1.0	0.3
Panet	0	0	0
Wakami	1.7	0.8	0.2
12F	0.6	0	0
Brutus	-	0.3	0.1

A Leaf Folding Sawfly, Phyllocolpa sp., formerly Nematus sp.

High numbers of these leaf folders persisted in Arbutus Township near Ramsay Creek and at the Spanish River Dam in Biscotasi Township. Larval mortality was high in the Arbutus Township infestation but low in Biscotasi Township.

Elsewhere in the district population levels fluctuated only slightly as shown in Table 13.

TABLE 13

Summary of Leaf Folding Sawfly Counts in Chapleau District from 1964 to 1966

NOTE: Counts were based on examination of 100 leaves from three trees at each location.

Location by township	Per cent of leaves folded		
	1964	1965	1966
10C	1	1	4
Osway	1	3	2
Fawn	-	1	3
Manning	1	1	1
Halsey	0	7	2
9D	2	4	2

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Population levels have increased over recent years. Moderate to heavy defoliation occurred on understory white spruce in Chapleau and McGee townships. Light defoliation was observed in townships D'Arcy, D and Brutus.

Balsam Shoot-boring Sawfly, Pleroneura borealis Felt.

This insect is usually abundant in alternate years. Thus in 1964 high numbers of infested shoots were recorded and few were infested in 1965 (Table 14). The abnormally low numbers of the insects present in 1966 probably resulted from the severe late spring frosts in 1964 (Table 14).

TABLE 14

Summary of Damage by the Balsam-shoot Boring Sawfly in Chapleau District from 1963 to 1966

NOTE: Counts were based on the examination of 50 branch tips from 10 trees at each location.

Location by township	Average d.b.h. of sample trees in inches	Per cent of shoots infested			
		1963	1964	1965	1966
Borden	3	6.7	3.5	0.2	2.4
32	2	4.3	10.4	0	0
12F	2	-	10.7	0.6	0

Amber marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Substantial increases in numbers of this leaf miner were observed throughout the district in 1966 (Table 15). Birch stands in townships 43, Bader and 12H near the western boundary of the district were heavily infested and medium infestations occurred in six townships in the southern part of divisions 69 and 29 (see map).

TABLE 15

Summary of Damage to White Birch Foliage in Chapleau District from 1964 to 1966

NOTE: Counts were based on examination of 100 leaves from three trees at each location.

Location by township	Average height of sample trees in feet	Per cent of leaves mined		
		1964	1965	1966
Leeson	13	1	2	8
Garnet	16	1	0	1
Nimitz	14	1	1	12
8D	15	0	0	15
10C	25	-	-	22

Spruce Bud Gall Midge, Rhabdophaga swainei Felt

Spruce reproduction throughout the district was damaged by this bud-destroying insect. Examination of six stands revealed a general increase in the number of infested shoots. High numbers of midges were observed at Little Wawa Lake in Peters Township and around Biscotasi Lake.

TABLE 16

Summary of Buds Damaged by the Spruce Bud Gall Midge at Six Points in Chapleau District from 1964 to 1966

NOTE: Counts were based on the examination of five branch tips from each of ten black spruce at each point.

Location by township	Average d.b.h. of sample trees in inches	Per cent of terminal buds infested 1964	1965	1966
Arbutus	1 1/2"	0	1.0	1.2
24 Range XXII	1 1/2"	-	-	5.1
Busby	1 1/2"	-	-	8.2
29	1 1/2"	0	0	3.9
Sandy	1 1/2"	-	-	6.4
9D	1 1/2"	0	1.0	5.4

Pine Tip Moth, Rhyacionia adana Heinrich

The nursery stock infested in 1965 was lifted in 1966. Fully-stocked seedbeds containing 3-0 red pine were damaged for the second consecutive year. However, only an average of 3.3 per cent of the red pine was infested in 1966. Very low numbers were also recorded in adjacent 3-0 jack pine seedbeds.

TABLE 17

Summary of Miscellaneous Insects Collected in Chapleau District in 1966

Insect	Host(s)	Remarks
Acleris minuta cinderella (Riley)	Leatherleaf	Numbers declining, heavily parasitized in Twp. 29, light in townships 12F and Smuts.
Acleris variana Fern.	bF	Low numbers in 12E Township.
Archips cerasivoranus (Fitch)	eCh, W	Pocket of heavy infestation along banks of creek, Twp.22 Range XVIII
Coleophora innotabilis Braun.	tA	Occasional casebearers in Panet and Arbutus townships.
Datana ministra Dru.	Se, wB	Few shrubs completely defoliated in townships 9 and 9D.

TABLE 17 (continued)

Insect	Host(s)	Remarks
Dendroctenus obesus Mann.	wS	Bark beetles in windthrown spruce.
Depressaria groteella Rob.	Hazel	Common near Hwy. 129 in Twp. 11E.
Dimorphopteryx pinguis (Nort.)	wB, yB	Population levels declined, very low numbers in McPhail Township.
Ecpantheria deflorata Fabr.	-	One larva of this rare species collected in Chapleau Township.
Epinotia corylana McD.	Al	Heavy in staminate alder catkins, Wakami River, Benton Township.
Epinotia solandriana Linn.	wB	Low numbers in 6 townships mostly in Division 29.
Epinotia solicitana Wlk.	wB	Larvae mine shoots and petioles of reproduction, small numbers at two locations.
Feralia jocosa Gn.	bF, jP	Few larvae collected in townships Smuts and 32.
Galerucella nymphaeae Linn.	Sweet Gale Water Lily	Leaf beetle, heavy infestations on lakeshores in Cochrane and Cortez townships.
Gracillaria invariabilis Braun.	p Ch	This leaf roller on pin cherry occurred commonly within the district.
Halisidota maculata Harr.	Al	Conspicuous Tiger Moth larvae common in D'Arcy and Hall townships.
Hemichroa crocea (Four.)	Al	Light defoliation in Hall Township.
Melanagromyza schineri (Gir.)	tA	Low numbers of twig deformers on reproduction in 4 townships, Div. 69.
Nematus hyalinus (Nort.)	W	Light defoliation on roadside willow in 10E Township.
Nematus limbatus Cress.	W	Population declined from 1965, light defoliation in Joffre and Hall twps.
Nematus oligospilus Forst.	tA	Understory trembling aspen lightly infested in Biscotasi Township.
Nematus ventralis Say	tA	Low numbers at Horton Lake.
Neodiprion abietis complex	bF	Population levels of the Balsam Fir Sawfly remain very low; 2 collections were obtained in the central portion of the district.
Neurotoma inconspicua (Nort.)	p Ch	Light infestation of web-spinning sawflies in the Biscotasi Township.
Nymphalis antiopa Linn.	tA	Pockets of heavy defoliation in Borden and Margaret townships.

TABLE 17 (concluded)

Insect	Host(s)	Remarks
Pareophora minuta (MacG.)	bAs	Light defoliation caused by this sawfly throughout the district, specifically in Benton and 11E twps.
Phyllocnistis populiella Chamb.	tA	Sucker growth at three locations was lightly infested by the Serpentine Leaf Miner.
Phyllocolpa agama (Roh.)	W	High numbers of leaf-folding sawflies around Henderson Lake in D'Arcy Twp.
Pikonema dimmockii (Cress.)	wS	Low numbers of the Green-headed Spruce Sawfly occurred in 4 townships.
Pineus strobi (Htg.)	wP	Pine Bark Aphids caused some twig mortality on understory white pine in 13H Township.
Polygonia faunus Edw.	yB, wB	Few larvae at 3 locations.
Prociphilus tessellatus Fitch	Al	Continued widespread infestations, status unchanged from 1965.
Pseudexentera oregonana Wlshm.	tA	Widespread throughout the district.
Pyrausta futilalis Led.	Dogbane	Occasional larvae in McPhail Twp.
Pyrrhia exprimens Hufn.	b Po	Widespread light infestation in the central portion of the district.
Rheumaptera hastata L.	Sweet Gale	High numbers of loopers in D'Arcy Township.
Toumyella numismaticum P. & M.	jP	Pine Tortoise Scales declined sharply throughout the district.
Trichiocampus irregularis (Dyar)	W	Few larvae in Fawn and 22 townships.
Trichotaphe levisella Fyles	Large Leaf Aster	Abundant leaf rollers in McPhail Twp., small numbers in 11D Township.
Trisetacus alborum Keifer	rP	Light mite infestation Borden Twp.
Vanessa cardui Linn.	Thistle	Large spiny larvae feeding in Township D at Mozhabong Lake.

STATUS OF INSECTS IN THE GOGAMA DISTRICT IN 1966

W. Ingram

Ugly-nest Caterpillar, Archips cerasivoranus (Fitch)

This insect was less abundant in the district in 1966 than in 1965. Lightly infested clumps of pin cherry and willow were observed in Jack and Ivanhoe townships. The decrease in population levels that occurred throughout the district is reflected in Table 5.

TABLE 5

Summary of Ugly-nest Caterpillar Colony Counts in Gogama District from 1964 to 1966

Location by township	Host	No. of colonies per square chain plot		
		1964	1965	1966
Gouin	W	2	2	0
Groves	p Ch	0	1	0
Ivanhoe	W, p Ch	3	4	2
Jack	W, p Ch	1	4	4
Kelvin	c Ch	0	2	0

Birch Sawfly, Arge sp., formerly Arge pectoralis (Leach)

Population levels of this insect remained low. Small pockets of light infestations occurred in Garvey and Westbrook townships in Division 72 and in Ivanhoe and Pinogami townships in Division 68. Several pockets of light infestations persisted in Cabot and Togo townships.

Birch Skeletonizer, Bucculatrix canadensisella Chamb.

Population levels of this insect increased throughout the district. White birch was heavily infested in Horwood and Pinogami townships in Division 68 (Table 6). Light infestations were observed in Invergarry, Noble, Togo and Jack townships in Division 72.

TABLE 6

Summary of Birch Skeletonizer Counts at Ten Sample Points in Gogama District from 1964 to 1966

NOTE: Counts based on a total of 100 leaves taken from three trees at each sample point.

Location by township	Host	D.b.h. of sample trees in inches	Per cent of leaves infested		
			1964	1965	1966
Cabot	wB	1.5	100	71	30
Horwood	wB	2	98	17	46
Ivanhoe	wB	2	61	29	39
MacMurchy	wB	2.5	96	78	39
Middleboro	wB	5	94	12	21
Middleboro	yB	6	-	1	22
Montcalm	wB	2	100	16	20
Pinogami	wB	3	74	21	82
Silk	wB	2	84	11	26
Sothman	wB	2	100	27	46

A Bark Beetle in Jack-pine Twigs, Conophthorus sp.

Population levels of this insect have been low for the past two years (Table 7). Light damage was observed at scattered locations in the district.

TABLE 7

Summary of Jack-pine Shoot Damage by Conophthorus sp. in Gogama District in 1965 and 1966

NOTE: Counts were taken on 100 jack pine trees at each sample point.

Location by township	Average d.b.h. in inches	Average height in feet	No. infested trees		No. infested shoots		No. infested leaders	
			1965	1966	1965	1966	1965	1966
Benneweis	1	10	7	6	41	23	0	0
Garvey	2	12	8	6	53	37	0	1
Horwood	2	15	5	1	29	9	0	0
Jack	1.5	12	14	8	69	23	1	1
Vrooman	1	10	6	6	22	44	0	3
Westbrook	2	10	36	6	189	30	1	1

European Spruce Sawfly, Diprion hercyniae (Htg.)

Populations remained low and only small numbers of larvae were collected at quantitative sampling locations (Table 8).

TABLE 8

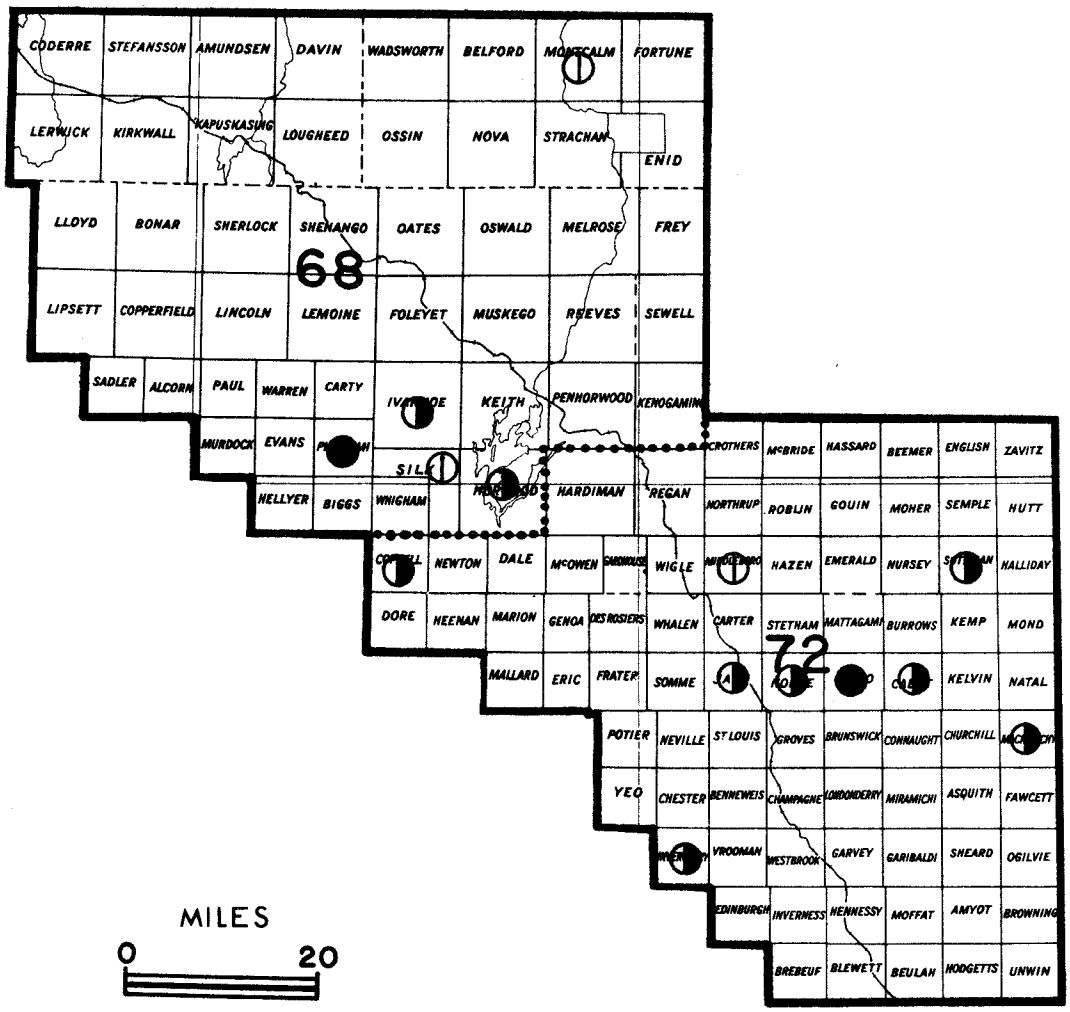
Summary of European Spruce Sawfly Larval Counts in Gogama District from 1964 to 1966

Location by township	Host	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample		
			1964	1965	1966
Benneweis	wS	10	7	0	2
Jack	bS	4	4	1	1
Jack	wS	9	14	0	2
Noble	wS	12	0	3	0

White-pine Shoot Borer, Eucosma gloriola Heinr.

Small jack pine trees in Garvey, Vrooman and Westbrook townships in Division 72 were lightly infested by this insect. Population levels were low throughout the district (Table 9).

GOGAMA DISTRICT



BIRCH SKELETONIZER

Locations where pockets of this insect occurred in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

TABLE 9

Summary of White-pine Shoot Borer Damage on Jack pine Trees at Five Points in Gogama District from 1964 to 1966

Location by township	Average d.b.h. of sample trees in inches	Average height of sample trees in feet	No. infested leaders per 100 tree sample		
			1964	1965	1966
Garvey	2	12	14	11	4
Vrooman	1	10	2	1	2
Westbrook	2	10	9	6	4
Champagne	2	7	-	-	3
Benneweis	1	10	-	-	2

American Poplar Leaf Beetle, Gonioctena americana (Schaeff.)

Small pockets of heavy infestation were observed on willow and trembling aspen in Keith, Muskego and Foleyet townships in Division 68. Light to moderate defoliation of roadside trembling aspen occurred at several locations elsewhere in the district. Larvae were frequently found feeding in association with a leaf roller Pseudexentera oregonona Wlshm.

A Leaf-tier on Alder, Gretchena semialba McD

Increasing numbers of this leaf-tier have occurred since 1964. In 1966 pockets of medium infestation were observed in Benneweis, Noble and Mattagami townships where up to 30 per cent of the terminal buds of alder was mined. Light infestations occurred at numerous points in the remainder of the district.

A Root Weevil, Hylobius warreni Wood

This weevil was found for the first time in the Gogama District in 1966 (see photograph). Scots pine trees were heavily infested in Noble Township causing light tree mortality. Mortality occurs when the larvae have girdled the tree at the root collar.

Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

Population levels of this insect declined for the third consecutive year, however, pockets of moderate to severe defoliation of roadside regeneration occurred in Ivanhoe and Silk townships. Light infestations occurred on larger trees throughout the remainder of the district. Quantitative sampling data are shown in Table 10.

TABLE 10

Summary of Leaf Damage Caused by the Aspen Blotch Miner at Thirteen Points in Gogama District in 1965 and 1966

NOTE: Counts were based on samples of 100 leaves at each location.

Location by township	Per cent leaves infested		No. mines per infested leaf		Average no. of mines per leaf	
	1965	1966	1965	1966	1965	1966
Carter	47	5	1.5	1.0	.72	.05
Champagne	18	-	1.4	-	.31	-
Coppell	12	5	1.3	1.2	.16	.06
Garabaldi*	1	37	1.0	1.2	.01	.043
Hellyer	73	11	4.2	1.0	3.05	.11
Invergarry	79	8	2.1	1.2	1.69	.10
Lemoine	78	5	4.9	1.0	3.82	.05
Mattagami*	2	5	1.3	1.2	.03	.060
Montcalm	41	10	1.4	1.0	.57	.10
Oates	16	8	2.3	1.1	.36	.09
Pinogami	48	23	2.1	1.3	1.03	.29
St. Louis	35	6	1.5	1.0	.54	.05
Silk	67	5	3.5	1.0	2.32	.05

* Based on 1000 leaves as in last year's table.

Western Tent Caterpillar, Malacosoma pluviale (Dyar)

A decline in population levels of this insect has occurred in the district for the past three years (Table 11). Light infestations were observed on roadside willow and pin cherry at numerous locations.

TABLE 11

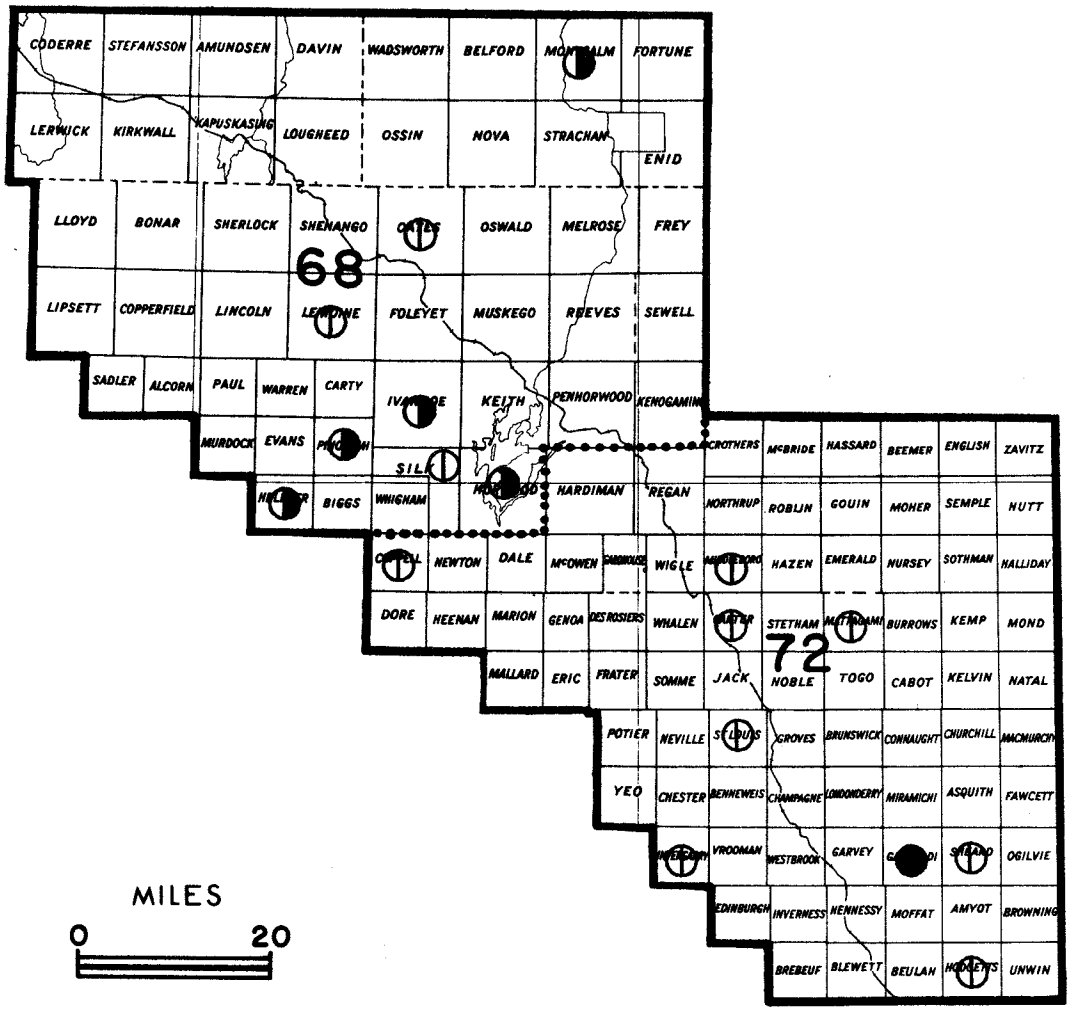
Summary of Western Tent Caterpillar Colony Counts in Gogama District from 1964 to 1966

Location by township	Host	No. colonies per measured mile of roadside		
		1964	1965	1966
Kelvin	w, p Ch	17	8	2
Mattagami	w, p Ch	8	3	1
Noble	p Ch	18	2	0
Roblin	w, p Ch	14	11	4
Silk	p Ch	22	18	12
Togo	p Ch	11	4	0

Balsam-fir Sawfly, Neodiprion abietis complex

Quantitative samples taken at four locations for the past several years show very little change in population levels of this insect (Table 12). Small numbers were collected at numerous locations in the district.

GOGAMA DISTRICT



ASPEN BLOTCH MINER

Locations where infestations were observed in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

TABLE 12

Summary of Balsam Fir Sawfly Larval Counts
in Gogama District from 1964 to 1966

Location by township	Host	Average d.b.h. of sample trees in inches	Total no. of larva per 15-tray sample 1964	1965	1966
Benneweis	wS	11	9	0	0
Jack	wS	13	6	1	10
Jack	bF	6	12	11	6
St. Louis	bS	3	3	2	0
Noble	bF	5	-	-	3

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

Population levels of this sawfly have declined since 1964. Quantitative samples at seven points in the district showed an average of 1.7 colonies per sample in 1964, 0.3 in 1965 and 0.2 in 1966.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Although population levels declined at all sample points, this sawfly was still found at numerous locations in the district. Jack pine was the predominant host, but the insect was observed on red pine stands in Ivanhoe and Mattagami townships (Table 13).

TABLE 13

Summary of Red-headed Jack-pine Sawfly Colony Counts on Jack Pine Trees
in Gogama District in 1965 and 1966

Location by township	Average d.b.h. of sample trees in inches	Average no. of colonies per 10 tree sample 1965	1966
Benneweis	2	1.1	.2
Chester	4	.7	.5
Foleyet	3	1.1	.1
Groves	2	4.7	2.5
Ivanhoe	3	3.4	.7
Ivanhoe*	3	.4	.1
Jack	4	1.3	.9
Silk	1.5	1.5	.1
Reeves	1	-	.5
Horwood	1	-	.1
Mattagami*	5	-	.8
Noble	3	-	.1

* Sample taken on red pine

Leaf-folding Sawflies on Poplars and Willow, Phyllocolpa spp. formerly Nematus spp.

These sawflies were collected more commonly than in 1965, even though this is not reflected in Table 14 below. Heavy infestations occurred on willow and trembling aspen regeneration along roadsides and lakeshores in Ivanhoe, Silk and Whigham townships.

TABLE 14

Summary of Leaf-folding Sawfly Counts at Seven Locations in Gogama District in 1966

NOTE: Counts are based on the examination of 100 leaves taken at random from each of three trees at each location.

Location by township	Host	Average height of sample trees in feet	Per cent of leaves folded		Average no. of folds per leaf	
			1965	1966	1965	1966
Hellyer	tA	10	-	12	-	1.2
Groves	tA	10	74	48	1.4	1.4
Ivanhoe	bPo	9	7	15	1.1	1.2
Pinogami	bPo	9	19	17	1.1	1.0
St. Louis	tA	12	19	6	1.2	1.2
Silk	tA	9	10	10	1.1	1.2
Hodgetts	tA	8	60	6	1.3	1.2

Balsam Shoot-boring Sawfly, Pleroneura borealis Felt.

This sawfly is usually abundant in alternate years but severe late frosts in 1965 interrupted this cycle. Data obtained at sample locations in 1966 are shown in Table 15.

TABLE 15

Summary of Balsam-fir Shoot Damage Caused by the Balsam Shoot-boring Sawfly in Gogama District in 1966

Location by township	D.b.h. of sample trees in inches	Percentage of shoots infested
Foleyet	2	40.0
Jack	6	9.1
Noble	2	5.0
St. Louis	1	4.5
McBride	2	2.0
Groves	3	1.6

Alder Woolly Aphid, Prociphilus tesselatus (Fitch)

Heavy infestations of this aphid occurred on pockets of alder throughout the district. Branch mortality was common in the central and north-central portions of Division 72 where high populations have been observed for the past several years. Light to medium infestations occurred elsewhere in the district.

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Although a decline in population levels occurred, light to moderate defoliation occurred in numerous areas in the district. Damage was restricted to suppressed or shaded trees. Data from quantitative samples are summarized in Table 16.

TABLE 16

Summary of Damage Caused by the Amber-marked Birch Leaf Miner to the Foliage of White Birch in Gogama District in 1966

Location by township	Average d.b.h. of sample trees in inches	Per cent leaves infested	Total no. of mines	Average no. of mines per infested leaf
Montcalm	2	0	0	0
Oates	2	27	28	1.0
Pinogami	3	10	11	1.1
Horwood	2	11	11	1.0
Coppell	2	4	4	1.0
Middleboro	5	0	0	0
Middleboro	6	4	4	1.0
Jack	3	5	6	1.2
Togo(understory)	2.5	7	8	1.1
Togo(overstory)	6	3	3	1.0
Invergarry	2	9	10	1.1
Sothman	2	2	2	1.0
MacMurchy	2.5	6	7	1.1

TABLE 17

Summary of Miscellaneous Insects Collected in Gogama District in 1966

Insect	Host(s)	Remarks
Acleris calignosana Wlk.	Al	Lightly infested clumps of alder in north east corner of divisions 68 and 72.
Acleris variana Fern.	wS, bS, bF	Small numbers in beating samples in Division 72.
Argyresthia pygmaella Hbn.	W	High numbers in Keith and Groves townships.

TABLE 17 (continued)

Insect	Host(s)	Remarks
Choristoneura fumiferana (Clem.)	wS, bF	Common in beating samples in central portion of Division 72.
Choristoneura rosaceana (Harr.)	aMo, pCh	Found in Stetham and MacMurchy townships in Division 72.
Cimbex americana Leach	w, tA, bPo	Occasional larva found in Noble, Burrows and Horwood townships.
Cinara canatra H & B	jP	Medium infestation near Cabot Lake in Cabot Township.
Coleophora fuscedinella Zell.	wB	Found at numerous points throughout the district.
Coleophora innotabilis Braun	tA	Birch casebearer found feeding on foliage of trembling aspen in Garvey and Coppell townships.
Compsolechia niveopulvella Chamb.	tA	Light infestations found throughout the district.
Corythucha elegans Drake	Al, W	Heavy feeding on trees in Jack Twp.
Croesus latitarsus Nort.	Al, wB	Defoliation was heavy on white birch in Noble Twp. and light on alder in Mattagami Township in Division 72.
Disonycha alternata Ill.	W	Medium infestation in Noble Township.
Epinotia crusiana Linn.	W	Light infestations on willow in Jack Township.
Epinotia solandriana Linn.	sB, tA	Light infestations observed in Noble and Keith townships.
Gracillaria alnivorella Cham.	Al	Alder throughout the district had from 10 to 30 per cent of the foliage affected.
Gracillaria invariabilis Braun.	pCh	Found commonly throughout the district.
Hydriomena renunciata Wlk.	Al	Up to 10 per cent defoliation in Jack, Groves and Togo townships.
Hyphantia cunea Dru.	Al, cCh, pCh, Wb, W	Relatively low numbers throughout the district.
Melenagromyza schineri (Gin)	Ta	Common in Churchill, Ivanhoe, MacMurchy and Keith townships.
Monoctenus fulvus Nort.	eC	Large numbers obtained in beating samples from Ivanhoe Township.
Mordwilkoja vagabunda Walsh	tA	Medium infestations in Noble and Cabot townships.
Neodiprion swainei Midd.	jP	Light infestation in Noble Township (.2 colonies per tree).

TABLE 17 (concluded)

Insect	Host(s)	Remarks
Nycteola frigidana Wlk.	W	Found in small numbers in Div. 68.
Parornix conspicuella Dietz.	wB	Light infestations in Stetham and Zavitz townships.
Phratora pupurea pupurea Brown	bPo	Single tree heavily infested in Horwood Township.
Phyllocolpa agama (Roh.)	W	Common around Marne Lake in Div. 72 and along Spruce Falls Road in Division 68.
Pikonema alaskensis (Roh.)	wS, bS	Numerous larvae found in beating samples in Jack, St. Louis and Noble townships.
Pikonema dimmockii (Cress.)	wS, bS	Found in association with Pikonema alaskensis (Roh.) in Jack Township.
Pineus similis (Gill.)	wS, bS	Light infestations in Asquith, Ivanhoe and Halliday townships.
Pineus strobi (Htg.)	wP	Trees heavily attacked in Asquith, Noble and MacMurchy townships.
Pissodes affinis Rand	jP	Occurred on weakened and dying trees along management Unit Road.
Pissodes approximatus Hopk.	wP, jP	Infestation on small trees in Noble Township.
Protoboarmia porcellaria indicataria Wlk.	bF	Collected three times during season at balsam fir sample plots in Noble Township.
Pseudexentera oregonana Wlshm.	tA	Light infestations were quite frequently associated with Gonioctena americana (Schaeff.) in the central portion of the district.
Rhabdophaga stobiloides (Walsh)	W	Observed throughout the district on open grown willow.
Rhabdophaga swainei Felt	bS	2.4 to 6.6 per cent of the buds were mined on black spruce trees in Division 72.
Sciaphila duplex Wlshm.	tA	A leaf roller found commonly throughout Division 68.
Semiothisa dispuncta Wlk.	bS, bF	Light infestations occurred throughout Division 72.
Trichotaphe levisella Fyles	Aster	Light infestations on aster in Stetham Township.
Xylomyges dolosa Grt.	bPo, LtA, tA, W	Found commonly throughout the district.

STATUS OF INSECTS IN THE WHITE RIVER DISTRICT

D. C. Constable

Ugly-nest Caterpillar, Archips cerasivoranus (Fitch)

Population levels of this tortricid were comparable to 1965 (Table 5). In Township 30 Range 23 a heavy infestation persisted on immature choke cherry along Highway 17. Small numbers of larval colonies were observed elsewhere in the district.

TABLE 5

Summary of Ugly-nest Caterpillar Colony Counts in White River District from 1964 to 1966

Location	Sample unit	Number of tents observed		
		1964	1965	1966
Township 29 Range 23	1 square chain	0	0	1
Township 74	1 mile roadside	1	0	0
Township 30 Range 23	1 mile roadside	470	435	461
Township 29 Range 23	1 square chain	45	56	49

Spruce Budworm, Choristoneura fumiferana (Clem.)

An intensive survey of this important forest insect was carried out in the district in areas where severe defoliation and mortality occurred in the late 1940's. Both open-grown balsam fir and white spruce trees were sampled at numerous locations throughout the district but all larvae obtained were from white spruce. Little defoliation was observed at sample points (Table 6).

TABLE 6

Summary of the Spruce Budworm Counts in White River District in 1966

Location	Average d.b.h. of trees in inches	No. tray samples	Total no. of larvae obtained
Pearkes Twp.	5	20	3
Mi. 6 O.P.C.	3	5	1
Township 74	5	10	3
Barbara Lake	3	10	6
Township 71	3	7	4
Township 29 Range 23	10	10	0

Larch Casebearer, Coleophora laricella Hbn.

This pest of tamarack and larch was first collected in the White River District in 1948. In 1961 intensive surveys were undertaken to determine the distribution and abundance of this insect. During the period from 1961 to 1964 larval populations had gradually increased. However, in 1965 the population trend showed a decrease and in 1966 a complete collapse occurred as indicated by quantitative sampling at five points in the district (Table 7).

TABLE 7

Summary of Larch Casebearer Larval Counts
in White River District from 1964 to 1966

NOTE: Counts were based on the number of larvae from four 18-inch branch tips from each of four trees at each location.

Location	Average d.b.h. of trees in inches	Average no. of larvae per branch tip		
		1964	1965	1966
Leslie Township	4	1.0	0.2	0
Township 71	4	7.1	1.8	0
Township 29 Range 23	5	1.1	0.3	0
Township 30 Range 26	4	12.5	8.8	0
Pic Township	5	14.5	0.6	0

Wandering Sawfly, Dimorphopteryx pinguis (Nort.)

Prior to 1965, this insect was rarely found in the district. A light infestation was observed in Pic Township in 1965, but only scattered trees were defoliated. In 1966, a small pocket of white birch in the same area was severely defoliated (see photograph). Elsewhere in the district damage was insignificant.

European Spruce Sawfly, Diprion hercyniae (Htg.)

This introduced pest has gradually extended its range in the district since 1961 when five larvae were collected in Glasgow Township. Small numbers were found at four locations in 1964 and 1966. The insect was more abundant in Township 71 in 1966 than previously recorded in the district. Its known distribution now extends from Township 31 west to Township 74. White spruce was the preferred host.

TABLE 8

Summary of European Spruce Sawfly Larval Counts
in White River District in 1966

Location	Average d.b.h. of trees in inches	Total no. of larvae per 15-tray sample
Township 71	5	20
Hunt Township	3	1
Township 74	4	1
Township 29 Range 23	4	1

American Aspen Beetle, Gonioctena americana (Schaeff.)

Populations of this aspen defoliator were generally higher throughout the district than in 1965. Pockets of heavy defoliation occurred to open-grown aspen reproduction along roadsides and lakeshores in Townships of Hunt, Cecile

and 64 (Table 9). Light to medium damage was observed at various locations elsewhere in the district.

TABLE 9

Degrees of Defoliation and Infestation of the American Poplar Leaf Beetle in White River District in 1966

Location	Per cent defoliation	Degree of infestation
Hunt Township	40	M
Township 64	60	H
Mikano Township	60	H
Cecile Township	60	H
Pearkes Township	10	L
Gertrude Township	10	L
Township 30 Range 23	20	M
Knowles Township	20	M

Aspen Blotch Miner, Lithocolletis salicifoliella Cham.

Population levels of this leaf miner increased sharply compared with 1965. Counts of mined leaves were considerably higher than those reported since 1964 (Table 10).

Trembling aspen reproduction along Dubreuil's and Tukanee Lake roads was heavily infested. Light to medium leaf mining of aspen, balsam poplar, and willow were observed at numerous locations throughout the district.

TABLE 10

Summary of Aspen Blotch Miner Counts at Five Locations in White River District from 1964 to 1966

NOTE: Counts were based on examination of 100 leaves from three aspen trees at each location.

Location	Average d.b.h. of trees in inches	Per cent of leaves mined		
		1964	1965	1966
Mikano Township	4	1	1	28
Hunt Township	2	0	1	18
Barbara Lake	4	0	1	14
Mi. 2 Cp. 70 rd.	3	0	1	10
Township 30 Range 23	3	2	2	40
Hunt Township	2	0	15	14

Western Tent Caterpillar, Malacosoma pluviale (Dyar)

A slight increase in numbers of larval tents per mile of roadside occurred in the district. The insect has been consistently more abundant along the Manitouwadge road than at other sample points (Table 11).

TABLE 11

Summary of Western Tent Caterpillar Counts per Measured Mile of Roadside in White River District

Location	Number of tents per mile or roadside 1964	1965	1966
Mi. 18 Manitouwadge Rd.	16	8	10
Bryant Township	6	5	5
Magone Township	6	0	7
Mi. 7 Cp. 70 Rd.	8	4	6
Township 71	8	5	5

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

This sawfly was found more frequently than in 1965 particularly in the northeastern portion of the district (Table 12). Jack pine trees on rocky slopes, shorelines and sandy hillsides were the preferred hosts.

TABLE 12

Summary of Larval Colony Counts of the Red-pine Sawfly in White River District

Location	Average d.b.h. of trees in inches	No. of trees examined	Average no. of colonies per tree
Township 70	5	10	0.1
Township 27	3	10	1.2
Challener Twp.	4	10	0.4
Hunt Township	3	10	0.4
Pearkes Township	3	10	0.2

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

This pine sawfly virtually disappeared from the district in 1966. Negative counts were recorded at all quantitative sample points (Table 13). Single larval colonies were found only in Hunt Township and Township 64. Population levels at sample points were comparable to 1962.

TABLE 13

Summary of Larval Colony Counts of Red-headed Jack-pine Sawfly in White River District in Alternate Years 1962 - 1966

Location	Average d.b.h. of trees in inches	No. of trees examined	Average no. of colonies per tree		
			1962	1964	1966
Hunt Township	5	20	0	0.8	0
Hunt Township	2	20	0	1.2	0
Township 70	4	20	0	2.2	0
Township 64	5	20	0	2.3	0
Township 71	3	10	.04	1.4	0
Pearkes Township	5	10	0	0.4	0

Pitch Nodule Maker, Petrova albicapitana Busck.

Unusually large numbers of this nodule maker occurred for the second consecutive year in the Ontario Paper Company limits. Infested trees ranged from 3 to 7 feet in height. On July 8, a total of 188 nodules was counted on 100 trees 10 miles south of Camp 70. Twenty sample trees were tagged and the location of terminal and lateral nodules was marked with metal tags to carry out survival studies in the spring of 1967 (Table 14).

A light infestation occurred on natural jack pine regeneration along the Dump Lake road where 12 nodules were counted on 55 trees. Elsewhere in the district, the insect occurred sporadically.

TABLE 14

Number of Terminal and Lateral Shoots Infested by the Pitch Nodule Maker on Twenty Sample Trees in White River District in 1966

Location	Average height of trees in feet	No. of terminal shoots infested	No. of lateral shoots infested
Camp 70 O.P.C.	5	12	29

Leaf Folding Sawflies, Phyllocolpa spp.

Population levels of these sawflies increased considerably in 1966. Light to severe leaf damage occurred at numerous locations in the district. The principal host was trembling aspen but balsam poplar and willow were also attacked to a lesser degree. The number of folds containing larvae was relatively low compared with the number of folds present at sample points (Table 15).

TABLE 15

Summary of Leaf Folding Sawfly Counts
in White River District in 1966

NOTE: Counts were based on examination of 100 leaves from three trees at each location.

Location	Average d.b.h. of trees in inches	Per cent of leaves folded	No. of folds containing larvae
Franz	2	30	5
Dubreuilville	2	40	8
Hawk Junction	2	20	5
Lochalsh	2	14	5
Bryant Township	2	40	11
Township 70	2	31	6
Pic Township	2	33	5

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Population levels of this sawfly were higher than in 1965. Small pockets of black and white spruce regeneration were heavily defoliated in Township 71, Pic Township and at Franz. This insect was a problem on ornamental trees in Wawa and White River.

Green-headed Spruce Sawfly, Pikonema dimmockii (Cress.)

This sawfly occurred more commonly on white spruce than in 1965. The highest larval counts were obtained in Pearkes Township and in Township 28 Range 23 where 2.4 larvae per tray sample occurred (Table 16).

TABLE 16

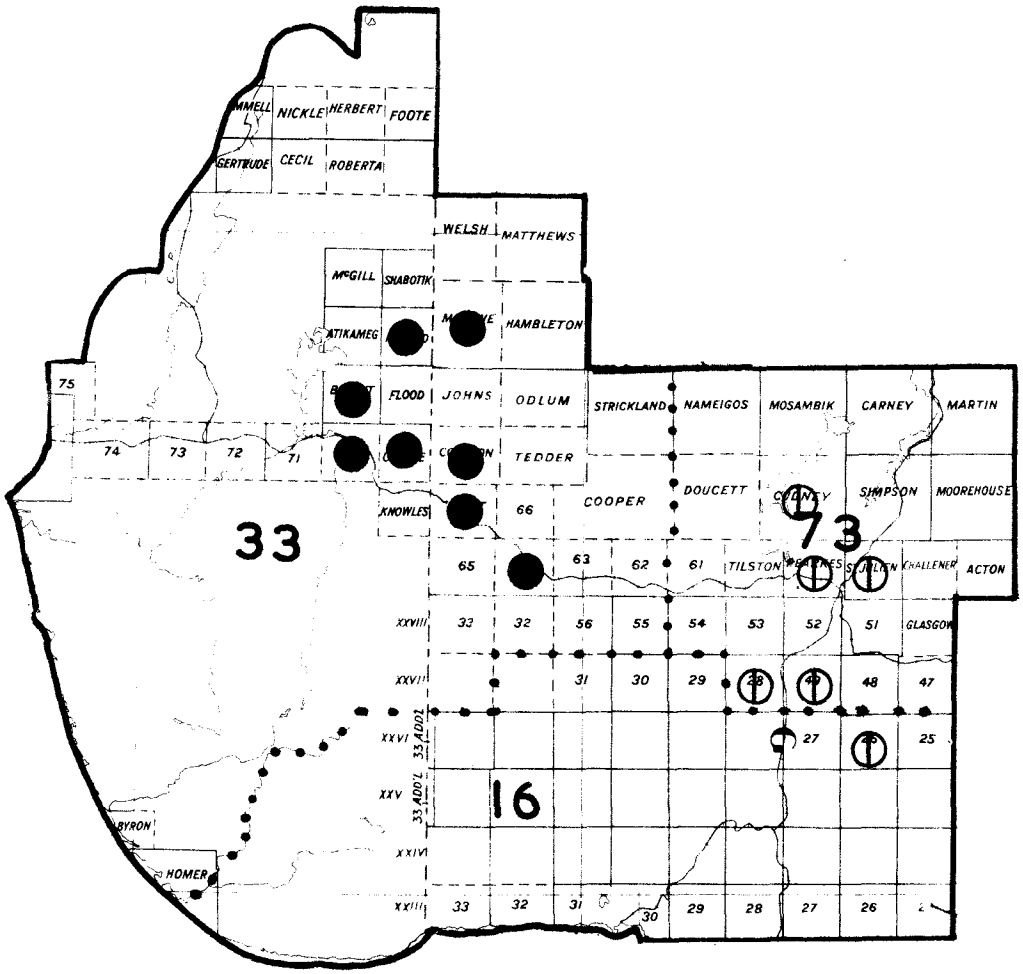
Summary of the Green-headed Spruce Sawfly Larval Counts
on White Spruce in White River District in 1966

Location	Average d.b.h. of trees in inches	No. of trees sampled	Average no. larvae per tray sample
Pic Township	3	10	0.6
Township 28 Range 23	4	7	2.4
Pearkes Township	2	10	2.4
Township 28 Range 27	3	15	0.6
Gertrude Township	2	4	1.0
Township 29 Range 23	4	10	0.4
Township 74	3	10	1.0

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

A significant increase in population levels of this birch leaf miner was observed in the district (Table 17). Pockets of heavy infestation were more numerous on white birch than in 1965. Severe leaf mining was observed in Hunt

WHITE RIVER DISTRICT



0 MILES 20

AMBER-MARKED BIRCH LEAF MINER

Locations where pockets of infestation were observed in 1966

Legend

Light infestation . . . . . ⊖

Heavy infestation . . . . . ●

Township west to lower White Lake where conspicuous discolouration was evident from aerial surveys (see map). In areas east of Township 28 damage was very light.

TABLE 17

Summary of Damage by the Amber-marked Birch Leaf Miner in White River District

NOTE: Counts were based on examination of 100 leaves from three trees at each location.

Location	Average d.b.h. of trees in inches	Per cent of leaves mined	
		1965	1966
Esnagi Lake	3	83	85
Township 32 Range 28	3	80	80
Township 31 Range 27	4	71	80
Pearkes Township	3	33	30
Hunt Township	3	15-30	75
Township 28 Range 28	3	32	60
Township 28 Range 24	3	3-8	65
Bryant Township	3	No counts	80
Magone Township	3	No counts	80

Spruce Bud Midge, Rhabdophaga swainei Felt

Bud damage caused by this miner increased slightly. Representative population levels were recorded at four points (Table 18).

TABLE 18

Summary of Spruce Bud Midge Counts in White River District in 1965 and 1966

NOTE: Counts were based on examination of 50 branch tips, five from each of ten trees at each location.

Location	Host	Average d.b.h. in inches	No. of shoots examined		Per cent of terminal buds infested	
			1965	1966	1965	1966
Township 74	wS	4	140	176	3.5	7.9
Township 70	bS	4	156	162	7.0	4.9
Twp. 32 Range 27	bS	2	153	161	3.9	4.9
Twp. 29 Range 23	wS	4	142	182	2.0	0.0

TABLE 19

Summary of Miscellaneous Insects Collected
in White River District in 1966

Insect	Host(s)	Remarks
Acleris variana (Fern.)	wS, bS	Light throughout the district.
Altica tombacina shoemakeri Schaeffer.	wildrose	Heavy infestation along Dump Lake road.
Anoplonyx luteipes Cress.	tL	Small numbers found on beating tray samples in Cecile Township.
Argyresthia pygmaella Hbn.	W	Common on fringe willow in district.
Badebecia urticana Hbn.	wB, bPo	Low numbers.
Bucculatrix canadensisella (Cham.)	wB	Very light populations throughout the district.
Campaea perlata Gn.	W, wB	Total of six larvae found at two locations.
Compsolechia niveopulvella Chamb.	tA	Found commonly on immature trees along Dubreuil's road.
Coleophora betulivora McD.	wB	Large numbers of larvae found at Mile 22 Manitouwadge road.
Conophthorus sp.	jP	Light damage to new shoots in Gertrude Township and along Bleep Lake road.
Dioryctria reniculella Grt.	wS	Small numbers.
Epinotia corylana McD.	Al	Light at several locations.
Epinotia cruciana Linn.	tA, wB	Light to medium infestations at scattered locations in district.
Euura resinicola (Marlatt)	W	Galls common throughout the district.
Feralia jocosa Gn.	jP	Small numbers found in Township 28 and Cecile Township.
Gracillaria invariabilis Braun.	pCh	Found in small numbers.
Neodiprion abietis complex	bF	Few larvae recovered on beating tray samples.
Neodiprion maurus Rohwer	jP	One colony in Cecile Township.
Neodiprion pratti banksianae Roh.	jP	One colony found south of Camp 53, OPC limits.
Nyctobia limitaria Wlk.	bF	Few loopers recovered in Township 28 Range 23 and Township 73.
Nycteola frigidana Wlk.	W	Light infestations on willow at scattered locations.

TABLE 19 (concluded)

Insect	Host(s)	Remarks
Phlyctaenia tertialis Gn.	El	Small numbers found throughout the district.
Phyllocnistis populiella Cham.	tA	Serpentine miners found on understory aspen at Hawk Junction.
Phyllocolpa agama (Roh.)	W	Light damage observed at scattered locations.
Phratora purpurea purpurea Brown	tA	Light infestations found in Pearkes Twp. and on shoreline trees at Quebec Harbour on Michipicoten Island.
Pyrrhia umbra experimens Wlk.	bPo	Light to medium infestation on new terminal shoots in the district.
Pissodes approximatus Hopk.	rP	Low mortality in Rumsey's plantation.
Pleroneura borealis Felt.	bF	Few larvae obtained on tray samples in Township 70.
Pseudexentera oregonana Wlshm.	tA	Commonly found in district.
Rhabdophaga brassicoides (Walsh)	W	Cabbage galls common on immature willow.
Semiothisa bicolorate Fabr.	jP	Frequently recovered on beating tray samples.
Semiothisa dispuncta (Group)	bF, wS, bS	Found frequently on beating tray samples.
Zeiraphera diniana Gn.	tL	Small numbers.
Xylomyges dolosa Grt.	tA, bPo	Light damage at three locations.

NORTHERN FOREST REGION

1966

INTRODUCTION

STATUS OF TREE DISEASES (REGIONAL)

INTRODUCTION

Northern Forest Region

This report deals with insect and tree disease conditions in the Northern Region in 1966. Tree diseases are presented on a regional basis, and data on insects are contained in the district section of the report.

The collapse of the forest tent caterpillar outbreak and a marked decline in birch leaf skeletonizer infestations were noteworthy developments in the Region. Cold, wet weather that persisted until early June contributed to the collapse of the forest tent caterpillar outbreak and retarded the development of the spruce budworm and other early insects. The European spruce sawfly, the red-headed jack-pine sawfly, leaf miners on trembling aspen and willow, and leaf-folding sawflies on poplars were more abundant than in 1965. New distribution records were established for a new type of Zeiraphera sp. in Swastika District, and Coleophora fuscedinella Zell. on white birch, Holcocera immaculella McD. on jack pine and Sirex cyanus F. on balsam fir in Cochrane District.

Scleroderris canker, posed a serious threat to red and jack pine plantations. Discovered in the Swastika Nursery in 1965, the incidence of infection was high in most young red pine plantations in Cochrane and Swastika districts in 1966 and red pine mortality was severe at several points in the above districts. Light infection occurred on red pine in the Spruce Falls Nursery in Kapuskasing District. Shoe string root rot caused light tree mortality in jack pine, red pine and white spruce plantations.

Due to a hot, dry summer infections of rust on conifers were considerably lower in 1966 than in 1965. For example, heavy infections of Pucciniastrum epilobii Otth reported in Kapuskasing and Cochrane districts in 1965 declined sharply in 1966. Browning of trembling aspen foliage by the ink spot disease was much less severe than in 1965.

Balsam fir mortality, a major problem in the Guilfoyle area of Kapuskasing District in recent years was less severe in 1966. Aerial surveys north of Iroquois Falls in the Cochrane District showed minor damage at scattered points.

First herbarium records included Godronia confertus (Hone) Groves on pin cherry, Godronia fuckeliana Groves on viburnum and Venturia populina on Carolina poplar in the Cochrane District.

Sincere appreciation is again expressed for the assistance given to field technicians by timber operators and personnel of the Ontario Department of Lands and Forests.

H. R. Foster

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

This fungus has caused mortality of a variety of coniferous and deciduous trees in scattered areas throughout the region in recent years. In 1966, a marked increase in mortality of both plantation and natural stands of jack pine was observed in Cane Township in Swastika District, and in Sheraton, Thomas, Adair and Adams townships in Cochrane District. Noteworthy tree mortality occurred in red pine plantations in Cane, Grenfell, Teck and Nordica townships in Swastika District and in Sheraton, Thomas and German townships in Cochrane District.

Ink Spot Disease of Poplar, Ciborinia whetzelii (Seav.) Seav.

A general decline in both extent and intensity of infections occurred in 1966. The large area of heavy infection which occurred in a major portion of Swastika District and Division 43 in Cochrane District in 1965, broke up into fourteen smaller areas of heavy infection in 1966. The largest of these occurred in Gauthier and Arnold townships, in Division 42; in four townships around the northwest end of Abitibi Lake; and at the junction of the Abitibi and the Frederickhouse rivers. Heavy infection in a large area in the central part of Kapuskasing District in 1965 declined in 1966 to four small areas in Fauquier, Way, Seaton and Rogers townships. One new area of heavy infection occurred in 1966 in Singer, Clive and St. Laurent townships in Cochrane District. Light-to-medium infection occurred in most trembling aspen stands in the remainder of the region.

A Canker of Manitoba Maple, Coryneum negundinis Berk. & Curt.

Samples of this disease organism were collected for the first time in Cochrane District in 1965. In 1966 twig mortality on Manitoba maple was severe on trees in South Porcupine and light in Timmins. Severe twig mortality also occurred in Kearns, Savard and Teck townships in the Swastika District.

Sweetfern Blister Rust, Cronartium comptoniae Arth.

Heavy infections of this rust recurred along the Bigwater Lake Road north of Timmins, and along the eastern border of Division 43 from Nellie Lake to Lipsett Lake in Cochrane District. Light-to-heavy infections recurred in 11 townships in the Swastika District. New areas of infection were found in Arnold, Charters, Burt and Willison townships of Swastika District and in Keefer Township in Cochrane District.

Permanent sample plots in Tisdale and Sheraton townships showed smaller numbers of trees fruiting in 1966 than in 1965 (Table 1). Three of the 34 infected trees, marked in the Sheraton plot in 1965, were dead in 1966.

TABLE 1

Summary of Trees with Fruiting Bodies and Relationship of Leader Growth to Infection by Cronartium comptoniae Arth. in Sheraton Township in 1965 and 1966

Year	Per cent of trees producing spore	Av. leader growth of trees (inches) Infected	Non infected	Per cent of dead trees
1965	68	4	10	0
1966	52	4	8	6

White Pine Blister Rust, Cronartium ribicola J.C. Fischer

This disease was again found at most locations where white pine occurred in the Swastika District. Highest infection occurred in Hudson Township where a new centre of infection was discovered (Table 2). Light infections persisted in Grenfell and Tyrrell townships in the Swastika District and in McArthur Township, Cochrane District.

TABLE 2

Incidence of White Pine Blister Rust in the Swastika District in 1966

Location (township)	No. of trees examined	Av. d.b.h. in inches	Per cent infected trees 1965	1966	Estimated mortality
Arnold	50	3	2	2	0
Hudson	50	3	-	18	5
Grenfell	100	4	16	12	2
Milner	50	8	8	7	1
Dunmore	50	6	6	10	2
Harris	50	6	8	3	1

Leaf Blight, Linospora tetraspora G. E. Thompson

Heavy infections of this leaf blight occurred on open growing balsam poplar in Currie, Garrison and McEvoy townships in Swastika District; Robb, Hillary, Sheraton, Glackmeyer and Avon townships in Cochrane District; and Clavet, Gill, Rogers and Fauquier townships in Kapuskasing District. Light-to-medium infection occurred in abandoned farm and cutover areas elsewhere in the region.

A Needle Rust on Tamarack, Melampsora medusae Thum.

Heavy infection of this rust persisted in Clute and Calder townships in Cochrane District and in Lee Township, Swastika District. Heavy infections which occurred in Lamarche, Clavet, Ogden, Holloway, Harker, Milner, Holmes and Bond townships in 1965 declined to light infection in 1966. Low infection levels occurred elsewhere in Cochrane and Swastika districts and at several locations in Kapuskasing District. Infections were found north to the Abitibi Canyon area.

Leaf and Twig Blight of Poplar, Pollaccia elegans Serv.

A general decline in incidence and severity of this disease occurred in Kapuskasing and Swastika districts. No heavy infections occurred in Kapuskasing District and only one area of heavy infection persisted in McVittie Township in Swastika District. Exceptions to the trend occurred in Swastika District in McVittie and Yarrow townships where counts of damaged twigs were higher in 1966 than in 1965 (Table 3). Medium infections persisted at several points in the Cochrane District. Young open-grown balsam poplar trees were the main hosts.

A heavy infection in the Town of Iroquois Falls caused almost total defoliation of mature Carolina poplar trees constituting a new host record (Photograph). Fruiting of both the ascigerous state Venturia populi (Vuill)Fabric., and Pollaccia elegans Serv. was abundant on the trees.

TABLE 3

Summary of Damage Caused by Pollaccia elegans Serv. on Balsam Fir Trees in the Northern Region in 1965 and 1966

Location (township)	No. of shoots per sample	Per cent of shoots infected 1965	1966	Severity of infection in 1966
Swastika District				
McVittie	50	24	64	Heavy
Pacaud	50	20	0	Nil
Benoit	100	15	0	Nil
Evantural	50	39	0	Nil
Yarrow	50	12	21	Light
Carr	50	-	6	Light
Cochrane District				
Tisdale	100	-	19	Light
Robb	100	-	26	Medium
Glackmeyer	100	-	31	Medium
Mortimer	100	-	17	Light
Homuth	100	-	37	Medium

Leaf and Twig Blight of Poplar, Pollaccia radiosa (Lib.) Bald. and Cif.

Heavy infections of this disease recurred in Clergue and Clute townships, Cochrane District, and in Montrose, Corkill, Garrison and Grenfell townships in Swastika District. Highest levels of infection were recorded in Montrose and Corkill townships (Table 4). Heavy infections also occurred at the mouths of the Ghost and the Lightning rivers on the south shore of Abitibi Lake. Medium infection was noted in Dymond and Marter townships in Swastika District and light infections occurred at numerous other locations in Cochrane and Swastika districts. Damage was negligible in the Kapuskasing District.

TABLE 4

Summary of Damage Caused by Pollaccia radiosa (Lib.) Bald. and Cif. in the Northern Region in 1966

Location (township)	No. of shoots per sample	Per cent of shoots infected	Severity of infection
Swastika District			
Montrose	100	60	Heavy
Bannockburn	100	36	Medium
Corkill	100	57	Heavy
Garrison	50	23	Light
Grenfell	100	7	Light
Cochrane District			
Robb	100	28	Medium
Homuth	100	47	Medium
Mortimer	100	17	Light
Whitney	100	11	Light

Rust on Balsam Fir, Pucciniastrum epilobii Otth.

A sharp decline in infection levels of this disease organism occurred in 1966. A heavy infection which occurred west of Smooth Rock Falls in the Cochrane District in 1965 decreased to pockets of light infection in 1966. The disease was not found in Kapuskasing District even at a location where up to 70 per cent infection occurred in 1965. A single light infection occurred in Eby Township, and was the first record from Swastika District.

Dieback of Red Pine, Scleroderris lagerbergii Gremmen

Since first collected in the Swastika Nursery in 1965, the range of this disease has been extended to include six additional townships in the Swastika District, seven townships in the Cochrane District and one township in the Kapuskasing District.

Severe damage to red pine plantations occurred in German, Sheraton, Dempsay, Adams and Dundonald townships in the Cochrane District, and in Nordica, McCann, Burt and Munro townships of the Swastika District (Table 5). Severe damage occurred in jack pine plantations in Dundonald and McCool townships of Cochrane and Swastika districts, respectively.

Light-to-medium infections occurred in jack pine plantations in Munro and Michaud townships, Swastika District; red pine plantations in Whitesides Township, Cochrane District; and red pine in the Spruce Falls Nursery of Kapuskasing District. The incidence of the disease ranged from 0 - 80 per cent in a Scots pine provenance test in German Township, Cochrane District. Planted white pine were attacked in Leitch Township of Cochrane District.

The deterioration and mortality of red pine in plantations in the Cochrane District has been so severe that the species was dropped from reforestation programs in recent years. The pattern of mortality generally showed severe damage over the first few years after planting with highest mortality in the weakened or slow growing trees under three feet tall, in frost pockets, and poor sites. Trees over three feet in height seem to survive attacks to lower branches unless a canker becomes established in a wound on the main stem. In larger or fast growing trees, the attack is often restricted to one or several of the lower branches.

TABLE 5

Summary of Incidence and Tree Mortality Caused by Scleroderris lagerbergii Gremmen in the Northern Region in 1966

Location (township)	Stand description	Host	Number of trees examined	Av. ht. of trees in feet	Per cent of trees attacked in 1966	Per cent of recent mortality	Per cent of old mortality
Cochrane District							
Sheraton	Planted	rP	178	1.5	24	14	38
Adams	"	rP	497	1.5	7	12	79
German	"	rP	123	1.3	39	41	19
German	"	rP	302	4.0	15	0	67
German	"	rP	326	6.0	13	0	69
German	"	scP	1674	8.3	14	5	62
Sheraton	"	jP	100	1.3	5	5	0
Timmins	Natural	jP	100	3.0	1	3	0
Sheraton	"	jP	100	7.0	0	1	0
Dundonald	Planted	jP	50	8.0	48	34	0
Whitesides	"	rP	100	3.0	5	2	0
Swastika District							
McCool	Planted	jP	220	6.0	10	12	23
Ingram	"	rP	100	8.0	3	2	0
Nordica	"	rP	100	5.0	46	30	6

Frost Damage

Severe frost damage occurred on balsam fir and white spruce trees in Bernhardt Township in Swastika District and on balsam fir in Gurney Township in Kapuskasing District. Moderate damage occurred on balsam fir regeneration in Benoit, Eby and Garrison townships, Swastika District. Light damage was observed on balsam fir regeneration in Godfrey, Hillary, Heightington, Hepburn and Adair townships in Cochrane District.

Winter Drying of Conifers

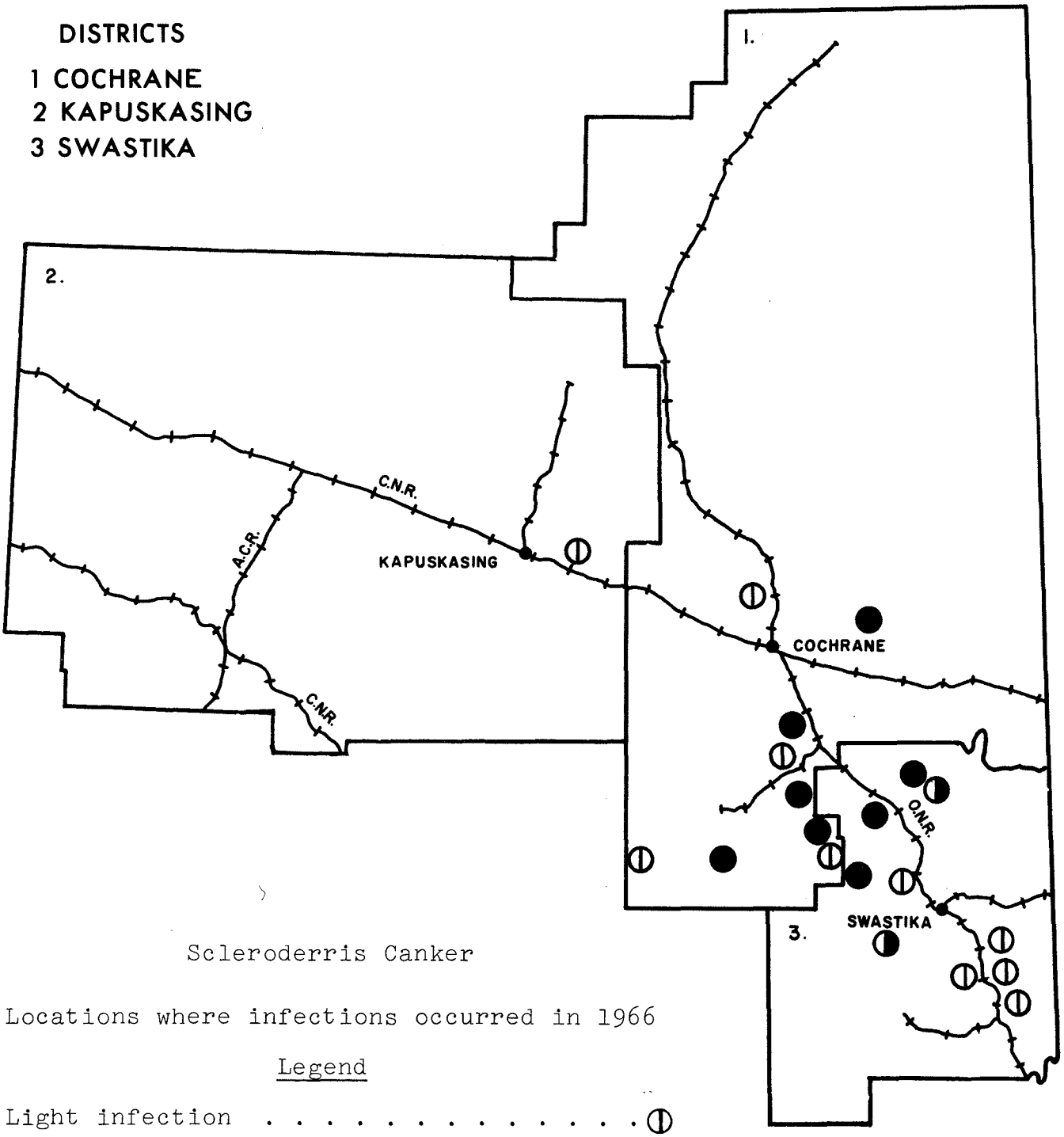
Light damage by winter drying occurred in red pine plantations in Chamberlain and Eby townships, and on Scots pine in Chamberlain, Harley and James townships in Swastika District. Light browning occurred on ornamentals in the Remi Lake-Kapuskasing area. Elsewhere in the region little damage by winter browning was observed.

TABLE 6

Other Noteworthy Diseases Collected in the Northern Region in 1966

Organism	Host(s)	Remarks
Apioporthe anomala (Pk.) Hoehn.	Hazel	Found in old egg niches in Harmon Township, Kapuskasing District
Apiosporina collinsii (Schw.) Hoehn.	Se	Common in Swastika and Cochrane districts
Bifusella crepidiformis Darker	bS	Light-to-heavy at points in Swastika District
Chrysomyxa ledi de Bary	wS, bS	Reduced to low levels in 1966 in Kapuskasing and Swastika districts and light in the Smooth Rock Falls area of Cochrane District
Chrysomyxa ledicola Lagerh.	wS, bS	Reduced to light in area north of Smooth Rock Falls in Cochrane District and heavy in Catherine Township of Swastika District
Coccomyces hiemalis Higgins	pCh, ecCh	light-to-heavy at many points in the region
Coccomyces tumidus (Fr.) DeNot.	Se	Light at points in Cochrane District
Coleosporium asterum (Delt.) Syd.	jP	Heavy on a few small trees in Tisdale Township, Cochrane District
Cryptodiaporthe salicina (Curr.) Wehm.	W	Common in Kapuskasing District
Cytospora chrysosperma (Pers.) Fr.	bPo, tA	Light at points in the region
Cytospora friesii Sacc.	bS	Collected in Keefer Township, Cochrane District

NORTHERN FOREST REGION



Scleroderris Canker

Locations where infections occurred in 1966

Legend

Light infection . . . . . ◐

Medium infection . . . . . ◑

Heavy infection . . . . . ●

TABLE 6 (continued)

Organism	Host(s)	Remarks
Dasyscypha agassizi (Berk. & Curt.) Curt.	bF	Observed at several points in Cochrane District
Dermea balsamea (Pk.) Seav.	bF	Light in Thornelee Township, Cochrane District
Dibotryon morbosum (Schw.) Theiss. & Syd.	pCh, ecCh	Found commonly in the region
Exidia spiculosa (S.F. Gray) Semm.	Hazel	Light in Leith Township, Swastika District
Gloeosporium spp.	mM, W Se, Mo	Heavy at several points in Swastika District and light at points in Cochrane and Kapuskasing districts
Godronia fuckeliana Groves	Viburnum	First collection in the region
Godronia confertus (Hone) Groves	pCh	Light tree mortality in German and Godfrey townships, Cochrane District
Hyperdermella ampla (J.J. Davis) Dearn.	jP	Light at points in the region
Hypoxylon mammatum (Wahl.) Miller	tA	Common in the region
Lachnellula chrysophthalma (Pers.) Karst	scP	Light in a provenance test plot in German Township, Cochrane District
Lenzites trabea (Pers.) Fries.	jP	Heavy in McGarry Township, Swastika District
Leptosphaeria clivensis (Berk. & Br.) Sacc.	Lycop-odium sp.	Light in Corkill Township, Swastika District
Lophodermium picea (Fckl.) Hoehn.	bS	Light-to-medium in Doon and Corkill townships of Swastika District.
Lophodermium pinastri (Schrad. ex Fr.) Chev.	wP, jP	Heavy in Banks, light in Ingram townships, Swastika District
Marssonina populi (Lib.) Sacc.	tA	Heavy on trees on poor sites in Cochrane District
Melampsora epitea Thuem.	W	Light at several locations in Swastika District
Melampsorella caryophyllacearum Schroet.	bF	Witches broom common in the region
Ophionectria cylindrospora (Sollm.) Barl. & Vogl.	jP	Several trees infected in Fauquier Township, Kapuskasing District
Peridermium sp.	jP	Light at points in Cochrane District and Spruce Falls Nursery in Kapuskasing District and heavy in Arnold Township, Swastika District
Poria obliqua (Pers.) Karst.	wB	Light at several points in cutover areas in Cochrane and Kapuskasing districts

TABLE 6 (continued)

Organism	Host(s)	Remarks
Puccinia asteris Duby	Aster	Common in Cochrane and Swastika districts
Puccinia bolleyana Sacc.	Elderberry	Common in the region with a medium infection in Montrose Township of Swastika District
Puccinia coronata Cda.	Buckthorn	Heavy infections at several points in Division 43, Cochrane District, common in Swastika District
Puccinia recondita Rob. ex Desm.	Thallictrum sp.	Heavy in Harley Township, Swastika District
Rhytisma acerinum Pers. ex Fr.	rM	Heavy in Knight and Boston townships, Swastika District and light at points in Cochrane District
Sclerophoma pithyophila (Cda.) Hoehn.	rP, jP, scP	Found in red pine plantations where S. lagerbergii Gremmen was collected in German, Adams, Sheraton and Whitesides townships of Cochrane District, and from red pine in Ingram and Leith townships, Swastika District. Collected from jack pine in Lisgar Township, Kapuskasing District and Scots pine in Chamberlain Township, Swastika District
Steganosperium pyriforme Cda.	rM	Causing branch mortality in Hilliard Township, Swastika District
Telephora terrestris Ehrh.	Blueberry	Light in Gross Township of Swastika District
Tubercularia vulgaris Tode. ex Fr.	Mo, W, tA,tL	Light in the region
Tympanis laricina (Fckl.) Sacc.	tL	Light in Fauquier Township, Kapuskasing District
Uncinula salicis (D.C. ex Merat) Wint.	W, bPo	Heavy in Tisdale Township, Cochrane District and in Lebel and Tyrrell townships of Swastika District
Valsa sordida Nit.	ltA, W	Heavy in Hudson and light in Hilliard townships, Swastika District

STATUS OF INSECTS IN THE COCHRANE DISTRICT

H. R. Foster

Gall Aphids on Spruce, Adelges spp.

Damage to white and black spruce foliage by gall aphids was generally lighter in 1966 than in 1965. The pineapple gall aphid, Adelges lariciatus (Patch), occurred commonly on open-grown white spruce trees in Division 44, and the eastern spruce gall aphid, Adelges abietis L., caused light damage at several points. A third species, Adelges strobilobius Kalt., caused appreciable damage to young black spruce in Mountjoy, Evelyn, Heightington and Dundonald townships.

Birch Skeletonizer, Bucculatrix canadensisella Cham.

A sharp decline in population levels of the birch skeletonizer occurred in 1966 and only scattered pockets of light intensity were observed. Larval counts were low at six quantitative sample points (Table 7).

TABLE 7

Summary of Birch Skeletonizer Larval Counts on White Birch Foliage in Cochrane District in 1965 and 1966

Note: Based on the examination of four leaves taken at cardinal points from each of five trees at each location.

Location (township)	Date checked in 1966	Total no. of larvae		Av. no. of larvae per leaf	
		1965	1966	1965	1966
Mortimer	Sept. 9	128	2	11	0.1
Calder	Sept. 9	108	0	8	0.0
Glackmeyer	Sept. 9	52	2	5	0.1
Ogden	Sept. 8	102	0	6	0.0
Hillary	Sept. 8	46	3	3	0.15
Macklem	Sept. 7	22	0	5	0.0

Jack Pine Resin Midge, Cecidomyia reeksi Vock.

Populations of this insect were low in 1966 for the fourth successive year. No infested shoots were found at quantitative sample plots in Denton and Hepburn townships but minor increases were recorded at three other locations (Table 8).

TABLE 8

Summary of Jack Pine Resin Midge Larval Counts on Jack Pine Trees in the Cochrane District in 1965 and 1966

Location (township)	Av. ht. of sample trees in feet	No. of shoots examined in 1966	Per cent of shoots infested 1965	1966
Robb	35	191	2.2	4.0
Murphy	20	196	11.0	0.6
German	18	203	0.9	1.2
Calvert	16	191	1.1	1.1
Stimson	15	194	0.0	0.3

Spruce Budworm, Choristoneura fumiferana (Clem.)

Light infestations occurred on white spruce trees in the Departure Lake area in Haggart Township, on balsam fir and white spruce in Timmins Township and on a few trees at seven other points in the district. Only small numbers of spruce budworm larvae survived to the final instar at most observation points.

Jack-pine Budworm, Choristoneura pinus Free.

Population levels of this insect increased on jack pine trees along gravel eskers from Nellie Lake to Lipsett Lake in Division 43. Light infestations in this area were generally limited to scattered open-grown trees. Light infestations also occurred on Scots pine trees in a provenance test plot in German Township and in young jack pine plantations in Sheraton and Timmins townships.

Larch Casebearer, Coleophora laricella Hbn.

Population levels of this insect have built up very slowly since small numbers of larvae were collected in the Porcupine area in 1961. In 1965 it was found at a few widely-scattered points and in 1966 a light infestation occurred in a tamarack swamp south of Iroquois Falls. Larval mortality was high in this area and it was difficult to find pupae for parasite studies.

Counts at sample plots established in 1966 averaged 0.3 larvae per 18-inch branch tip in Clute and Calvert townships and none in Haggart, Mountjoy and Carscallen townships.

Casebearers on Birch, Coleophora betulivora McD. and C. fuscedinella Zell

Small numbers of Coleophora betulivora McD. were collected in Dundonald, Mountjoy, Hillary and Challies townships. The species C. fuscedinella Zell occurred in Robb, Dundonald and Timmins townships.

A Twig Borer on Jack Pine, Conophthorus sp.

This insect caused light damage on open-grown jack pine trees at many points in Division 43. Damage at quantitative sample plots was lower in 1966 than in 1965 (Table 9). The insect was abundant near the permanent sample plot in Tisdale Township where 31 damaged shoots were counted compared to five in the plot.

TABLE 9

Summary of Damage by a Twig Borer on Jack-pine Trees in Cochrane District in 1965 and 1966

Note: Based on counts of all damaged twigs on twenty trees at each location.

Location (township)	Av. d.b.h. of sample trees in inches	Total number of damaged shoots		Number of infested leaders in 1966
		1965	1966	
Sheraton	4	9	2	0
Tisdale	5	41	5	0
Murphy	4	0	2	0
Robb	3	58	15	0
McKeown	3	10	1	0

European Spruce Sawfly, Diprion hercyniae (Htg.)

Small numbers of this insect were collected commonly from white and black spruce trees. The main collecting areas were north of Abitibi Lake, west of Cochrane and around Porcupine. Quantitative samples revealed that an increase in population levels occurred in 1966 (Table 10).

TABLE 10

Summary of European Spruce Sawfly Larval Counts Made in Cochrane District in 1965 and 1966

Note: Counts based on the total number of larvae on 15 tray samples at each point

Location (township)	Tree species sampled	Av. d.b.h. of sample trees in inches	Total number of larvae per sample point	
			1965	1966
Leitch	wS	6	4	15
Hanna	bS	3	1	6
Teefy	wS	6	1	12
Tisdale	wS	5	17	21
Calder	wS	9	4	13
Whitney	wS	2	-	11

Birch Leaf Miner, Fenusa pusilla Lep.

A heavy infestation of this introduced insect occurred on white birch ornamentals in Timmins and South Porcupine. Although extensive checks were carried out on white birch foliage in the district no further distribution records were made in 1966.

American Aspen Beetle, Gonioctena americana (Schaef.)

Pockets of medium infestation occurred in the townships of Hillary, Bartlett, German, Michie and Clergue. Light to medium infestations occurred in the Abitibi limits south of Smooth Rock Falls and north to the Fraserdale area. Defoliation by small numbers of colonies occurred at many other points in the district.

Pine Root Weevil, Hylobius warreni (Wood)

This weevil caused light tree mortality in a Scots pine provenance test plot in the Kettle Lakes Park in 1965 and 1966. As in 1965, the weevil showed little preference for any of the five strains of Scots pine in the test plot (Table 11).

TABLE 11

Summary of Scots Pine Tree Mortality in German Township in 1965 and 1966

Scots pine strain	Total number of trees examined	Number of trees infested by weevils	
		1965	1966
Adirondack	134	4	2
Norfolk	170	5	3
Austria	260	1	0
Belgium	266	3	1
Denmark	316	10	4

Aspen Blotch Miner, Lithocolletis salicifoliella Cham.

Infestations of this insect increased to heavy intensity on young trembling aspen trees in Denton, Thorneloe and Hillary townships in the southern part of Division 43 and decreased generally to medium intensity in the Smooth Rock Falls - Abitibi Canyon area. Population levels were low in six quantitative sample plots (Table 12).

Low populations occurred on balsam poplar and willow at several points in the district.

TABLE 12

Summary of Aspen Blotch Miner Counts in Cochrane District in 1965 and 1966

Location (township)	Tree species	Per cent of leaves mined in 1966	Total number of mines per 100 leaves 1965	1966
Dempsay	tA	2	5	2
Mountjoy	tA	4	1	4
Haggart	tA	6	11	6
Brower	tA	16	3	19
	bPo	5	3	5
Murphy	tA	6	4	7
	bPo	1	1	1
Clute	tA	1	2	1
	bPo	9	12	9

Forest Tent Caterpillar, Malacosoma disstria Hbn.

The effectiveness of weather as a control agent of the forest tent caterpillar has been demonstrated in the Cochrane District in recent years. The incipient stages of an outbreak of the insect occurred in 1962 when small numbers of larvae and cocoons were found at numerous locations. Pockets of light infestations occurred in 1963, and in 1964 larval numbers were sufficiently high to cause moderate defoliation in small areas in Tisdale and Whitney townships. However severe frosts in the spring destroyed the foliage of host trees and larval populations were greatly reduced through starvation. Similar weather conditions in 1965 caused a further decline in numbers of the insect and in 1966 no larvae were found in the district.

Western Tent Caterpillar, Malacosoma pluviale (Dyar)

Pockets of medium infestation occurred in German, Deloro and Whitney townships in 1966. Light infestations occurred commonly in Division 43 and occasionally in divisions 44 and 45. Minor changes in population levels were recorded at six quantitative sample points (Table 13).

TABLE 13

Summary of Western Tent Caterpillar Larval Colony Counts in Square Chain Plots in Cochrane District in 1965 and 1966

Location (township)	Number of colonies counted 1965	1966
Calvert	3	1
Godfrey	3	4
German	3	1
Ogden	3	4
Thorneloe	6	3
Deloro	7	9

Balsam-fir Sawfly, Neodiprion abietis complex

A heavy infestation in Adanac Township in 1965 declined to light intensity in 1966. Medium infestations along the hydro development road north of Smooth Rock Falls and in the vicinity of South Porcupine decreased to light intensity. Elsewhere in the district larval colonies were scarce.

Red Pine Sawfly, Neodiprion nanulus nanulus Schedl.

A light infestation on jack pine trees in Dundonald Township declined in 1966 and only scattered colonies were observed. A new light infestation occurred in a young red pine stand at Hillary Lake in Division 43. Single colonies were observed on red pine in Kirkland and German townships.

A Cutworm, Peridroma sauci Hbn.

Larvae of this cutworm destroyed an estimated quarter of a million black spruce seedlings in the Cochrane Nursery. The soil used to produce the seedlings came from swamps in which the cutworms apparently overwintered in the egg stage. On hatching, the young cutworm larvae found an ideal food supply in the seedlings. By feeding on the succulent plant tissue at ground level one larva was capable of killing a large number of seedlings. Thus, a relatively low population of the insect caused extensive damage and over 80 per cent of the seedlings were killed in some flats.

The use of insecticides to control the cutworm was discouraged because of the extensive handling of the seedlings in planting. The nocturnal feeding habits of the insect suggested hand picking and this method of control proved adequate. Four hundred larvae were collected the first night, 100 the second, and only a few larvae each night thereafter.

Leaf-folding Sawflies, Phyllocolpa spp.

Population levels of leaf-folding sawflies on trembling aspen increased appreciably in Cochrane District in 1966. High populations occurred in Keefer, Michie and Bartlett townships along the south boundary of the district, in the Homuth Township area and in Potter and Adair townships in Division 45. Light infestations were observed at many other points in the district and at six quantitative sample points (Table 14).

TABLE 14

Summary of Leaf-folding Sawfly Counts on Trembling Aspen in Cochrane District in 1965 and 1966

Note: Based on the examination of 100 leaves taken at random from three trees at each point.

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of folds on one hundred leaves 1965	1966
Brower	2	2	2
Murphy	2	3	4
Haggart	2	5	7
Dempsay	2	0	6
Clute	2	2	3
Mountjoy	3	1	8

Heavy infestations of a leaf-folding sawfly on balsam poplar persisted at several points in Division 43. Light infestations occurred commonly on balsam poplar elsewhere in the district.

A heavy infestation of a third species, Phyllocolpa agamus (Roh.), occurred on narrow-leafed willow in Hanna Township.

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

Infestations of the yellow-headed spruce sawfly increased considerably in 1966 on ornamental trees in Timmins, South Porcupine, Iroquois Falls, Cochrane and Smooth Rock Falls. Severe defoliation occurred on white spruce trees in Timmins and in a plantation in Calder Township. Light defoliation occurred at nine other points in the district and on black spruce trees in Mountjoy Township. Small numbers of second generation larvae were observed in beating mat samples in late September.

White-pine Weevil, Pissodes strobi (Peck)

Infestations of the white-pine weevil were heavy on white spruce trees on an abandoned farm in Whitney Township and medium on certain strains of Scots pine in a provenance test in German Township. Light infestations occurred on white spruce, black spruce and jack pine trees at many other points in the district (Table 15). Low numbers of red pine and white pine trees were attacked.

TABLE 15

Summary of Trees Weevilled at Sample Points in the Cochrane District in 1965 and 1966

Location (township)	Tree species	Av. height of sample trees in feet	Per cent of trees weevilled 1965	1966
Sheraton	bS	12	4	4
Sheraton	jP	14	12	5
Calder	wS	8	7	8
Whitney	wS	10	27	24
Hanna	bS	12	2	3
Homuth	bS	15	5	4
Dempsay	bS	12	3	1

A re-tally of white-pine weevil attack on 11 strains of Scots pine was made in a provenance test in German Township (Table 16). The Adirondack strain again showed the lowest incidence of attack and the Baltic strains were most capable of surviving weevil attack.

TABLE 16

Summary of White-pine Weevil Attack on Eleven Strains of Scots Pine in German Township in 1965 and 1966

Note: Growth rate of trees based on the average length of 10 representative leaders for each strain.

Origin of seed	No. of trees examined in 1966	Average leader growth in inches	Av. ht. of trees in inches	No. of trees attacked		No. of infested leaders	
				1965	1966	Killed in 1966	Survived attack in 1966
Auvergne	42	6	32	7	2	1	1
Haute Loire	60	5	40	9	0	0	0
Finland	83	5	42	3	9	3	6
South Finland	63	6	45	8	7	1	6
Cevennes	106	5	45	13	10	8	2
Adirondack	79	9	61	0	1	0	1
East Baltic	171	10	74	11	24	6	18
Sweden	102	14	79	2	9	2	7
West Europe	161	12	79	13	19	12	7
Lower Austria	92	11	79	6	12	5	7
West Baltic	143	14	94	21	21	2	19

Balsam Shoot-boring Sawfly, Pleroneura borealis Felt

Medium infestations of this insect occurred on a few trees in Hillary and Musgrove townships and at one location about one mile west of the permanent sample plot in Haggart Township. Infested shoot counts at sample points are shown in Table 17.

TABLE 17
Summary of Balsam Shoot-boring Sawfly Counts in Cochrane District in 1965 and 1966

Note: Based on the examination of all buds on four branch tips from each of five trees at each point.

Location (township)	Av. height of sample trees in feet	No. of shoots examined in 1966	Per cent of shoots infested		
			1964	1965	1966
Haggart	26	326	4.4	0.0	5.2
Thorneloe	12	360	12.0	0.0	2.3
Calder	30	318	7.3	4.6	2.2
Timmins	30	379	4.2	3.7	3.8
Pharand	20	411	11.2	2.8	2.1

Larch Sawfly, Pristiphora erichsonii (Htg.)

Populations of the larch sawfly were generally low in the district in 1966. Infestations along the Ontario Northland Railway from Moose River Crossing to Moosonee declined from medium in 1965 to light intensity in 1966. Similar decreases occurred in cutover areas in Heightington and Potter townships. Light infestations elsewhere in the district were mainly on small open-grown tamarack trees.

Mountain-ash Sawfly, Pristiphora geniculata (Htg.)

Infestations of the mountain-ash sawfly increased in number and intensity in 1966. Medium infestations occurred in Timmins and Schumacher and north of Abitibi Lake in Bonis Township. New areas of distribution included the townships of Robb, Mountjoy, McKeown, Clive, St. Laurent and Sydere.

A Poplar Leaf Roller, Pseudexentera oregonana Wlshm.

A heavy infestation of this leaf roller recurred in the Jowett Lake area in Clute Township and small pockets of medium infestation were observed in the Cochrane-Smooth Rock Falls area. Light infestations occurred commonly elsewhere in Division 44 and in the southern part of Division 43. Mature trembling aspen trees were the favoured host in heavy infestations but all sizes of trees were attacked.

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

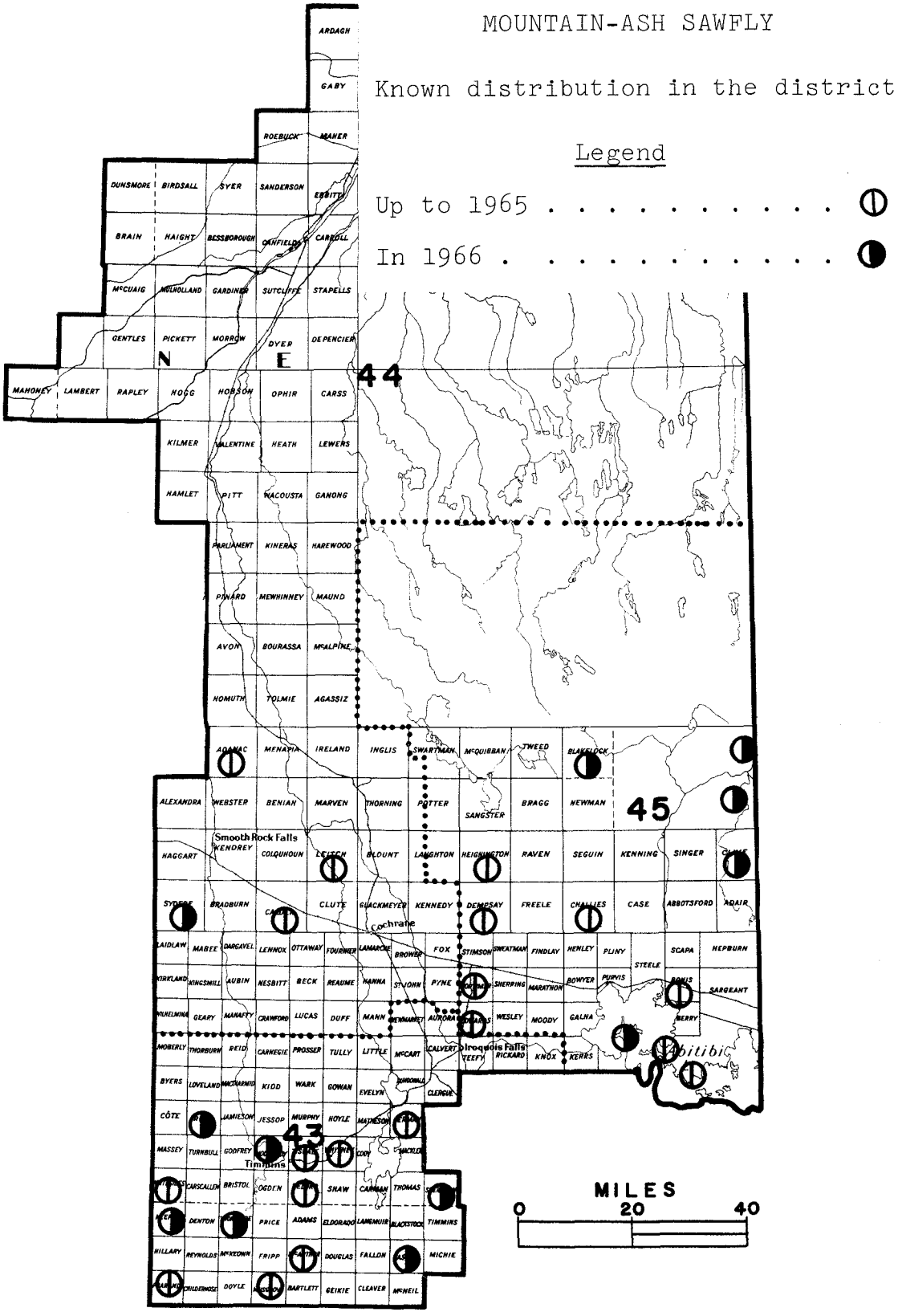
Populations of this leaf miner declined from outbreak proportions in 1962 to low levels in 1966. High populations in 1966 were restricted to a few ornamentals in Timmins, small open-grown trees in Purvis Township and groups of host trees north of Smooth Rock Falls. Light infestations occurred commonly elsewhere in the district. The decline in population levels that has occurred in the past two years is reflected in data from sample plots (Table 18).

TABLE 18

Summary of Damage by Profenusa thomsoni (Konow) on White Birch Foliage in Cochrane District from 1962 to 1966

Location (township)	Av. height of sample trees in feet	Total number of mines per 100 leaves				
		1962	1963	1964	1965	1966
Tisdale	14	242	119	145	12	9
Glackmeyer	25	106	67	24	14	10
Timmins	18	238	140	75	11	7
Hillary	20	81	16	22	5	9
Evelyn	20	284	198	98	5	12
Mortimer	28	832	264	103	17	11

COCHRANE DISTRICT



Spruce Bud Midge, Rhabdophaga swainei Felt

Populations of this midge decreased to low levels in 1964 and since then quantitative samples have generally been negative. However, damage by the insect was observed more commonly in the district in 1966. Although counts were negative at four locations, 10-minute search periods at each plot revealed trace-to-light damage (Table 19).

TABLE 19

Summary of Damage Caused by the Spruce Bud Midge on Black Spruce Trees in Cochrane District in 1966

Location (township)	Av. d.b.h. of sample trees in inches	Per cent of shoots infested	Estimated damage in plot area
Kendrey	3	0.0	Trace
Hanna	2	0.0	Trace
Stimson	4	0.0	Trace
Denton	4	1.3	Light
Timmins	4	0.0	Light

Pine Tip Moth, Rhyacionia adana Heinrich

Light infestations of this insect occurred on jack pine regeneration along bush roads in the townships of Dempsay, Stimson and Freele in Division 45 and in Sheraton, Timmins and McCart townships in Division 43. A few trees in jack pine plantations were attacked in Timmins and Sheraton townships. Light damage recurred on red pine regeneration in Kirkland Township.

Pine Tortoise Scale, Toumeyella numismaticum (P. & M.)

High populations of this insect occurred on several strains of Scots pine in provenance test plots at Kettle Lakes Park. The attack was generally restricted to small numbers of trees of each strain and twig mortality was light. Light infestations recurred at the Kamiskotia Mine in Robb Township and at numerous points in Shaw and Denton townships.

TABLE 20

Summary of Miscellaneous Insects Collected in the Cochrane District in 1966

Insect	Host(s)	Remarks
Acleris calignosana Wlk.	Al	Light population in St. Laurent Twp. (district record)
Acleris variana Fern.	wS, bF	Light in small fir stand in Pyne Township, collected more commonly than in recent years
Acrobasis betulella Hlst.	wB	Light at points north of Iroquis Falls
Acmaeops proteus (Kby.)	wS	Larvae recovered from white spruce log
Aleyrodidae (white flies)	bPo, W	Light in German and Leitch townships
Altica corni Woods	Do	Light leaf-feeding beetles, Tisdale Township
Anchylopera burgessiana Zell.	pCh	Populations reduced to low numbers at most points in 1966
Anoplonyx canadensis Htgn.	tL	Light at points in Division 44
Anoplonyx luteipes (Cress.)	tL	Light in Pinard Township (district record)
Antispila cornifoliella Clem.	Do	A few larvae (regional record)
Aphrophora parallela (Say)	jP	Populations generally reduced to low levels
Archippus strianus Fern.	wS, bF	A few larvae
Archips cerasivoranus (Fitch)	ecCh	Medium in small area of Haggart Township, light in Leitch and Glackmeyer townships
Argyresthia laricella Kft.	tL	Light on a few trees in Leitch and Clute townships
Camponotus sp.	Ground	Carpenter ant flights numerous in May
Caripeta angustiorata Wlk.	jP	Small numbers of larvae
Compsolechia niveopulvella Chamb.	tA	Low numbers at points in the Southern part of the district
Corythucha spp.	wB, W	Heavy at points in Division 43
Dasyneura balsamicola Lintn.	bF	Medium in Dundonald and St. Laurent townships, light at several other points
Dimorphopteryx pinguis (Norton)	wB	Low numbers at many points
Dioryctria reniculella Grt.	wS	Found more commonly in 1966 than in the previous four years
Diploda sp.	Ground	Large numbers of dead millipedes along sand roads in Adams Township
Drepana arcuata Wlk.	wB	Small numbers, district record
Drepana bilineata Pack.	wB	A few larvae, district record
Epinotia sp.	Al	Heavy in alder catkins at several points in the district

TABLE 20 (continued)

Insect	Host(s)	Remarks
Epinotia solicitana Wlk.	wB	Light on open-grown trees at Opishing Park in Hillary Township
Euura hospes (Walsh)	W	Light on a few trees at South Porcupine
Fenusa dohrnii (Tischb.)	Al	Light in Bradburn and Tisdale townships
Galerucella cavicollis Lec.	pCh	Reduced to light in 1966
Galerucella decora Say	W	Light at points in the Smooth Rock Falls area
Gracillaria alnivorella Cham.	Al	One pupa collected
Gracillaria invariabilis Braun.	ecCh, pCh	Medium in Dundonald Township and light at several other points
Gracillaria syringella F.	Lilac	Heavy in Timmins and South Porcupine
Heterarthrus nemoratus (Fall.)	wB	A few miners collected on Shaft Island, Abitibi Lake
Holcocera immaculella McD.	jP	Medium population on open-grown trees in Tisdale Township (district record)
Hylobium pinicola (Cooper)	wS	One adult beetle (district record)
Ichthyura albosigma Fitch	tA	Small numbers in Hepburn Township
Lapara bombycoides Wlk.	jP	Small numbers in Dundonald Township
Lithocolletis betulivora Wlshm.	wB	A few larvae collected near Cochrane and on Shaft Island in Abitibi Lake
Lyonetia sp.	wB	Small numbers of a rare type of leaf miner
Macremphytus varians (Nort.)	Do	Light-to-medium at many points in the district
Meadorus lateralis Say	wS	Small numbers of adults in beating mat samples
Melanagromyza schineri (Gir.)	tA	Light at many points in the district
Monoctenus fulvus Nort.	eC	Light in Kirkland and Tisdale townships
Neacanthocinus pusillus (Kby.)	wS	Larvae in white spruce trap logs
Nematus limbatus Cress.	W	Light-to-medium at many points in Division 43
Nematus salicisodoratus Dyar	W	Light on a few trees in Potter Township (district record)
Neodiprion compar (Leach)	jP	One colony, Dundonald Township
Neodiprion nigroscutum Midd.	jP	One colony, Dundonald Township
Neodiprion pratti banksiana Roh.	jP	A few colonies, Calvert Township
Neurotoma fasciata (Nort.)	Ser	A few larvae
Neurotoma inconspicua (Nort.)	pCh	Light on a few trees in German Township

TABLE 20 (continued)

Insect	Host(s)	Remarks
Nyctobia limitaria Wlk.	bF	A few larvae, Bartlett Township
Nymphalis antiopa Linn.	W	Light in southwestern part of Division 43
Parornix conspicuella Dietz.	wB	Small numbers of this leaf miner found commonly in all divisions
Petrova albicapitana Busck.	jP	Light at many points
Phratura purpurea purpurea Brown	tA	Light in Dundonald Township
Phyllocnistis populiella Cham.	tA, bPo	Small numbers common in the district
Pikonema dimmockii (Cress.)	wS, bS	Found more commonly in beating samples in 1966 than usually in Cochrane District
Pissodes dubius Rand.	wS	One adult, Calder Township
Pityophthorus sp.	scP, r P	Light in German and Sheraton townships
Pristiphora lena Kincaid	wS	Light on a few trees in Homuth Township
Pyrrhia exprimens Wlk.	bPo	Found on small trees in Bonis and Bartlett townships
Rhyacionia busckana Heinr.	jP	Common in district on open-grown trees
Rhynchaenus canus Horn	wB	Small numbers of leaf miners (district record)
Rhynchaenus rufipes Lec.	W	Heavy on shiny willow at South Porcupine
Semiothisa bicolorata Fabr.	jP	Small numbers of larvae
Semiothisa dispuncta Wlk.	jP	Small numbers of larvae
Semiothisa orillata Wlk.	jP	Small numbers of larvae
Sirex cyancus F.	bF	A few adults, Sheraton Township (district record)
Taniva albolineana Kft.	blue S	Heavy on two ornamentals in Timmins
Tenthredinidae # S 37	tA	Light in Homuth and Fournier townships
Thyridopteryx ephemeraeformis Haw.	rP, scP, jP	Small numbers in Kettle Lakes Park
Trichiocampus irregularis (Dyar)	W	Light in Whitney Township
Vanessa cardui Linn.	Hollyhock	Light on flowers at South Porcupine
Zeiraphera fortunana Kft.	wS	Trace population in Timmins Township
Zeiraphera ratzburgiana Ratz.	wS	Low population at several points
Zeugophora spp.	tA, bPo	Light on trembling aspen and balsam poplar at several points in the district

STATUS OF INSECTS IN THE KAPUSKASING DISTRICT

G. T. Atkinson

Pineapple Gall Aphid, Adelges lariciatus Patch

The only heavy infestation found in 1966 occurred on white spruce in Owens Township. Heavy infestations recorded in 1965 on white spruce in Way and Fauquier townships and on black spruce in O'Brien Township declined to light intensity. Similarly, a decline in numbers of galls was observed on white spruce ornamentals in the Kapuskasing-Remi Lake area.

Birch Skeletonizer, Bucculatrix canadensisella Cham.

Survey records show that no collections of this insect were made in the district from 1956 to 1961. One collection was made in 1962, light damage occurred in 1963 and heavy infestations were reported throughout the host range in 1964 and 1965. These infestations subsided in 1966. In the two years of heavy infestation strong competition for feeding sites existed between the birch skeletonizer and Profenusa thomsoni (Konow).

Jack Pine Resin Midge, Cecidomyia reeksi Vock.

Population levels of this insect were very low in the district in 1966 except in McMillan and Rogers townships where light infestations occurred. A quantitative sample in McMillan Township revealed that 6.7 per cent of the jack-pine shoots were infested and 1.5 per cent twig mortality occurred. In Rogers Township 20 per cent of the shoots in a sample from one roadside jack pine (2 inches d.b.h.) were infested and twig mortality was severe. Sampling in Wicksteed and Clavet townships produced negative results.

Larch Casebearer, Coleophora laricella (Hbn.)

A light infestation, five to six larvae per 18-inch branch tip, persisted in Fauquier Township. An intensive survey of tamarack failed to extend the distribution of the insect beyond Fauquier Township.

Spruce Coneworm, Dioryctria reniculella (Grt.)

Numbers of this insect have been low in the district since it was first recorded in 1960. The highest count was made in Harmon Township where 9 larvae were recovered from one 30-inch branch tip from an 11-inch d.b.h. white-spruce tree. Small numbers occurred on white spruce in Sheldon, Howells and Cargill townships. Many of the larvae were found in webbing around staminate flowers.

European Spruce Sawfly, Diprion hercyniae (Htg.)

This introduced sawfly was first reported in the district in 1961. Although no extension in distribution was observed in 1966, the insect was found more commonly than in recent years in the area between Gill Township and the eastern boundary of the district.

Aspen Blotch Miner, Lithocolletis salicifoliella Cham.

Although quantitative sampling showed only low population levels of this insect (Table 7), heavy infestations were recorded in Lisgar and Nansen townships and medium infestations occurred in O'Brien and Gurney townships. Generally, low numbers were observed in the remainder of the district. Most of the larvae in samples submitted to the laboratory from Rogers and Stoddart townships were parasitized.

TABLE 7

Summary of Aspen Blotch Miner Counts Based on the Examination of 100 Leaves Taken at Random from Three Trembling-aspen Trees at Each Location

Location (township)	Av. height of sample trees in feet	Per cent of leaves mined			Total no. of mines per 100 leaves		
		1964	1965	1966	1964	1965	1966
Wicksteed	9	0	3	7	0	3	7
O'Brien	12	4	6	12	4	8	14
Gurney	15	1	6	9	1	6	9
Torrance	10	3	7	8	3	8	8
Gill	12	1	2	7	1	3	8

Forest Tent Caterpillar, Malacosoma disstria Hbn.

In 1965 light to heavy infestations of this insect occurred in a 600 square mile area in the northwestern part of the district and in a 70 square mile area in the southwest. The collapse of these infestations in 1966 was attributed to adverse weather conditions in the spring. Twenty egg bands were marked in Rogers Township to determine hatching dates and larval emergence. The results showed that two egg bands hatched on May 23 and two on May 24 but the hatched larvae did no feeding. No adults were taken in light trap set up at Remi Lake in the eastern part of the district.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Population levels of this insect declined in 1966, and only one collection was made. Cold, wet weather retarded development in 1965 and it is believed that few reached maturity.

A Leaf-folding Sawfly on Willow, Phyllocolpa agama (Roh.)

Damage by this leaf-folder was observed commonly on roadside willow. Light infestations were recorded in Nansen, Rogers, Owens and Lisgar townships. Larval populations were low in the remainder of the district. Although some feeding had occurred few larvae were found.

A Leaf-folding Sawfly on Balsam Poplar, Phyllocolpa sp.

Heavy infestations of this leaf folder have persisted throughout the district since 1962. The heaviest attack occurred on open-grown regeneration and sucker growth and on the lower part of the crowns of larger trees. Quantitative sampling results are shown in Table 8. Some folded leaves contained both larva and spiders but no predation was observed.

TABLE 8

Summary of Damage to Balsam Poplar Foliage in the Kapuskasing District in 1965 and 1966

Note: Trees sampled averaged five feet in height.

Location (township)	Total no. of leaves per tree 1965	1966	Total no. of folded leaves 1965	1966	Per cent of leaves folded 1965	1966
Fauquier	305	268	73	73	23.8	27.2
McCrea	286	234	87	77	30.4	32.8
McMillan	423	296	127	97	30.0	32.8
Seaton	325	327	87	94	26.9	28.7

A Leaf-folding Sawfly on Trembling Aspen, Phyllocolpa sp.

The increase in population levels of this leaf folder in the district in 1966 is reflected in the results of quantitative sampling shown in Table 9. Open-grown trees and roadside reproduction bore the brunt of attack. Heavy infestations occurred along Highway 11 from Stoddart to Clavet townships in Division 47; in McEwing, Wicksteed and Haig townships in Division 74 and in the Kapuskasing area and Lisgar township in Division 75. Infestations in the remainder of the district were light to medium.

TABLE 9

Summary of Leaf-folding Sawfly Counts on Trembling Aspen in the Kapuskasing District in 1965 and 1966

Location (township)	Av. height in feet	Total no. of leaves infested 1965	1966	Total no. of folds per 100 leaves 1965	1966
Gill	12	5	12	8	16
Wicksteed	9	9	17	12	24
Gurney	15	3	9	3	9
O'Brien	12	9	18	11	23
Parnell	12	8	11	9	14
Torrance	10	2	7	2	7

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

No appreciable change in population levels of this insect was evident in the district in 1966. A heavy infestation recurred on open-grown white spruce along the Algoma Central Railway in Way Township. White spruce was severely defoliated in a small plantation at the Nagagami River and along Highway 11 in McMillan Township. Light infestations were recorded in Clavet, Owens, Gurney, Stoddart and Macvicar townships.

White-pine Weevil, Pissodes strobi (Peck)

An increase in weevilling occurred in the district in 1966 (Table 10). A heavy infestation persisted in a white pine plantation in Wicksteed Township. Light infestations were observed on white spruce in Stoddart and Gurney townships for the second consecutive year. A decline in the number of infested leaders occurred on jack pine in Lisgar Township. Low numbers of damaged leaders were observed in the remainder of the district.

TABLE 10

Summary of Damage by the White-pine Weevil in the Kapuskasing District in 1965 and 1966

Location (township)	Host	Av. height in feet	Total no. of infested trees 1965	1966
Pearce	bS	10	6	8
Shearer	wS	8	3	6
Kohler	bS	15	7	13
Parnell	bS	15	2	11
Clavet	bS	15	2	7
Gurney	bS	15	2	4

Balsam Shoot-boring Sawfly, Pleroneura borealis Felt

Normally, larval populations of this insect show an increase in alternate years. However, in 1966 low populations occurred for the second consecutive year. A light infestation occurred in Cargill Township and small numbers were found in Shanly Township.

Larch Sawfly, Pristiphora erichsonii (Htg.)

Population levels of the larch sawfly have declined in the district since 1960. This decline has been attributed in part to mortality of early instar larvae. Small roadside trees were lightly defoliated at scattered points in the district but no noticeable defoliation of mature stands occurred. Sequential sampling in Fauquier, Casgrain and Kohler townships produced no curled tips.

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Infestations of this insect increased in intensity but not in extent in 1966. The light infestations reported in 1965 in Gill, McMillan and Fintry townships and in Township 138 increased to heavy intensity in 1966. Heavy infestations recurred in Wicksteed and Fauquier townships. At Carey Lake Air Base in Stoddart Township, 100 per cent of the foliage of open-grown and ornamental white birch trees was infested. Medium infestations occurred in Sheldon, Howells and Harmon townships.

The results of quantitative sampling are shown in Table 11.

TABLE 11

Summary of Damage by the Amber-marked Birch Leaf Miner in the Kapuskasing District in 1965 and 1966

Note: Based on the examination of 100 white birch leaves picked at random from three trees at each location.

Location (township)	No. of leaves affected		Total No. of mines	
	1965	1966	1965	1966
Wicksteed	45	53	133	193
Fauquier	35	46	97	103
Casselman	23	27	41	60
Seaton	6	19	8	23

Spruce Bud Gall Midge, Rhabdophaga swainei Felt.

General observations and quantitative sampling revealed an increase in population levels of this midge (Table 12). The highest number of infested buds occurred in a small plantation of white and black spruce in McCrea Township. Light infestations were recorded in Township 138 and in Macvicar, Parnell, Sheldon, Clavet and McMillan townships. Black spruce was the preferred host as indicated by quantitative sampling in McCrea and McMillan townships.

TABLE 12

Summary of Damage by the Spruce Bud Gall Midge in the Kapuskasing District in 1965 and 1966

Note: Based on the examination of 50 branch tips at each location.

Location (township)	Host	Av. d.b.h. of host trees	No. of 1 year old shoots examined 1966	Per cent of buds infested 1965	1966
McCrea	wS	2	203	0.47	3.1
McCrea	bS	2	176	-	7.9
Parnell	wS	4	193	0.0	2.5
Macvicar	wS	3	172	0.0	2.7
McEwing	wS	4	184	0.0	1.5
McMillan	wS	3	198	0.0	0.03
McMillan	bS	2	168	-	2.5

TABLE 13

Summary of Miscellaneous Insects Collected in Kapuskasing District in 1966

Insect	Host(s)	Remarks
Acleris variana (Fern.)	wS	Low numbers in Fauquier and Owens townships
Acronicta lepusculina Gn.	tA	Low numbers in Lisgar Township
Adelges strobilobius Kalt.	bS	Heavy in Gurney Township
Anoplonyx luteipes (Cress.)	tL	Small numbers in Clavet, Gurney and Fauquier townships
Asemum striatum (L.)	wS	Collected in October from spring cut logs
Caripeta angustiorata Wlk.	jP, rP	Small numbers in Gill Township
Choristoneura fumiferana (Cham.)	wS	Small numbers in Gill and Eilber townships
Coleophora betulivora McD.	wB	Trace in Stoddart Township
Dasyneura balsamicola (Linton.)	bF	Low populations in Gurney Township
Dryocoetes affaber Mann.	wS	Collected in October from spring cut logs
Eupithecia filmata Pears	bF, wS, bS	Most common insect on beating tray samples
Fenusa dorhnii (Tischb.)	Al	Common in district
Framinghamia helvalis (Walker)	tA, bPo	Light in Nansen and Clavet townships
Galerucella decora (Say)	W	Generally light in district

TABLE 13 (continued)

Insect	Host(s)	Remarks
Gonioctena americana (Schaef.)	tA	Very low numbers in 1966
Gracillaria syringella F.	Lilac	Late generation collected 27/8/66
Gretchena semialba McD.	Al	Low numbers, Gill Township
Micurapteryx sp. prob. salicifoliella	W	Heavy in district
Mindarus abietinus Koch.	bF	Heavy in Rogers Township, light in Fauquier and Williamson townships
Monochamus notatus Drury	wS	Collected in October from spring cut logs
Monoctenus fulvus (Nort.)	cC	Trace in Rogers Township
Nematus fulvicrus Prov.	W	Small numbers in district
Nematus ventralis Say	tA	Light in McMillan Township
Neodiprion abietes complex	bF	Low numbers in district
Pikonema dimmockii (Cress.)	wS, bS	Further increase in population levels
Pissodes dubius Rand	bF	Adult in Fauquier Township
Polygraphus rufipennis Kby.	wS	Collected in October from spring cut logs
Pseudexentera oregonana Wlshm.	tA	Numbers declined in 1966
Pulicalvaria piceaella (Kft.)	wS	Low numbers in Fauquier and Clavet townships
Raphia frater Grt.	tA	Trace in Macvicar Township
Semiothisa bicolorata Fabr.	jP, rP	Trace in Gill Township
Semiothisa dispuncta (Group)	bF	Trace in Gurney and Clavet townships
Semiothisa orillata Wlk.	eC	Small numbers in Rogers Township
Semiothisa sexmaculata Pack	tL	Small numbers in Clavet Township
Semiothisa submarmorata Wlk.	tL	Small numbers in Gurney Township

STATUS OF INSECTS IN THE SWASTIKA DISTRICT

M. J. Applejohn

Ugly-nest Caterpillar, Archips cerasivoranus (Fitch.)

Populations of this insect increased markedly for the second consecutive year. A particularly heavy infestation occurred on cherry in Harley Township where 483 tents were counted in a square chain plot (Table 7). Heavy infestations also occurred in Cairo and Walker townships. Medium populations were noted in Hilliard, Marter, Kearns and Playfair townships and light infestations were observed at widely separated locations in divisions 42 and 39.

TABLE 7

Summary of Ugly-nest Caterpillar Colony Counts in the Swastika District from 1964 to 1966

Location (township)	Sample unit	Av. tree height in feet	Number of tents per sample unit 1964	1965	1966
Eby	square chain plot	5	0	62	29
Harley	square chain plot	4	51	287	483
Kearns	mile of roadside	4	7	19	57
Cairo	square chain plot	4	-	-	158
Playfair	square chain plot	3	-	-	58

Birch Skeletonizer, Bucculatrix canadensisella Chamb.

Infestations that occurred on birch stands in a large part of the District in 1964 and 1965 virtually collapsed in 1966. Small pockets of light infestation persisted in Casey and Harris townships in Division 42 and in Ray Township in Division 63. This sharp decline in population levels is reflected in larval counts summarized in Table 8.

TABLE 8

Summary of Larval Counts of the Birch Skeletonizer on White Birch Foliage in the Swastika District from 1964 to 1966

Note: Counts were based on examination of four leaves from each of five trees at each location

Location (township)	Av. d.b.h. in inches	Total no. of larvae 1964	1965	1966	Av. no. of larvae per leaf 1964	1965	1966
Lamplugh	3	272	90	4	10.2	3.6	0.1
Yarrow	3	201	10	0	8.0	0.4	0.0
Cairo	6	151	56	0	6.0	2.2	0.0
Black	3	102	61	10	4.0	2.4	0.4
Walker	4	228	34	3	9.1	1.3	0.1
Marriot	3	315	104	0	12.6	4.0	0.0

Jack-pine Budworm, Choristoneura pinus Free

Populations of this budworm increased appreciably in 1966. Light infestations were detected on roadside jack-pine trees in Hudson and Ingram townships. Small numbers of larvae were collected in eight other townships throughout the district.

Larch Casebearer, Coleophora laricella (Hbn.)

Minor fluctuations in populations of the larch casebearer occurred in 1966. The most noteworthy occurred in Lebel Township where the average number of larvae per 18-inch branch tip declined from 7.4 in 1965 to 0.8 in 1966 (Table 9). Smaller numbers of larvae were observed in Hudson, Harker and Teck townships. An infestation west of Matatchewan in Powell Township increased from light to medium intensity. New, light infestations were detected in McGarry, Hearst and Hilliard townships.

TABLE 9

Summary of Larch Casebearer Larval Counts in the Swastika District from 1964 to 1966

Note: Counts were based on examination of four 18-inch branch tips taken from the mid-crown of each of four trees

Location (township)	Av. d.b.h. in inches	Av. no. of larvae per branch tip 1964	1965	1966
Marter	4	0.6	3.0	7.1
Lebel	5	0.9	7.4	0.8
Powell	4	0.8	8.7	17.4
Hilliard	5	-	-	8.5
Hudson	5	13.8	8.1	4.8
Harker	6	-	12.9	8.8

European Spruce Sawfly, Diprion hercyniae (Htg.)

Quantitative sampling revealed a general increase in populations of this sawfly (Table 10). In Kearns and Bowman townships 54 and 43 larvae respectively were recovered in tray samples. High populations were also noted on open-grown white spruce in Walker Township where 37 larvae were counted on eight beating tray samples. Populations of the second generation in September were generally lower than the first generation in July.

TABLE 10

Summary of European Spruce Sawfly Larval Counts made in July in the Swastika District from 1964 to 1966

Location (township)	Tree species	Av. d.b.h. in inches	Total no. of larvae per 15-mat sample 1964	1965	1966
Bowman	wS	6	13	21	43
Pacaud	wS	5	17	11	23
Dymond	wS	4	5	13	21
Eby	bS	4	2	5	5
Garrison	wS	7	9	10	13
Eby	wS	4	11	11	26
Cane	wS	2	-	-	28
Kearns	wS	4	-	-	54

Birch Miner, Fenusa pusilla Lep.

Little change in numbers or distribution of this insect occurred in 1966. Heavy infestations persisted in Harris, Teck, Dymond and Eby townships. New heavy infestations occurred in Armstrong and Dack townships. A pocket of medium infestation was observed along the east shore of Spear Lake in North Williams Township. Low numbers of mined leaves were noted at several locations in Division 42. Damage in all cases was confined to small white birch regeneration and the lower branches of larger trees.

American Aspen Beetle, Gonioctena americana (Schaeff.)

Heavy infestations of this defoliator persisted along Highway 560 between Gowganda and the Gogama District boundary. Other heavy infestations were noted near the High Falls Dam in Baden Township, along the Sunrise Lake Road in Ossian Township and north of Highway 66 in Arnold Township. A medium infestation occurred in Benoit Township. Light defoliation was observed at numerous locations in divisions 39 and 42.

Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

Populations of this leaf miner declined in 1966. The most noticeable decline occurred in Kimberly and Marriot townships where leaf mining declined from 29 and 31 per cent respectively in 1965 to 12 and 15 per cent in 1966 (Table 11). A heavy infestation on pole-sized trembling aspen near Sunny Lake in Dunmore Township declined to light intensity. In contrast to the above trend on aspen, heavy infestations persisted on balsam poplar in Chamberlain and Teck townships. Light-to-medium infestations were observed on blasam poplar at several other locations. Light infestations occurred on large-toothed aspen in Henwood Township and on willow in Dack Township.

TABLE 11

Summary of Damage Caused by the Aspen Blotch Miner in the Swastika District from 1964 to 1966

Note: Counts were based on examination of 100 leaves selected at random from three trees at each location.

Location (township)	Host	Av. d.b.h. in inches	Per cent of leaves infested			Total no. of mines		
			1964	1965	1966	1964	1965	1966
Teck	tA	2	0	0	7	0	0	7
Playfair	tA	3	0	5	11	0	5	11
Walker	tA	4	23	15	4	31	17	4
Kimberly	tA	4	40	29	12	59	31	12
Marriot	tA	4	25	31	15	40	31	15
Chamberlain	bPo	2	-	-	42	-	-	47
Dack	W	1	-	-	12	-	-	13
Catherine	bPo	2	-	-	10	-	-	12

Western Tent Caterpillar, Malacosoma pluviale Dyar

Little change in the status of this insect occurred in 1966. A light infestation persisted in Warden Township where 23 tents were counted along one mile of roadside (Table 12). New, light infestations were detected in Chown, Brethour and Pacaud townships.

Roadside brushing and spraying with herbicides have been important control factors.

TABLE 12

Summary of Western Tent Caterpillar Colony Counts in the Swastika District from 1964 to 1966

Location (township)	Tree species	Sample unit	No. of tents per sample unit		
			1964	1965	1966
Munro	pCh	square chain plot	23	30	12
Warden	pCh wB tA	mile of roadside	12	25	23
Argyle	pCh	mile of roadside	12	16	13
McEvoy	pCh wB	mile of roadside	13	27	21
McCool	pCh	square chain plot	-	-	8

Cedar Sawfly, Monoctenus fulvus Nort.

Population levels of this insect were higher in 1966 than in recent years. A light infestation occurred in Eby Township where 41 larvae were counted on a 15-tray sample (Table 13). Low populations were observed at Sunneywater Lake in Gamble Township, along the northeast shore of Lake Matatchewan in Baden Township, and on the south shore of Abitibi Lake in Rand Township.

TABLE 13

Summary of Cedar Sawfly Larval Counts in the Swastika District in 1966

Location (township)	Av. d.b.h. in inches	Total no. of larvae per 15-tray sample
Eby	2	41
Dymond	2	5
Farr	3	6
Chown	2	11

Red-pine Sawfly, Neodiprion nanulus nanulus (Schedl.)

Light infestations of this sawfly occurred on young jack pine trees in Terry, Nordica, and Farr townships and at several locations along Highway 65 between New Liskeard and Elk Lake. Individual colonies were noted on red and jack pine trees along Highway 101 east and west of Matheson and near Kirkland Lake in Teck Township.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Substantial increases in population levels of this insect were observed in the district in 1966. A heavy infestation occurred at Arctic Gateway Park in Maisonville Township where an average of 10.2 colonies per tree was recorded (Table 14). Medium infestations occurred in Tolstoi, Brethour, Playfair, Henwood and Chamberlain townships. Low numbers of colonies were observed commonly elsewhere in the district (see map). Defoliation of infested trees ranged from five to seventy per cent (see photograph).

TABLE 14

Summary of Red-headed Jack-pine Sawfly Colony Counts Made on Ten Jack-pine Trees in the Swastika District from 1964 to 1966

Location (township)	Av. d.b.h. in inches	Av. no. of colonies per tree 1964	1965	1966
Playfair	1	0.8	0.5	2.3
Eby	4	0.6	0.9	0.9
Maisonville	6	1.5	1.6	10.2
Teck	4	1.1	0.3	0.8
Munro	5	0.6	0.6	1.1
Chamberlain	2	-	1.7	4.6
Brethour	4	-	2.1	3.8

Pitch Nodule Maker, Petrova albicapitana (Busck.)

A small heavy infestation occurred near Davis Lake in Tolstoi Township. A light infestation was observed in a Scots pine plantation near Wabiwawa in Chamberlain Township. Little change in population levels occurred elsewhere in the district compared with 1965 (Table 15).

TABLE 15

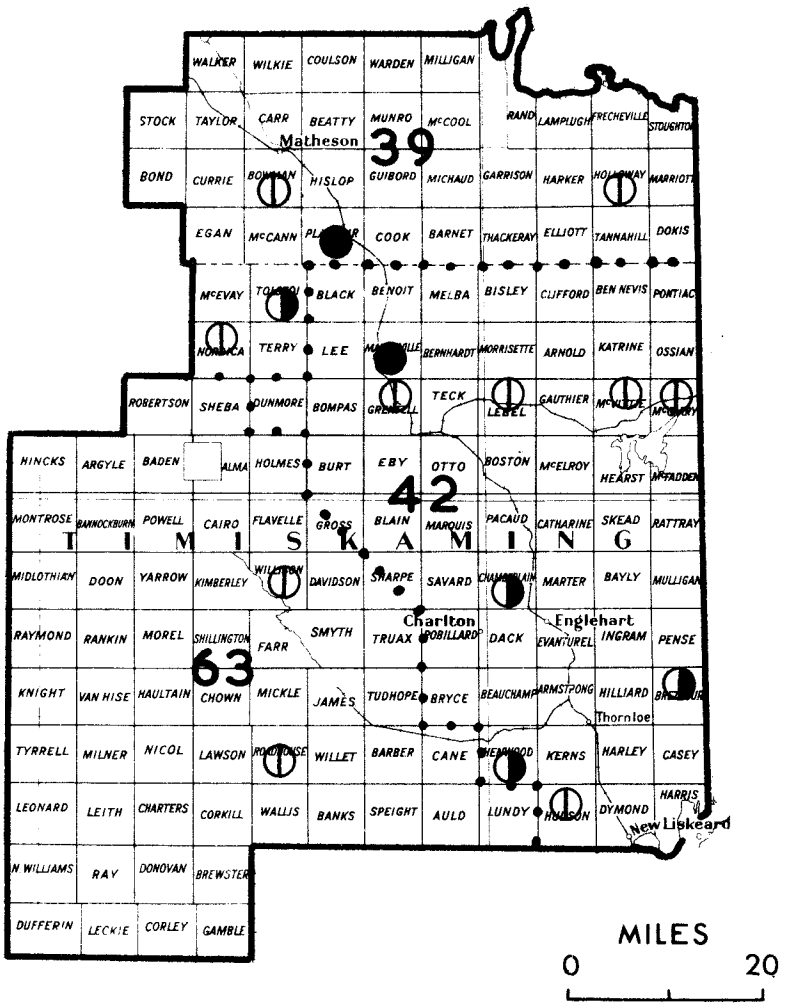
Summary of Damage by the Pitch Nodule Maker on Jack-pine in the Swastika District from 1964 to 1966

Location (township)	Av. d.b.h. in inches	Av. no. of nodules per tree 1964	1965	1966
McCann	3	1.4	1.1	0.9
McVittie	3	0.7	0.2	0.2
Gauthier	2	2.7	0.8	0.5
McEvoy	2	1.3	1.0	0.0
Michaud	3	2.0	0.9	2.1
Playfair	3	-	-	0.9

Yellow-headed Spruce Sawfly Pikonema alaskensis Roh.

Heavy infestations persisted for the second consecutive year on roadside windbreaks and small plantations in Harley, Evantural, Cane, Dymond and Eby townships. Ornamentals suffered severe damage in the towns of Swastika and Kirkland Lake in Teck Township. A medium infestation occurred at Hills Lake Hatchery in Bryce Township. Light defoliation was observed on open-grown white and black spruce trees at numerous other locations.

SWASTIKA DISTRICT



RED-HEADED JACK PINE SAWFLY

Location of infestations in 1966

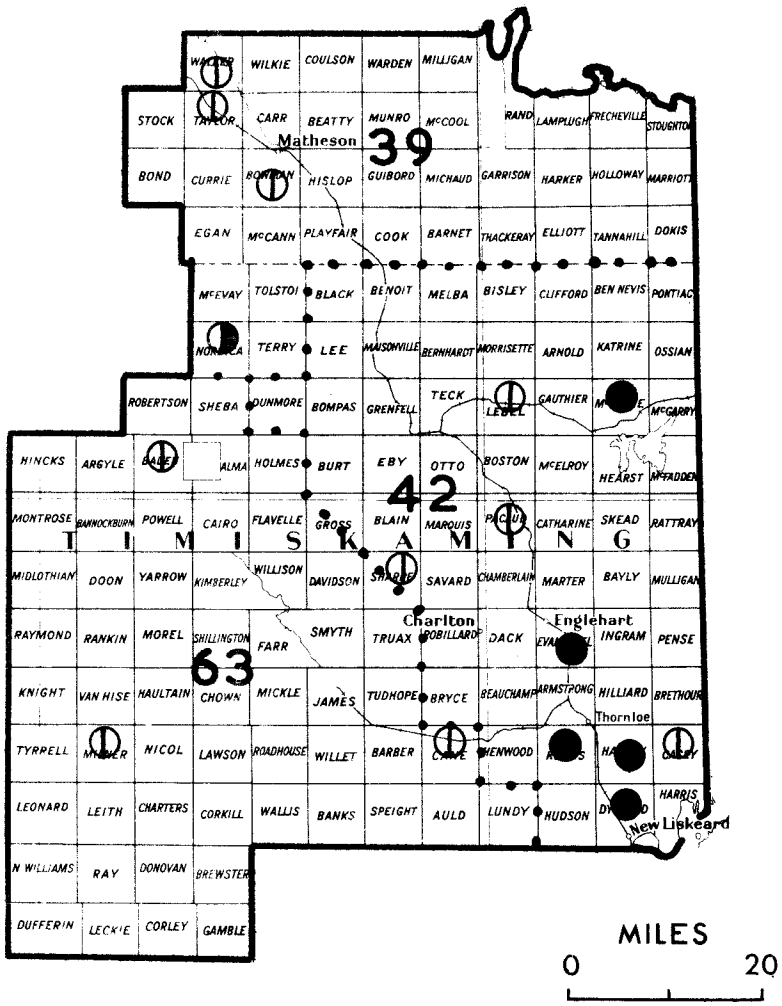
Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

SWASTIKA DISTRICT



YELLOW-HEADED SPRUCE SAWFLY

Location of infestations in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

White-pine Weevil, Pissodes strobi Peck

A heavy infestation persisted on scattered white pine regeneration in Grenfell Township where 28 per cent of the leaders of sample trees were infested (Table 16). Light infestations were noted in a red pine provenance test plot in Ingram Township and on Scots-pine plantings in Chamberlain and James townships. Light-to-moderate damage was observed on black spruce regeneration along Highway 101 in Munro Township and on jack pine regeneration along Highway 65 in Henwood Township.

TABLE 16

Summary of White-pine Weevil Damage in the Swastika District from 1964 to 1966

Location (township)	Host	No. of trees examined	Per cent of leaders infested 1964	1965	1966
Gauthier	jP	100	8	6	4
Grenfell	wP	50	26	14	28
Benoit	jP	100	6	5	3
Nordica	jP	100	5	12	8
McGarry	bS	50	10	36	10
Currie	bS	100	-	-	9
McEvoy	jP	100	-	-	8

Balsam Shoot-boring Sawfly, Pleroneura borealis Felt.

Light infestations of this primitive sawfly persisted in Marquis and Farr townships and new light infestations were noted in Tudhope and Holloway townships. Although 1966 was a peak year in the insect's 2-year life cycle, only minor increases in numbers of mined buds were recorded at most sample points and damage was much less severe than in 1964 (Table 17). Records show that in the peak year of 1964 late frosts caused considerable larval mortality and low populations in 1966 may be a direct result.

TABLE 17

Summary of Balsam Shoot-boring Sawfly Damage in the Swastika District from 1964 to 1966

Location (township)	Av. d.b.h. in inches	No. of buds examined in 1966	Per cent of buds mined 1964	1965	1966
Bernhardt	4	234	1.7	2.8	0.4
Benoit	4	247	27.0	0.0	5.7
Eby	6	369	17.7	5.0	5.9
Marquis	6	286	18.3	0.0	8.4
Farr	6	218	16.5	1.5	9.6

Larch Sawfly, Pristiphora erichsonii (Htg.)

Populations of this defoliator continued to decline in most areas in 1966. A medium infestation in Milner Township declined to light intensity. Substantially reduced numbers occurred in Gauthier, Holloway, and McGarry townships. Exceptions to the above trend occurred in Benoit, Lee and Ingram townships where individual, open-grown trees were severely defoliated.

Mountain-ash Sawfly, Pristiphora geniculata (Htg.)

Populations of this insect persisted at a high level in 1966. Heavy infestations recurred on clumps of mountain ash in Eby, Nicol, McGarry and Catherine townships. Severe damage to mountain ash ornamentals occurred in Teck and Dymond townships. Light to moderate damage was encountered at numerous other locations in the district.

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Quantitative sampling showed substantial reductions in numbers of mined leaves at five of seven locations (Table 18). A single pocket of heavy infestation persisted north of Davis Lake in Tolstoi Township. Small medium infestations occurred in Rand, McCann, Mickle, and Banks townships. Light damage of white birch foliage was observed at several other locations.

TABLE 18

Summary of Damage Caused by the Amber-marked Birch Leaf Miner in the Swastika District from 1964 to 1966

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

Location (township)	Av. d.b.h. in inches	No. of leaves attacked			Total no. of mines		
		1964	1965	1966	1964	1965	1966
Playfair	3	31	27	15	80	35	15
James	4	53	22	22	90	30	25
Stock	3	30	16	6	77	21	6
Arnold	3	70	40	12	103	51	14
Van Hise	3	35	15	2	78	18	2
Clifford	4	58	18	18	96	25	22
Otto	3	56	30	13	89	47	13

A Poplar Leaf Roller, Pseudexentera oregonana Wlshm.

A substantial decline in numbers of this insect occurred in 1966. The heavy infestation which has persisted in Dymond, Armstrong, Harley and Hudson townships since 1962 declined to light intensity. Light infestations recurred along Highway 65 between New Liskeard and the Quebec boundary. Light infestations were detected for the first time north of Highway 101 in Munro and Marriot townships. Light defoliation was observed at several locations in Division 63.

Spruce Bud Gall Midge, Rhabdophaga swainei Felt.

Although little change in population levels was recorded at most quantitative sample points, (Table 19) an appreciable increase in numbers of this insect occurred in 1966. Heavy infestations occurred on black spruce in Dack, Evantural, and Walker townships and on white spruce at two locations in Chamberlain Township. Medium infestations were detected on black spruce in Arnold, Pontiac, and Dunmore townships. Low numbers of infested buds were observed at numerous other locations.

TABLE 19

Summary of Damage Caused by the Spruce Bud Gall Midge in the Swastika District from 1964 to 1966

Location (township)	Tree species	No. of shoots examined in 1966	Per cent of shoots infested 1964	1965	1966
Garrison	wS	143	5.5	0.0	3.5
Lebel	wS	161	2.9	4.4	3.1
Dymond	wS	65	0.9	0.0	4.6
Chamberlain	wS	226	-	-	28.8
Eby	bS	154	3.5	2.6	2.6
Eby	wS	150	9.3	3.1	4.0

TABLE 20

Summary of Miscellaneous Insects Collected in the Swastika District in 1966

Insect	Host(s)	Remarks
Acleris oxycoccana Pack	blueberry	Heavy infestations in Thackery Twp.
Acronicta lepusculina Gn.	tA	Small numbers near Isobel Lake
Adelges abietis Linn.	wS	Light infestation in Beauchamp Twp.
Adelges strobilobius Kalt.	bS	Heavy infestation near Watabeag Lake
Agromyza ulmi Frost.	wE	Medium infestation in Dymond Twp.
Altica corni Woods	Do	Large numbers in Otto Twp.
Anoplonyx luteipes (Cress.)	tL	Small-to-medium numbers on mat samples at numerous locations
Aphania dextrana McD	bPo	Low population in Garrison Twp.
Aphrophora parallela Say.	ScP	Light infestations in Henwood, Dack, and Maisonville twps.
Argyrotaenia tabulana Free	jP	Light infestations in plantations in McCool Twp.
Campaea perlata Gn.	bF	Small numbers on mat samples
Caripeta angustiorata Wlk.	wP, jP	Two collections on mat samples
Catocala relicta Wlk.	cPo	Single collection from Swastika Nursery
Cecidomyidae	jP	High populations in Tolstoi and Michaud twps.
Choristoneura fumiferana (Clem.)	wS, bF	Small numbers on mat samples at several locations
Choristoneura rosaceana Harr.	W	Small numbers in Pacaud and Dymond twps.
Coleophora betulivora McD	wB	Low populations at several locations
Croesus latitarsus Nort.	wB	Single colony in McCool Twp.
Dasyneura balsamicola, Lintn.	bF	Light infestation at Kenogami Lake
Dendroctonus obesus Mann.	wS	High population in spruce logs
Dimorphopteryx pinguis (Nort.)	wB, Al	Common in the district
Dioryctria abietivorella Grt.	bF	Small numbers in cones in Rand Twp.
Dioryctria reniculella Grt.	wS	Low population in new shoots in Dymond Twp.
Disonycha alternata Ill.	W	Heavy infestation in Yarrow Twp.
Epinotia cruciana Linn.	W	Light infestation in Robillard Twp.
Epinotia lindana Fern.	Do	Medium-to-large numbers in Kearns and Maisonville twps.
Epinotia solandriana Linn.	wB, Al	Small numbers at several locations
Eriophyes sp.	bO	Light infestation in Hilliard Twp.
Eupithecia filmata Pears.	wS, bF	Common on mat samples throughout the district
Eupithecia gelidata Moesch.	wB	Low population in Bowman Twp.
Eupithecia palpata Pack.	wP	Single collection from Grenfell Twp.
Euthyatira pudens Gn.	Do	Low population in Maisonville Twp.
Evodinus monticola (Rand.)	wS	Small numbers in trap logs

TABLE 20 (continued)

Insect	Host(s)	Remarks
Fenusa dohrnii (Tischb)	Al	Heavy in Morrisette Twp.
Gracillaria alnivorella Cham.	Al	Heavy near Wildgoose Lake
Gracillaria cuculipenella Hbn.	bAs	Light in Yarrow Twp.
Gracillaria invariabilis Braun	pCh	Heavy infestation along Hwy. 101 in Garrison Twp.
Halisidota maculata Harr.	W	Single colony in Yarrow Twp.
Hylurgopinus rufipes Eich.	wE	Small numbers in Harley Twp.
Hyphantria cunea Dru.	wB	Single colony in Armstrong Twp.
Lapara bombycoides Wlk.	jP	Low number in Playfair Twp.
Lithocolletis aceriella Clem.	rM, Mo	Medium in Knight Twp.
Lithocolletis betulivora Wlshm	wB	Small numbers at several locations
Lithocolletis sp.	Ha	Light infestation in Knight Twp.
Macremphytus varianus (Nort.)	Do	Medium numbers in several twps.
Malacosoma disstria Hbn.	tA	Occasional colonies in the New Liskeard area
Monochamus notatus (Drury)	wS	High population in trap logs
Monochamus scutellatus (Say)	wS	High population in trap logs
Nematus fulvicrus Prov.	W	Single colony in Eby Twp.
Nematus limbatus Cress.	W	Single colony in Grenfell Twp.
Nematus ribesii (Scop.)	currant	Single colony in Kirkland Lake
Nematus salicisidoratus Dyar	W	Low population in Bowman Twp.
Nematus ventralis Say	tA, W	Single colonies found commonly
Neodiprion abietis complex	wS, bF	Low populations at several locations
Neodiprion pratti banksianae Roh	jP	Single colony in Terry Twp.
Neodiprion swainei Midd.	jP	Light infestation at Banks Lake
Pareophora minuta MacG.	bAs	Heavy infestations in Yarrow, Baden and Midlothian twps.
Peridroma saucia Hbn.	bS, jP	Light infestation in tubelings
Phenacaspis pinifoliae Fitch	jP	Light infestation at Banks Lake
Phlytaenia tertialis Gn.	El	Low population in Knight Twp.
Phratora americana canadensis Brown	W	Light infestation in Dack Twp.
Phyllocolpa agama (Roh.)	W	Light in Kimberly and McCann twps.
Phytomyza sp.	honey-suckle	Heavy infestation in Teck Twp.
Pikonema dimockii (Cress.)	wS	Small numbers on mat samples at numerous locations
Pineus floccus Patch	wS	Heavy in Skead and Lebel twps.
Pissodes approximatus Hopk	rP	Light in Marquis and Grenfell twps., medium in Nordica Twp.
Prociphilus tesselatus (Fitch)	AL	Numerous heavy infestations
Pulicalvaria piceaella Kft.	blue S	Medium on ornamentals in New Liskeard
Pyraustra futilalis Led.	dogbane	Light in Grenfell Twp.

TABLE 20 (continued)

Insect	Host(s)	Remarks
Recurvaria sp.	wB	Light infestation in Lee Twp.
Rhynchaenus rufipes Lec.	W	Heavy in Eby Twp.
Saperda calcarata Say	tA	Damage to several trees on shore of Abitibi Lake
Schizolachnus piniradiatae (Dav.)	rP	Medium infestation in Ingram Twp.
Schizura concinna A. & S.	W	Single colony in Armstrong Twp.
Semiothisa bisignata Wlk.	wP	Medium numbers in Grenfell Twp.
Semiothisa orillata J.E. Smith	eC	Medium numbers in Eby Twp.
Semiothisa sp.	tL	Medium numbers in Lebel Twp.
Taniva aboliniana Kft.	wS	Light infestation on plantation trees in Harley Twp.
Tenthredinidae # 13	W	Single colonies in three twps.
Tenthredinidae # 12	W	Small numbers at several locations
Trichiocampus irregularis (Dyar)	W	Medium numbers at two locations
Vasates quadripes Shim	siM	Heavy at Charlton
Xylomoges dolosa Grt.	tA	Small numbers in Nordica Twp.
Zeiraphera ratzeburgiana Ratz.	wS	Heavy in Harley Twp.
Zeiraphera sp.	jP	Light in Tolstoi Twp.
Zeugophora sp.	bPo, tA	Heavy in Teck Twp. Light-to-medium at numerous other locations

MIDWESTERN FOREST REGION

1966

Page

STATUS OF INSECTS (REGIONAL)

STATUS OF TREE DISEASES (REGIONAL)

STATUS OF INSECTS (DISTRICT)

INTRODUCTION

Midwestern Forest Region

This report deals with the status of forest insects and tree diseases in the Midwestern region. The larch sawfly and tree diseases are dealt with regionally and other insects on a district basis.

A late cold spring caused almost complete hatch failure of forest tent caterpillar larvae and was responsible for a very large reduction in the extent of infestations in the region. Larch sawfly populations increased for the second consecutive year in Port Arthur District and the central part of Geraldton District. Light defoliation of balsam fir caused by the spruce budworm occurred in the Burchell Lake area. The upward trend of populations of Phyllocolpa sp., a leaf folding sawfly, continued in the Geraldton District and light-to-moderate infestation of aspen was observed at numerous locations.

The results of an intensive survey of Scleroderris canker of pines, Scleroderris lagerbergii, showed that the disease is widespread in the eastern portion of the region. The organism was confined to small diameter red and jack pine in plantations and natural stands and caused considerable tree and branch mortality at several locations. A severe wind storm caused extensive damage to stands in an area of approximately 50 square miles north of Nakina.

Special sampling of insects in balsam fir plots and diseases in hail damaged areas was continued. Service work, extension calls and short courses of instruction to junior forest rangers constituted an important part of the work of district technicians.

The interest and assistance of Department of Lands and Forests and Woods operating personnel is gratefully acknowledged.

K. C. Hall

STATUS OF INSECTS

Larch Sawfly, Pristiphora erichsonii (Htg.)

For the second consecutive year population levels of the larch sawfly increased substantially in the region. The heaviest defoliation, approximately 70 per cent, occurred in several stands of large diameter trees in Soper Township and on numerous open-grown planted larch trees in McIntyre Township. The largest and most noticeable areas affected by the population increase included Division 34 and 24 in Port Arthur District and the central part of Geraldton District (see map). Infestations throughout these areas increased to moderate intensity with defoliation ranging from 10 to 40 per cent. Elsewhere in the region colonies occurred more frequently but defoliation was light.

STATUS OF TREE DISEASES

Yellow Witches' Broom, Chrysomyxa arctostaphyli Diet.

Light to moderate incidence of this disease continued on white spruce and black spruce in Townships 82, 85, and 89 in the Geraldton District. The highest incidence was recorded in a stand of open-growing spruce at Nipigon Bay Road, Township 89, where 18 per cent of the examined white spruce trees were diseased with one to three brooms per affected tree. This organism was collected on the alternate host, bearberry, at White Sand Lake in Township 85.

In the Port Arthur District witches' brooms were common on black spruce in Savanne and Joynt townships.

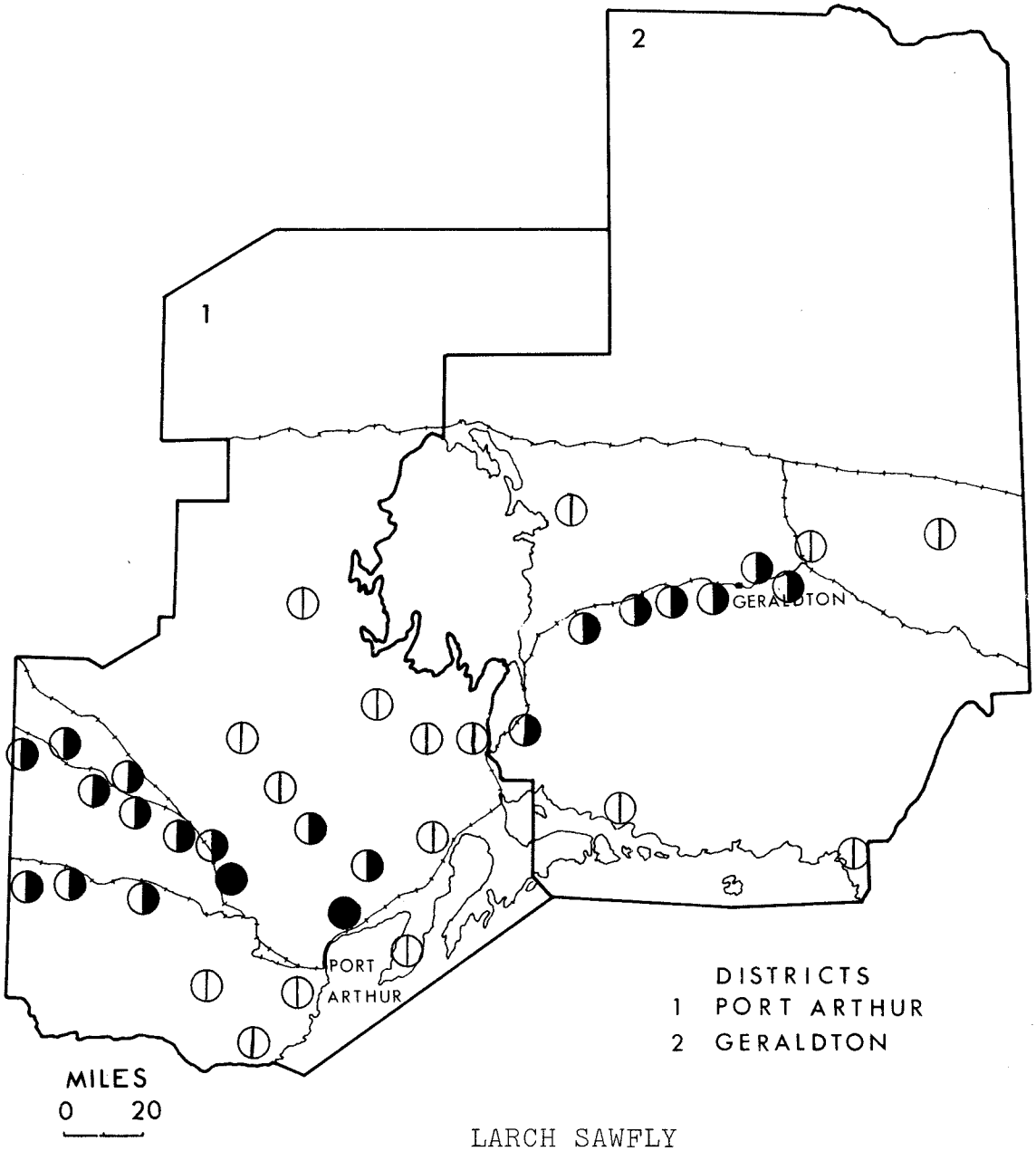
Needle Rust of Spruce, Chrysomyxa Ledi de Bary

In 1966, the incidence of this rust increased in the western part of the Port Arthur District. Light to moderate infections were observed in numerous stands of black spruce of all diameter classes along Highway 17 from Raith to English River. In the Atikokan Road area the rust was common on small black spruce trees. In Geraldton District the severity of this needle rust declined from a high to a low level in a 50-acre white spruce stand at Jackfish Lake, Township 82. New pockets of moderate infection were observed on black spruce regeneration at mile 16, Auden Road, at Mile 3 on the Camp 81 Road, and in Vivian Township.

Ink Spot of Aspen, Ciborinia whetzelii (Seaver) Seaver

The incidence of this leaf spot declined to a low level in the Region in 1966. The only area of infection observed was in Exton Township, Geraldton District, where several stands of young trembling aspen were lightly infected. In 1965 the disease was common at numerous locations in the region.

MIDWESTERN FOREST REGION



LARCH SAWFLY

Locations where infestation of the larch sawfly were observed in 1966

Legend

Light infestation . . . . . ◐

Medium infestation . . . . . ◑

Heavy infestation . . . . . ●

Black Knot of Cherry, Dibotryon morbosum (Schw.) Theiss. & Syd.

Infections of this disease continued to be severe in Pic Township, in Townships 79 and 87 and at scattered locations in Division 23, Geraldton District. The highest incidence was observed in a small pocket of pincherry (Prunus pennsylvanica) one mile east of Camp 54, Division 23, where all trees were diseased and the severity ranged from 4 to 20 infections per tree. In Port Arthur District pockets of moderate infections were common along the Armstrong Road, on Sibley Peninsula, in Nipigon Township and through the Fort William and Port Arthur area.

White Trunk Rot of Hardwoods, Fomes igniarius (L. ex Fries) Kickx.

This destructive wood rot was found commonly on large trembling aspen trees through Blacksand Park. Quantitative sampling at one location showed that 16 per cent of host trees were affected, with the number of conks ranging from 1 to 8 per tree.

A Leaf Rust of Mountain Ash, Gymnosporangium sp.

For the fifth consecutive year, severe infection of mountain ash by this rust was observed along the north shore of Lake Superior in Geraldton District. The degree of severity on leaflets ranged from 75 per cent to 100 per cent which represented a substantial increase since 1965 (Table 1). New pockets of severe infection were observed at several locations along the Auden Road where the highest incidence was recorded at Milage 19, here, 85 per cent of the leaves were infected. The disease was common between Nipigon and Port Arthur, but in all cases the severity was light. High incidence of infection occurred on several clumps of serviceberry (Amelanchier) in Pic Township and in Township 86.

TABLE 1

Summary of Infection of Mountain Ash Caused by Gymnosporangium sp. in the Geraldton District from 1964 to 1966

Location	Per cent of leaflets infected		
	1964	1965	1966
Township 87	78	100	100
Pic Township	64	36	90
Auden Road mile 19	-	-	85
Township 79	100	43	75

Leaf and Twig Blight of Poplar, Pollaccia radiosa (Lib.) Bald. & Cif.

In 1966 the incidence of this disease increased in the Geraldton District. Light twig mortality was common on small trembling aspen in O'Meara, Sandra, and Kowkash townships, through the area south of Caramat in Division 23, and in the Goldfield Road area in Division 17. In the Port Arthur District the incidence of this disease remained low.

Tip Blight of Balsam Fir, Rehmiellopsis balsamea Waterm.

A new distribution record for this organism was established in the Port Arthur District in 1966 when light to moderate infection occurred on several open-grown balsam fir trees in MacGregor Township. The disease was found for the first time in 1958 but until 1966 was confined to the Black Sturgeon area.

Tar Spot of Maple, Rhytisma punctatum Pers. ex Fries.

This leaf disease of mountain maple occurred commonly throughout the Port Arthur District and the western part of Geraldton District. The severity of infection was light at most locations. However, moderate to severe damage was observed at several points on Sibley Peninsula and along the Armstrong Road.

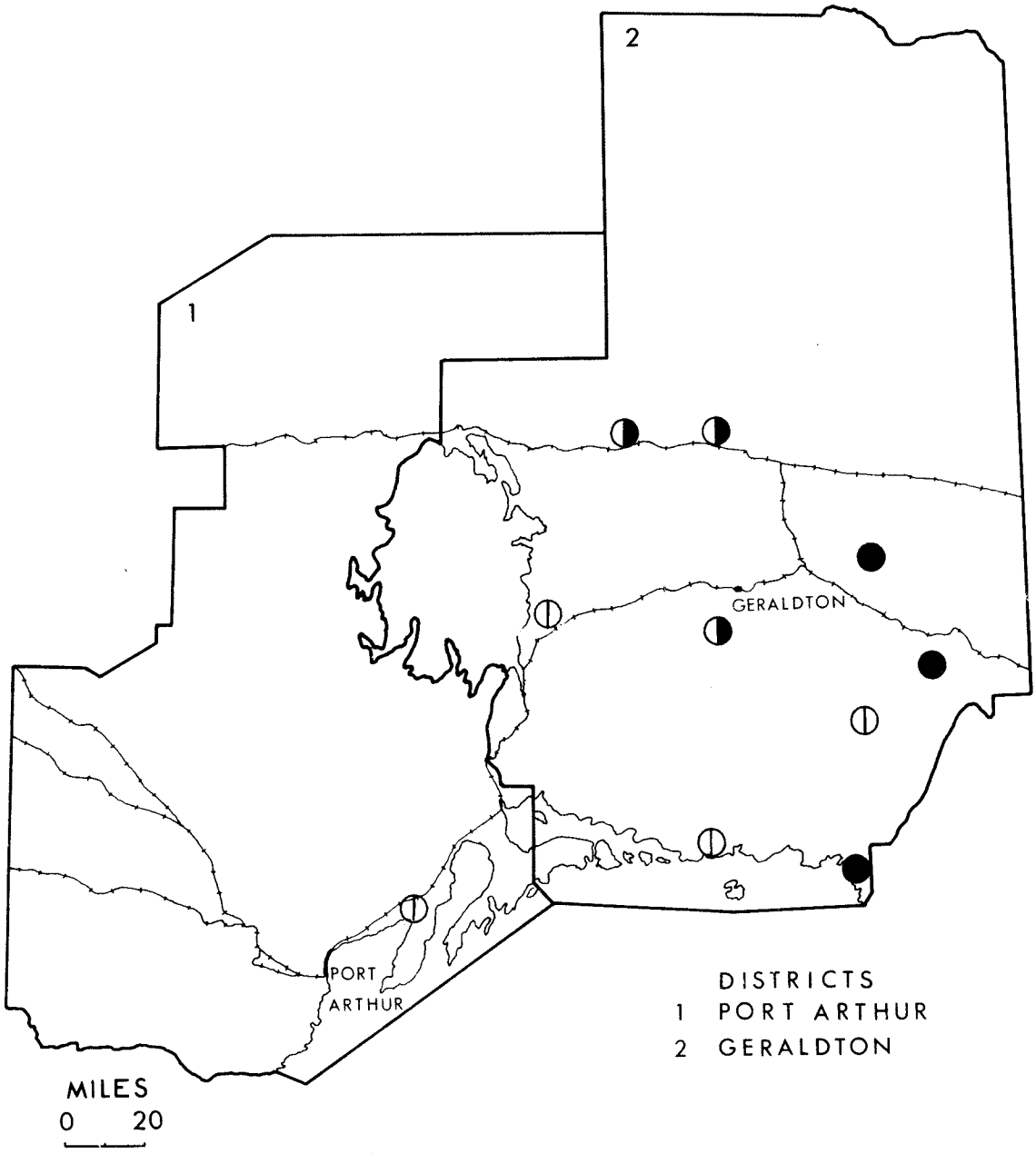
Tar Spot of Willow, Rhytisma salicinum Pers. ex Fries.

A marked increase in the incidence of this disease occurred in the Geraldton District in 1966. A high degree of infection was observed on scattered clumps of willow along the Auden and Goldfield roads and east of Longlac. The highest incidence was recorded at Chipman Lake Road, in Division 23, where 70 per cent of the leaves were infected. The incidence remained low at all sampling points in Port Arthur District.

Scleroderris Canker of Pine, Scleroderris lagerbergii Gremmen.

This destructive organism occurred commonly in the eastern part of the region in 1966, but only rarely in the western section (see map). Although the disease is confined to small diameter hosts, it was present in both plantations and natural regeneration and in varying degrees of severity. In plantations the highest incidence of infection was observed on Scots and jack pine trees in O'Meara Township, in jack pine plantings in Kowkash and Pic townships and at one location south of Stevens. In sample plots in the latter area 41.2 per c ent mortality was caused by this organism. The degree of infection in red pine plantations was considerably lower, however, in Sandra and McTavish townships a low percentage of mortality was recorded (Table 2). Infections were found frequently in natural jack-pine regeneration throughout Division 23 and in several areas in Division 80. Light to moderate branch mortality occurred commonly in the affected stands; however, tree mortality was low except at one location in Kowkash Township where 18.8 per cent of the examined trees were killed.

MIDWESTERN FOREST REGION



Scleroderris Canker

Locations where infections were observed in 1966

Legend

Light infection . . . . . ◐

Medium infection . . . . . ◑

Heavy infection . . . . . ●

TABLE 2

Summary of Incidence and Tree Mortality Caused by Scleroderris lagerbergii in the Midwestern Region in 1966

Location	Stand type	Host	No. of trees examined	Height in feet	Incidence Per cent of infected trees	Mortality Per cent of dead trees	Old mortality cause unknown
Stevens	Plant.	jP	160	3	10.6	41.2	Light
Kowkash Twp.	"	jP	415	3	0	25.0	"
Pic Twp.	"	jP	100	6	77.0	20.0	"
McTavish Twp.	"	rP	400	3	5.8	3.5	Nil
Sandra Twp.	"	rP	206	8	37.3	3.4	Light
Kowkash Twp.	Natural	jP	170	4	0	18.8	Nil
Kowkash Twp.	"	jP	100	8	62.0	0	"
Exton Twp.	"	jP	100	6	88.0	3.0	"
Goldfield Rd.	"	jP	100	6	84.0	2.0	Light
Township 83	"	jP	160	5	25.0	2.5	"
Davies Twp.	"	jP	223	8	9.4	.4	Nil
Average for all sampling points					22.9	11.4	

Hail Damage

In May 1963 two sample plots were established in Errington Township to study tree mortality in an area that was heavily damaged by a hailstorm in 1961 (Forest Insect and Disease Annual Report Ontario Region 1962). The trees were tallied as respecting to the extent of damage, d.b.h. and crown class. In the following years examinations were made periodically and all disease organisms found on dead trees or branches were submitted to the Forest Disease Survey for identification. The damage to individual trees in both plots ranged from light to severe branch mortality. In the majority of cases the bark was punctured by hail stones and the cambial layer on one side of the trunk was killed.

Plot No. 1 was established in a dense young, fire-origin jack pine stand containing trees in the 1 to 5 inch d.b.h. class. Armillaria mellea (Vahl. ex Fr.) Kummer was the most common organism found and accounted for 22.3 per cent of tree mortality (Table 3).

TABLE 3

Jack Pine Tree Mortality in a Hail Damage Plot in the Geraldton District from 1963 to 1966

Causal organism	Cumulative percentage of dead trees			
	1963	1964	1965	1966
Armillaria mellea (Vahl ex Fr.) Kummer	2.8	9.3	14.9	22.3
Tremmela sp.		5.6		
Scoleconectria sp.		.9		
Tympanis confusa Nyl.		.9		
Other organisms	1.8			

Plot No. 2 was established in a mixed regeneration stand in an old cutover. The highest mortality rate, 43.6 per cent, occurred on balsam fir followed by white birch, 9.5 per cent and black spruce, 8.0 per cent. Disease organisms found on dead trees are as follows (Table 4):

TABLE 4

Summary of Organisms Collected and Per Cent of Trees Affected in a Hail Damage Plot in the Geraldton District

Causal Organism	Tree species	Per cent of trees affected
Thyronectria balsamea (Cke. & Pk.) Seel.	bF	12.8
Valsa sp.	bF	10.2
Bothrodiscus pinicola Shear	bF	5.1
Other fungi	bF	15.5
Diatrypella betulina (Pk.) Sacc.	wB	4.7
Melanconium sp.	wB	2.4
Other fungi	wB	2.4

Wind Damage.

In early July, 1966, a windstorm caused heavy damage to coniferous and broad-leaved trees in an area of approximately 50 square miles north of Nakina. The affected area extended from the eastern half of Esnagami Lake southeastward between Alph and Sexsmith lakes and through the Cordingley Lake area (see map). The damage was most severe on Louella, Bill and Ara islands and along the southeastern shore of Esnagami Lake where trees in jack pine and trembling aspen stands were partially, or completely, uprooted and others were broken. Heavy windthrow and breakage also occurred along lakeshores and on knolls in the Cordingley Lake area. Extensive blow-down was observed in the cut-over areas south east of Cordingley Lake where large residual trembling aspen and clumps of black spruce were uprooted or broken.

Numerous trees were also broken in a hillside white birch stand at Leonard Lake in Kilkenny Township.

TABLE 5

Other Noteworthy Organisms in the Midwestern Region in 1966

Organism	Host(s)	Remarks
Armillaria mellea (Vahl ex Fr.)	tA	Found on small dead trees in Rupert Twp.
Cenangium f errunginosum Fries	jP	Collected on dead branches at Marathon
Chrysomyxa ledicola Lagerh.	Labrador tea	Pockets of this rust common at one location in Croll Twp.
Coleosporium asterum (Diet) Syd.	jP	Lower branches lightly infested on several trees in Upsala and Bain twps.
Cronartium ribicola J. C. Fischer	Goos-berry	Light infections on several plants at Percy Lake
Cytospora chrysosperma (Pers.) Fries	tA	Organism found on small trees killed by A. mellea in Rupert Twp.
Erwinia amylovora (Burr.) Winslow et al.	Mo	Very low incidence in Gorham Twp.
Erysiphe aggregata (Pk.) Farl.	Al	Low incidence on scattered hosts, Upsala Twp.; found commonly in Conmee Twp.
Ganoderma applanatum (Pers. ex Waller) Pat.	tA	Recovered on root system of one hybrid aspen at Thunder Bay Nursery
Hypodermella ampla (J. J. Davis) Dearn.	jP	Incidence declined from severe to light in Eva Twp. Light to moderate infections on scattered trees in O'Meara Twp.
Mamianiella coryli (Batsch ex Fries) Hoehn.	Hazel	Severe on one clump, Limestone Lake
Melampsora epitea Thuem.	W	Heavy infection on scattered branches of lakeshore trees, Twp. 83
Melampsora medusae Thuem.	W	Light leaf rust on small shrubs at Pays Plat River, Twp. 87
Mellampsorella caryophyllacearum Schroet.	bF	Witches' brooms occur throughout the Pays Plat area and in Blacksand Park in Kilkenny Twp.
Nyssopsora clavellosa (Berk.) Arth.	Aralia	Rust common along the MacDiarmid Fire Tower trail
Peridermium sp.	jP	Occasional galls on understory trees at Owl Lake

TABLE 5 (continued

Organism	Host(s)	Remarks
Pollaccia saliciperda (All. & Tub.) V. Arx	W	One clump of willow moderately infected in the City of Port Arthur, first district record
Puccinia asteris Duby	Aster	Low incidence common at widely scattered collection points
Puccinia coronata Cda.	Rhamnus sp.	Common in Croll Twp.
Puccinia hieracii (Roehling) Martius	Dandelion	First record for Geraldton District
Pucciniastrum potentillae Korn.	Potentilla tridentata	Found in Twps. 78 and 86
Pucciniastrum pustulatum (Pers.) Diet.	bF	Low incidence of leaf rust at Marshall Lake
Sclerophoma pithyophila Hoehn.	rP, scP	Found on numerous dead red pine tips at Twomey Lake and in plantations in Neys Park and in O'Meara Twp.
Scoleconectria scolecospora (Bref.) Seaver	wP	Found infrequently in a white pine plantation in Paipoonge Twp.
Thyronectria balsamea (Cke. & Pk.) Seel.	bF	Collected on widely scattered dead trees along LeMay Road and in Herbert Twp.
Valsa leucostoma Fries	W	Pocket of severe stem and branch mortality at Mile 10 Goldfield Road.

STATUS OF INSECTS IN THE PORT ARTHUR DISTRICT

K. C. Hall

STATUS OF INSECTS

Ugly-nest Caterpillar, Archips cerasivorana Fitch

Three pockets of heavy infestation of this insect occurred in the district in 1966. The largest of these was located at Whitefish Lake where over 200 tents was recorded along ¼ mile of roadside. High populations persisted at the junction of the Stanley and Twin City Crossroads. A new area of infestation occurred in Rosslyn Village in Paipoonge Township. Colony counts at these locations averaged 37 and 23 respectively. Low populations were observed in Devon Township and along the Burchell Lake road.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Population levels of this important insect increased in a 5-acre stand containing balsam fir and white spruce in a wide range of diameter classes in the Burchell Lake area in 1966. The last year of significant damage by the spruce budworm in this locality occurred in 1963 when seven per cent defoliation was recorded. Population levels remained at endemic levels the following two years but, in 1966, an appreciable population increase occurred and nine per cent defoliation of balsam fir resulted. An assessment of egg mass densities showed an average of five masses per 100 square feet of foliage indicating that a light infestation will continue in 1967. Elsewhere in the district population levels were very low.

Larch Casebearer, Coleophora laricella (Hbn.)

No important change in the status of this insect was observed in 1966. A small increase in numbers of larvae occurred in MacGregor Township and minor declines were recorded in Crookes Township and on Sibley Peninsula (Table 6).

TABLE 6

Summary of Larch Casebearer Counts on Tamarack Trees in the Port Arthur District from 1964 to 1966

Location	Av. d.b.h. in inches	Av. number of larvae per 18" branch tip		
		1964	1965	1966
MacGregor Twp.	7	4.0	5.4	6.2
O'Connor Twp.	6	.7	.1	.1
Crookes Twp.	4	4.6	1.9	1.2
Sibley Peninsula	5	1.2	1.6	.2

A Bark Beetle of the Genus Conophthorus sp.

A light-to-moderate infestation of this beetle persisted on a jack pine windbreak in Upsala Township. Quantitative sampling showed an average of 2.4 damaged shoots per tree. Low populations were observed at one other location in the district.

European Spruce Sawfly, Diprion hercyniae (Htg.)

This introduced sawfly occurred in small numbers throughout Division 24, primarily on open-grown white spruce trees. The highest number was an average of 5.1 insects per mat sample in O'Connor Township (Table 7.)

TABLE 7

Summary of Collections of the European Spruce Sawfly in the Port Arthur District in 1966

Note: Ten mat samples taken from white spruce trees.

Location	Date sampled	Av. number of insects per mat sample
Devon Twp.	July 15	1.5
Devon Twp.	Sept. 9	.5
O'Connor Twp.	Aug. 30	2.6
O'Connor Twp.	Sept.26	5.1
Scoble Twp.	Aug. 8	1.6

A Birch Leaf Miner, Fenusa pusilla (Lep.)

A marked increase in population levels of this miner was observed in the cities of Fort William and Port Arthur. Light to moderate infestations occurred on numerous white birch trees and, in several instances, high populations were observed. Numerous extension calls were received with respect to this insect. No infestations were observed in forested areas but new distribution records were established in Conmee Township, on Sibley Peninsula and as far north as Black Sturgeon Lake.

American Aspen Beetle, Gonioctena americana (Schaeff.)

Population levels of this beetle varied considerably in the district in 1966. A sharp decline occurred in the Dog Lake area where very light defoliation of small diameter roadside trees was observed. Along Highway 11 and 17 west populations increased and defoliation ranging from 5 to 15 per cent was observed on numerous small, fringe trees. Light defoliation occurred commonly along the Armstrong road.

Birch Leaf Roller, Gracillaria sp.

Heavy infestations of this roller persisted on large white birch trees at Plummes Lake in 1966, where approximately 75 per cent of the leaves were damaged. Light to moderate infestations occurred at scattered locations along Highway 11 from Huronian Lake west to the district boundary. Elsewhere in the district populations were low.

Blotch Miner on Balsam Poplar, Lithocolletis sp.

Population levels of this insect were high at most sample points in 1966. Heavy infestations persisted in Marks, Scoble, Conmee and Oliver townships where an upward trend in larval populations and numbers of mined leaves was recorded. Although heavy infestations persisted in Paipoonge and O'Connor townships, quantitative sampling revealed a decline in numbers of mined leaves (Table 8). Medium infestations were observed in Neebing Township where low populations had occurred for several years.

Adult emergence was slightly lower than in 1965 at all sample points except in Scoble and Marks township where significant increases were recorded (Table 9). Larval mortality ranged from 21 to 48 per cent. Parasitism was the primary control factor causing from 12 to 28 per cent mortality. Cannibilism and predation were low and mortality from unknown causes increased from an average of 9 per cent to 12 per cent.

TABLE 8

Comparison of Counts of Lithocolletis sp. in the Port Arthur District in 1965 and 1966

Note: 100 leaves examined at each location.

Location (township)	Per cent of leaves mined		Av. no. of mines per leaf	
	1965	1966	1965	1966
Marks	54	96	.6	1.9
O'Connor	98	85	3.8	2.3
Neebing	15	50	.1	.6
Scoble	79	100	1.4	4.4
Conmee	61	63	1.0	.9
Paipoonge	96	68	3.7	1.2
Oliver	67	100	1.0	3.9

TABLE 9

Summary of Adult Emergence and Larval Mortality of Lithocolletis sp. in the Port Arthur District in 1965 and 1966

Note: 100 leaves examined at each location.

Location (township)	Per cent of mines showing adult emergence		Per cent larval mortality	
	1965	1966	1965	1966
Marks	41	79	59	21
O'Connor	84	73	16	27
Neebing	67	52	33	48
Scoble	70	77	30	23
Conmee	73	53	27	47
Paipoonge	67	53	33	47
Oliver	70	62	30	38

Aspen Blotch Miner, Lithocolletis salicifoliella Chamb

The light infestations of this miner reported in the Lac Des Mille Lac area and along the Atikokan road in 1965 increased to heavy intensity in 1966. Populations were confined to small diameter roadside aspen trees. Elsewhere in the district populations were low.

Forest Tent Caterpillar, Malacosoma disstria Hbn.

A marked reduction in the area of heavy infestation of the forest tent caterpillar occurred in the district in 1966. This spectacular decline was attributed to a late cold spring which caused almost complete hatch failure throughout a large portion of the district (Table 10). Records show that forest tent caterpillar eggs normally hatch in early May. However, in 1966, cold weather conditions delayed hatching until late May and most of the fully-formed larvae died inside the eggs.

In 1965 heavy defoliation of trembling aspen occurred over an area of approximately 5000 square miles. In 1966, moderate-to-heavy infestation was mapped in an area of 120 square miles extending from Deatys Lake west to the district border (see map). Damage within the infestation was spotty with numerous patches of heavy and light defoliation interspersed. Small isolated pockets of light infestation occurred at Watershed and Greenwater Lakes in Division 34 and at Kabitotikwia Lake in Division 27.

Forecasts for 1967, based on egg mass counts, indicate a southward spread of light infestation and an upward trend of populations in the Greenwater Lake area (Table 11).

TABLE 10

Summary of Per Cent of Forest Tent Caterpillar Egg Hatch in the Port Arthur District in 1966

Note: Ten egg masses examined at each location

Location	Av. number of eggs per band	Per cent of eggs hatched	Degree of defoliation
Upsala Twp.	156	2.0	Nil
English River	169	3.2	Nil
East of Raith	167	1.5	Nil
Trewartha Twp.	149	1.4	Nil
Chief Bay	172	5.0	Nil
Mile 70 (Armstrong Rd.)	141	0.0	Nil
Black Sturgeon Lake	135	19.5	Nil

TABLE 11

Summary of Forest Tent Caterpillar Egg Band Counts and Infestation Forecasts for 1967 in the Port Arthur District

Location	Av. d.b.h.	Av. number of egg bands per tree 1966	Forecast for 1967
Greenwater Lake	4	7	Severe
Greenwood Lake	5	3	Moderate
Moss Lake	6	1	Light
Plummer Lake	5	0	Nil
Burchell Lake	4	0	Nil

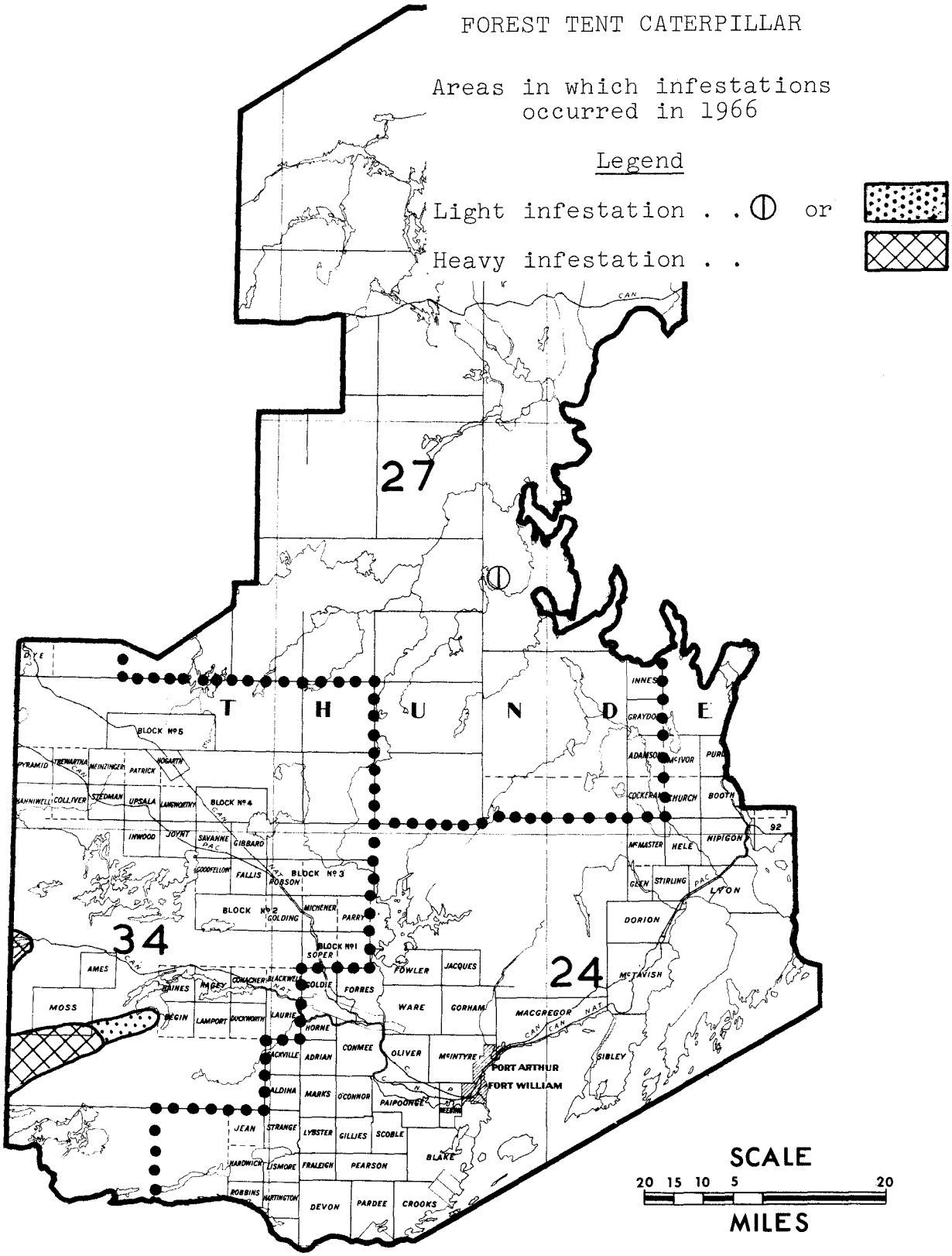
Western Tent Caterpillar, Malacosoma pluviale (Dyar)

Population levels of this insect remained low in the district. The highest count was recorded in MacGregor Township where eight colonies were recorded along one mile of roadside.

Balsam-fir Sawfly, Neodiprion abietis complex

No important change in the status of this insect was observed in the district in 1966. At Black Sturgeon Lake and Inwood Park colony counts on open-grown balsam fir averaged 1.3 and 1.0 per tree respectively. Population levels on white spruce in O'Connor, Marks, Gillies and Paipoonge townships were low and comparable to 1965.

PORT ARTHUR DISTRICT



Red Pine Sawfly, Neodiprion nanulus nanulus Schedl

No infestations of this sawfly were observed in 1966. The highest colony counts occurred on a jack pine shelterbelt in Savanne Township and on open-grown regeneration in Paipoonge Township where an average of 1.3 and 1.0 colonies per tree was recorded. Small numbers of colonies were collected more commonly than in the past several years.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Two small pockets of medium infestation of this sawfly occurred in the district in 1966. Medium populations persisted on open-grown jack pine trees at the Department of Highways Headquarters on the Atikokan road where an average of 8.6 colonies was recorded compared with 7 in 1965. In Savanne Township populations increased from endemic levels in 1965 to an average of 5.9 colonies per tree in 1966. Heavy defoliation was observed on scattered open-grown trees in Oliver, McIntyre and Neebing townships and on Sibley Peninsula.

Yellow-headed Spruce Sawfly, Pikonema alaskensis Roh.

Infestations of this defoliator occurred at numerous locations throughout Division 24. The most severe damage was observed in a white spruce plantation in McTavish Township where defoliation ranged from 40 to 90 per cent. Moderate defoliation occurred on numerous small open-grown spruce in the Lakehead cities. In the Great Lakes plantation in O'Connor Township defoliation averaged 10 per cent. Elsewhere in the district damage was light and confined to small trees or lower branches of fringe trees.

White pine Weevil, Pissodes strobi Peck

Damage caused by the white pine weevil was light in all areas sampled in 1966. Damage appraisals showed a decrease in the per cent of trees weevilled in five pine plantations (Table 12).

TABLE 12

Summary of Leader Damage by the White Pine Weevil in the Port Arthur District from 1964 to 1966

Location	Tree species	Av. d.b.h.	Number of trees examined	Per cent of trees weevilled		
				1964	1965	1966
Thunder Bay Nursery	jP	4-5	183	3	6	4
(Paipoonge Twp.)	jP	2-3	272	10	8	2
Boy Scout Tree Farm	wP	3	155	8	9	7
(Paipoonge Twp.)	ScP	4-5	709	9	6	3
	ScP	3-4	343	13	12	9

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Population levels of this insect remained low in the district in 1966. This miner was first observed in the district in 1963 occurring at scattered locations in Division 24 as a result of a westerly extension of infestation from Geraldton District. New distribution records established in the past three years show that the insect is widely distributed throughout the district.

Spruce Bud Gall Midge, Rhabdophaga swainei Felt.

Population levels of this insect remained low in the district in 1966. Quantitative sampling showed a downward trend in the number of infested buds at all sample points (Table 13).

TABLE 13

Summary of Damage by the Spruce Bud Gall Midge in the Port Arthur District from 1963 to 1966

Location (township)	Tree species	Per cent of terminal buds infested			
		1963	1964	1965	1966
Joynt	bS	1.1	1.6	1.1	1.0
Goldie	bS	1.4	1.4	1.0	0.0
92	bS	.4	4.0	1.9	1.1
MacGregor	wS	1.2	1.0	1.1	.6

TABLE 14

Summary of Miscellaneous Insects Collected in the Port Arthur District in 1966

Insect	Host(s)	Remarks
Acleris gallicolana Clem	W	Small numbers at several locations in Paipoonge Township
Acleris variana Fern	wS	Light populations in association with spruce budworm along the Burchell Lake road. Small numbers common on fringe trees in O'Connor Township
Adelges abietis Linn.	bS	Small numbers on many small trees at Ameythst Harbour. This is an introduced insect and although found principally in the east has been collected at several locations in the district in the past few years
Adelges strobilobius Kalt.	bS	Few galls on one tree at English River

TABLE 14 (continued)

Insect	Host(s)	Remarks
Anchylopera sp.	W	Small numbers on one species of willow at one location in O'Connor Township
Aphrophora parallela Say	ScP,jP	Light infestation on fringe trees at several locations in Conmee and Oliver townships
Calligrapha multipunctata bigsbyana Kby.	W	Small numbers on sample trays in Paipoonge Township
Chrysomela falsa Brown	W	Adults found frequently at one location in Pyramid Township
Chrysomela sp.	W	Light skeletonizing on numerous hosts along Lac Des Mille Lac road and at scattered locations in Pyramid Township
Cimbex americana (Leach)	W	Recovered in small numbers on sample trays at numerous locations
Coleophora betulivora McD.	wB	Single larvae collected at two locations
Dasyneura serrulatae O.S.	Al	Galls caused by this insect common at one location in Fallis and Upsala townships
Eufidonia notataria Wlk.	jP	Collected in Paipoonge Township. Not recovered in other areas where beating samples taken
Eupithecia palpata Pack	jP	Found in small numbers in association with Semiothisa bicolorata at all sampling points
Fenusa dohrnii (Tischb)	Al	Light infestation on most trees along Twin city crossroads in Paipoonge Twp. and along the Pine Portage road
Galerucella decora Say	W	Moderate infestation at several locations along the Spruce River road. Defoliation averaged 40 per cent
Gypsonoma fasciolana Clem	Se	Endemic population, Sibley Peninsula
Hydriomena divisaria Wlk	wS	Few larvae on sample trays in Scoble Township
Monochamus scutellatus (Say)	bS	Numerous larvae recovered in trap logs at Marks Lake
Monoctenus fulvus (Nort.)	eC,Jun.	Small numbers recovered on tray samples in O'Connor Township, Whitefish Lake and on Sibley Peninsula
Nematus fulvicrus Prov.	W	Ave. 4 colonies per tree, Savanne Township

TABLE 14 (continued)

Insect	Host(s)	Remarks
Nematus limbatus Cress.	W	Occurred commonly on open-grown trees in Fort William, scattered colonies along Spruce River road
Neodiprion abbotti Cress	jP	Few larvae on tray samples, Paipoonge and Oliver townships
Neodiprion compar (Leach)	jP	Recovered on mat samples in Paipoonge and Oliver townships and at scattered locations along the Atikokan road
Neodiprion nigroscutum Midd	jP	Small numbers, Oliver Township
Nycteola cinereana N. & D.	bPo	Small numbers on small diameter hosts in Nipigon Township
Nycteola frigidana Wlk	W	Light populations on scattered host at Marie Louise Lake
Paratetranychus ununguis (Jac.)	jP	Very heavy populations on three trees in Fort William
Phratora americana canadensis Brown	W	One colony on fringe trees, Argon River
Phyllocolpa agama (Roh.)	W	Moderate populations on numerous trees at one location in O'Connor Township
Phyllocolpa sp.	bPo,tA	Common on small diameter hosts along Stanley road, Paipoonge Township
Pikonema dimmockii (Cress.)	wS	Found in small numbers on sample trays at numerous locations
Pineus pinifoliella Fitch	wS	Small number of galls on open-grown hosts, MacGregor Township
Pineus similis Gill	wS	Few galls on one tree at Black Sturgeon Lake
Pineus strobi (Htg.)	wP	Light infestation on several trees, Kab Lake
Pissodes approximatus Hopk.	S	Numerous adults collected from roots at one location in Paipoonge Township
Pristiphora lena Kincaid	wS	Few larvae, Devon Township
Pulicalvaria piceaella Kft.	wS	Few larvae on sample trays, O'Connor Township
Pyrrhia umbria expermens Hufn	bPo	Small numbers on small roadside hosts, Nipigon Township
Semiothisa bicolorata Fabr.	jP	Found commonly on open-grown trees in Paipoonge Township. Smaller populations recovered in Devon, Oliver and O'Connor Townships

TABLE 14 (continued)

Insect	Host(s)	Remarks
Semiothisa bisignata Wlk	wP	Small numbers, Neebing Township
Semiothisa dispunctata Wlk.	wS	Few larvae on fringe trees in Devon and O'Connor townships
Semiothisa orillata Wlk	eC	Small numbers on sample trays in Pardee and O'Connor townships
Semiothisa sexmaculata Pack	tL	Found commonly in Joynt and Upsala townships
Sternochaetus lapathi (Linn.)	W	Collected in O'Connor Township, two trees dead
Thera juniperata (L.)	Jun.	Small numbers, Sibley Peninsula
Trichiocampus irregularis (Dyar)	W	Small numbers, Argon River
Trichiosoma triangulum Kby	W	Light populations in association with Calligrapha sp., Paipoonge Township
Zeugophora sp.	bPo	Light numbers on small hosts along Spruce River and Silver Mt. roads.

STATUS OF INSECTS IN THE GERALDTON DISTRICT

V. Jansons

STATUS OF INSECTS

Larch Casebearer, Coleophora laricella (Hbn.)

Population levels of this insect remained low in the district as indicated in Table 6.

TABLE 6

Summary of Larch Casebearer Larval Counts in the Geraldton District from 1964 to 1966

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

Location (township	Av. d.b.h. of sample trees in inches	Av. no. of larvae per branch tip 1964	1965	1966
Pic	5	4.6	0.8	0.6
87	6	3.8	0.5	0.2
Croll	6	-	0.4	0.5

Wandering Sawfly, Dimorphopteryx pinguis (Nort.)

Light defoliation of white birch was observed for the second consecutive year on scattered trees in Rainbow Falls Park, Township 85. Defoliation was mainly confined to small diameter trees and did not exceed 15 per cent. Low populations were found on open-grown trees at several locations in Pic Township.

European Spruce Sawfly, Diprion hercyniae (Htg.)

Small numbers of this pest were collected at three locations in the district. The highest numbers occurred on open-grown white spruce in Pic Township where a total of 12 larvae were collected in a 15-tray sample. Prior to 1966, small numbers had been collected in 1960, 1964 and 1965.

Severe outbreaks of this introduced sawfly occurred in eastern Canada in the 1930's and 1940's. The insect was found in Ontario in 1936 and it has gradually spread throughout the province.

American Aspen Beetle, Gonioctena americana (Schaeff)

A new medium infestation of this insect was observed on scattered clumps of young trembling aspen in a large area two miles east of Chipman Lake road in O'Meara Township. The number of colonies averaged 8.2 per sample tree. Populations declined to a low level in a 3-year-old infestation at Hillsport, Division 23, and at Nakina.

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Partly because of low temperatures in May forest tent caterpillar eggs failed to hatch. This resulted in a collapse of the light infestation observed in the Blacksand Park area in 1965.

Leaf-folding Sawflies, Phyllocolpa spp.

Infestations of this insect have increased in extent and intensity in the district since 1963. In 1966 light to medium infestations were common on aspen reproduction throughout most of the district. The highest numbers of infested leaves were recorded on young aspen at Chorus Lake where 28 folds were counted on one hundred sample leaves (Table 7). Light to medium numbers of infested leaves were observed on small balsam poplar trees in Sandra and in Kowkash townships, at Klotz Lake and in the area south of Caramat.

TABLE 7

Summary of Leaf-folding Sawfly Counts in the Geraldton District in 1965 and 1966

Note: Counts are based on examination of 100 leaves taken from three trees at each location.

Location	Tree species	Av. d.b.h. in inches	Av. no. of folds per leaf	
			1965	1966
Chorus Lake	tA	2	-	.28
Rupert Twp.	tA	2	-	.23
Klotz Lake	tA	2	.38	.23
MacLeod Lake	tA	1	.19	.17
Taffy Lake	bPo	1	.23	.14
Davies Twp.	tA	2	-	.13

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

This insect was more abundant than in recent years. Small black spruce and white spruce were heavily defoliated in the Town of Geraldton and at Marathon in Pic Township. Light defoliation was observed on several black spruce trees on the south shore of Killala Lake and on scattered small white spruce in McLeod Park in Ashmore Township.

White-pine Weevil, Pissodes strobi (Peck)

For the second consecutive year a general decline in population levels was observed in the district. However, a new infestation occurred in a clump of roadside trees at Highway 11 three miles east of Flynn Lake where 13 per cent of small black and white spruce trees were weevilled. Elsewhere in the district the incidence of attack was low (Table 8).

TABLE 8

Summary of Damage by the White-pine Weevil in the Geraldton District from 1964 to 1966

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

Location	Tree species	Av. height of trees in feet	Per cent of trees weevilled 1964	1965	1966
Flynn Lake	bS, wS	3	-	-	13
Legault Twp.	bS	7	16	11	4
Goldfield rd.	jP	6	-	-	3
Rupert Twp.	bS	8	9	6	1
Stevens, Div. 23	bS	6	7	4	1
McComber Twp.	bS	8	7	4	1
Maple rd.	bS	6	8	4	0
Stevens, Div. 23	jP	4	3	1	1
Creelman Creek	bS	6	7	2	0
Peterson Creek	bS	4	3	2	1

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Populations of this insect increased in two areas. The number of infested leaves increased from 2 per cent in 1965 to 26 per cent in 1966 in an extensive young white birch stand at Caramat (Table 9). Small pockets of severe leaf mining were observed on understory trees at Pamela Lake and along the north-east shore of Lukinto Lake. A medium infestation continued at Longlac.

The second population increase occurred at Leonard Lake, Kilkenny Township, where about 90 per cent of the foliage of small understory was infested. Small numbers of infested leaves were found on scattered trees in the Auden road area, at Castlebar Lake, south of Caramat, in Sandra, Ledger and Pic townships and in townships 87, 86, and 83.

TABLE 9

Summary of Damage by the Amber-marked Birch Leaf Miner in the Geraldton District from 1964 to 1966

Note: Counts are based on examination of 100 white birch leaves at each location.

Location	No. of mined leaves			Av. no. of mines per leaf		
	1964	1965	1966	1964	1965	1966
Longlac	70	43	38	2.64	1.26	1.33
Caramat	0	2	26	0	.02	.31
Pays Plat	26	6	0	.47	.08	0

Spruce Bud Gall Midge, Rhabdophaga swainei Felt

Populations of this insect increased in 1966. Pockets of new light infestations were observed on small open-grown white spruce at Jackfish Lake in Township 82 and along the Goldfield road in Division 17. A light infestation persisted for the third consecutive year in Township 84. Population levels at sample points are shown in Table 10.

TABLE 10

Summary of Damage by the Spruce Bud Gall Midge in the Geraldton District from 1964 to 1966

Note: Counts were based on the examination of five branch tips from each of ten trees.

Location	Tree species	Av. d.b.h. in inches	No. of shoots examined	Per cent of terminal buds infested		
				1964	1965	1966
Goldfield rd	bS	1	157	-	-	8.0
Township 84	bS	1	162	8.0	7.3	7.3
Jackfish Lake	wS	2	159	-	-	6.8
Pic Twp.	wS	1	164	1.2	.7	1.3
Croll Twp.	bS	1	153	.0	1.3	2.0
Rainbow Falls	wS	2	161	2.0	.7	.0

TABLE 11

Miscellaneous Insects Collected in Geraldton District in 1966

Insect	Host(s)	Remarks
Acleris variana Fern.	wS, bF	Small numbers in beating samples in the south-eastern part of the district
Adelges abietis Linn.	wS	Light populations on scattered trees at Steel Lake
Adelges lariciatus (Patch)	wS	Small numbers
Altica corni Woods	Do	Light defoliation of shore shrubs continued at Chipman Lake; severe defoliation of scattered shrubs in Croll Twp.
Altica tombacina shoemakeri Schffr.	fireweed	Light populations on several plants at Marshall Lake, Div. 80
Ancylis mediofasciana Clem.	pCh, Se	Small numbers of leaf tiers at two collection points; uncommon insect
Anomogyna elimata Gn.	wS	Small numbers in spruce plot
Anoplonyx luteipes (Cress.)	tL	Collected in beating samples
Aphrophora parallela Say	wS	Small numbers in Pic Twp.
Archips cerasivoranus (Fitch)	tA	Five colonies in a sq. chain plot east of Longlac; generally populations very low
Badebecia urticana Hbn.	wB	Small numbers on scattered trees in Sandra Twp.
Brephos infans Moesch.	wB	Small numbers in beating samples at Hourglass Lake and in Twp. 87; rare insect in Ontario
Campaea perlata Gn.	Al, wB W, bF	Small numbers in beating samples at widely scattered points; first collection since 1961
Caripeta angustiorata Wlk.	jP	Small numbers in beating samples; rare insect
Choristoneura fumiferana (Clem.)	wS	Small numbers in beating samples at eight widely separated collection points
Chrysomela crotchi Brown	tA	Light defoliation of small trees at three locations in the western part of the district
Cimbex americana Leach.	Al, wB, W	Small numbers in beating samples
Compsolechia niveopulvella Chamb	tA	Light leaf roller populations on scattered trees in Exton, Kilkenny, and Chipman twps. and in the Auden road area

TABLE 11 (continued)

Insect	Host(s)	Remarks
Dasyneura balsamicola (Lint)	bF	Small numbers on scattered trees
Deilinia erythemaria Gn.	W, Al	One larva in each of four beating samples; first record for the district
Depressaria betulella Busck.	wB	Small numbers in beating samples
Depressaria heracliana Linn.	Wild parsnip	Found feeding in seeds of this plant at one location in Twp. 80
Dioryctria reniculella Grt.	wS	Small numbers common at Nakina
Ectropis crepuscularia Schiff	W	Collected in beating samples
Epinotia corylana McD.	Al	Sixty six per cent of sampled cones infested in Sandra Twp.; light incidence in Chipman Twp.
Epinotia cruciana Linn.	W	First record for the district
Epinotia lindana Fern.	Do	Light leaf tier population on small shrubs in MacLeod Park, Ashmore Twp., first record for the district
Eufidonia notataria Wlk.	jP	Small numbers in beating samples at three locations; first record for the district
Eupithecia filmata Pears	wS, bF	Common insect in beating samples
Eupithecia gelidata Moesch	wB, W	Small numbers in beating samples
Eupithecia palpata Pack	jP	Small numbers in beating samples
Eupithecia ravocastaliata Pack.	W	One larva in beating samples, first record for the district
Eupithecia transcanadata McK.	wS	Small numbers in beating samples
Feralia jacosa (Grt.)	wS	Small numbers in beating samples
Gonioctena notmani (Schaeff.)	W	Light to medium populations on scattered willow clumps through the Castlebar and Klotz Lake area
Gracillaria alnivorella Cham.	Al	Light populations at Castlebar Lake tower road, Div. 23
Gracillaria invariabilis Braun	pCh	Leaf rollers collected on small trees in Ashmore Twp.
Gracillaria sp.	wB	Light infestation of leaf rollers on understory trees at Hourglass Lake, Div. 23
Grapholita prunivora Walsh	pCh	Found in cherry black knot cankers
Hemichroa crocea (Four)	Al	Occasional colony
Hydriomena divisaria Wlk.	Al	Uncommon insect
Hypagirtis piniata Pack.	bF	Collected in balsam fir plot
Hyperetis amicaria H.S.	Al	Rare insect in the district
Lithocolletis salicifoliella Chamb	W, tA	Light infestation of blotch miners on small roadside willows at Longlac; populations remained extremely low on aspen throughout the district

TABLE 11 (continued)

Insect	Host(s)	Remarks
Macremphytus varianus (Nort.)	Do	Defoliation decreased from severe in 1965 to light in 1966 on shore shrubs at Wildgoose Lake, Colter Twp.
Malacosoma pluviale (Dyar)	pCh, wB, Se	Populations declined at all sample points; highest counts 3 tents per one mile of roadside in Twp. 85
Meadoris lateralis Say	Al	Numerous adults in beating samples at one location in Twp. 87
Mindarus abietinus Koch.	bF	Light populations of twig aphids common in Summers and in Kilkenny townships
Nadata gibbosa A. & S.	wB, Se	Small numbers in beating samples
Nematus hyalinus (Nort.)	W	One small tree heavily infested by this gall-making sawfly in Summers Twp.
Neodiprion abietis complex	wS, bS, bF	Scattered colonies on shore black spruce at Killala Lake; small numbers in beating samples at ten widely scattered collection points through the district
Neodiprion compar (Leach)	jP	Single larvae in beating samples at three collection points
Neodiprion nanulus nanulus Schedl	jP	Two colonies on ten sample trees in Summers Twp.
Neodiprion nigroscutum Midd.	jP	Small numbers in beating samples
Neodiprion pratti banksianae Roh.	jP	Single colonies
Neodiprion virginianus complex	jP	Numerous colonies on one tree in Kitto Twp., small numbers at other collection points
Nycteola cinereana N. & D.	bPo	Light infestation of small shore trees at Pijitawabik Bay, Kilkenny Twp. and at Lucy Lake in Kowkash Twp.
Nycteola frigidana Wlk.	W	Light population on shore shrubs at Killala Lake
Nyctobia limitaria Wlk.	wS, bF	Small numbers in beating samples
Nymphalis antiopa (Linn.)	W	One infested clump of willows at Coldwell, Twp. 78
Pachysphinx modesta Harr.	tA	Two larvae, first district record
Papilio glaucus Linn.	wB	Small numbers in beating samples

TABLE 11 (continued)

Insect	Host(s)	Remarks
Phratora americana canadensis Brown	W	Small scattered colonies on roadside trees at Caramat; rare insect
Phratora hudsonia Brown	wB	Light populations of this rare insect on several understory trees in Rainbow Falls Park, Twp. 85
Phyllocnistis populiella Chamb.	tA, bPo	Small numbers of leaf miners at two collection points
Pikonema dimmockii (Cress.)	wS, bS	Small numbers common in beating samples throughout the district
Pineus similis Gill.	wS	One heavily infested tree in Twp. 88
Plagodis alcoolaria Gn.	wB, Al, W	Small numbers in beating samples at widely scattered points
Pleroneura borealis Felt	bF	Light populations in Summers and Legault twps.
Pristiphora lena Kincaid	wS	Small numbers in beating samples
Pseudexentera oregonana (Wlshm)	tA	Light leaf roller activity in Exton and Chipman townships and in the Auden road area
Pyrrhia exprimens Wlk.	bPo	Pockets of lightly defoliated small trees in Kowkash and Coltham twps.
Rhabdophaga batatas (Walsh)	W	One infested twig
Rheumaptera hastata Linn.	Al	Populations at an extremely low level
Saperda moesta Lec.	tA	Poplar borer infested small trees occur in Croll Twp., in the Caramat area and at Hillsport
Sciaphila duplex Wlshm.	tA	Small numbers
Scoliopteryx libatrix Linn.	W, Al	Two parasitized larvae in beating samples; first district record
Semiothisa bicolorata Fabr.	jP	Occur in beating samples
Semiothisa dispuncta group	wS	Small numbers in beating samples
Semiothisa sexmaculata Pack.	tL	Conifer loopers collected in beating samples
Tenthredinidae #9	Al, wB	Small numbers
Tenthredinidae #14	W	Solitary feeding larvae collected on a small shrub
Tenthredinidae #29	W	Small numbers in beating samples

TABLE 11 (continued)

Insect	Host(s)	Remarks
Tenthredinidae #40	Al	Small numbers
Trichiocampus irregularis (Dyar)	W	Several colonies found on shade trees in the town of Geraldton; occasional feeding at other sample points
Trichiosoma triangulum Kby.	W	Small numbers in beating samples
Zeiraphera ratzeburgiona Ratz.	wS	Light numbers of infested shoots at MacDiarmid

WESTERN REGION

1966

STATUS OF INSECTS (REGIONAL)

STATUS OF TREE DISEASES (REGIONAL)

INTRODUCTION

Western Forest Region

This report deals with major insect and disease conditions common to all districts in the Region as well as those pertaining to individual districts.

The collapse of the forest tent caterpillar outbreak was the most noteworthy development in the Region in 1966. The area of severe infestation decreased by approximately 25,000 square miles. Although spectacular, the decline was not surprising in Kenora and Sioux Lookout districts because population levels had reached a peak and natural control factors were becoming increasingly effective.

Infestations of the jack-pine budworm increased in extent and intensity, particularly in the Kenora District, where the area of severe defoliation increased by 5000 square miles compared with 1965. Larch sawfly and balsam-fir sawfly populations increased but a reduction in pine sawfly numbers occurred. Scleroderris canker of pine caused by Scleroderris lagerbergii Gremmen was recorded for the first time in the Region near Ignace.

The Timber Division of the Department of Lands and Forests initiated a tubeling planting program in the Region in 1966. The method used in growing the seedlings created a favourable environment for cutworms. As a result an infestation of the variegated cutworm occurred on the tubelings at Ignace. Fortunately, the infestation was discovered before extensive losses occurred and appropriate control measures were taken.

In 1966, Mr. H. J. Weir assumed responsibility for the work of the Forest Insect and Disease Survey in the Kenora Forest District.

Sincere appreciation is expressed for the assistance given to field technicians by Woods Operators and Department of Lands and Forests personnel.

P. E. Buchan

Forest Tent Caterpillar, Malacosoma disstria Hbn.

After increasing for six consecutive years, a spectacular decline in the extent of the forest tent caterpillar outbreak occurred in the Region in 1966. Aerial and ground surveys revealed that heavy infestations were confined to an area of approximately 4200 square miles representing a reduction of about 25,000 square miles compared with 1965. This decline was almost identical to that reported in the previous outbreak in the Region (1948-1954) when a reduction of 20,000 square miles in the extent of heavy infestations occurred in 1953 in Sioux Lookout and Kenora districts.

In both instances the decline was attributed to severe weather conditions. In 1966, the first three weeks in May, when caterpillars normally emerge and begin feeding on newly-opened aspen buds, were unusually cool. Weather records for this period showed an average daily high of 50.3 degrees and an average low of 31.3 degrees. Apparently these temperatures activated the larvae but were not sufficiently high to cause hatching. As a result the larvae consumed their food reserves before conditions were favourable for emergence and died inside the egg or before becoming established on the foliage. In contrast, in 1953, unusually high temperatures prevailed from May 3 to May 9, and temperatures reached a high of 89° F. and averaged 78° F. for seven days. Hatch records showed 85 per cent emergence by May 9. On May 10 snow fell and temperatures declined, remaining low for four days, during which a low of 19° F. was recorded. The storm and freezing temperatures completely destroyed the leaves and new shoots of trembling aspen. As a result larvae that survived the freezing conditions, and those that hatched later, starved. Thus the last two outbreaks in the Western Region have been terminated largely by weather. The effectiveness of weather as a control factor is not restricted to Ontario being reported in the United States by, Blackman, Tomlinson, Sweetman and Hodgson in 1918, 1938, 1940 and 1941 respectively.

The only area of heavy infestation in the Region in 1966 was located in the eastern two-thirds of Fort Frances District. An area of light infestation comprising approximately 700 square miles occurred to the north of the main body of heavy infestation. Map (1).

The highest populations were on hills and ridges with a southerly exposure. In many instances no egg hatch occurred in valleys or on northern slopes. Examination of egg bands from eight points in Kenora and Sioux Lookout districts and from five points in Fort Frances District revealed that less than 50 per cent of the potential larval population emerged (Table 1).

TABLE 1

Summary of Per Cent Forest Tent Caterpillar Egg Hatch from Random Samples in the Western Region in 1966

Location	Per cent failed to emerge		Per cent para-sitized		Per cent diseased		Per cent sterile		Total per cent egg hatch	
	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966
Sioux Lookout District	31.0	51.0	1.0	0.7	-	3.4	8.0	23.0	60.0	21.9
Kenora District	8.0	50.3	1.3	2.6	-	3.3	9.0	6.0	81.7	37.8
Fort Frances District	15.0	46.7	4.0	1.5	-	4.9	11.0	8.6	70.0	38.3

Populations were further decimated in the late larval and cocoon stages. High numbers of dead late instar larvae were observed on tree trunks and understory in the Rocky Islet Bay area of Rainy Lake. Diagnosis at the Insect Pathology Research Institute revealed that the mortality was caused by a polyhedral virus disease. Dissection of cocoons at five points in Fort Frances District revealed that 82 per cent of the caterpillars were parasitized, five per cent were diseased and two per cent were killed by predators and other agents (Table 2).

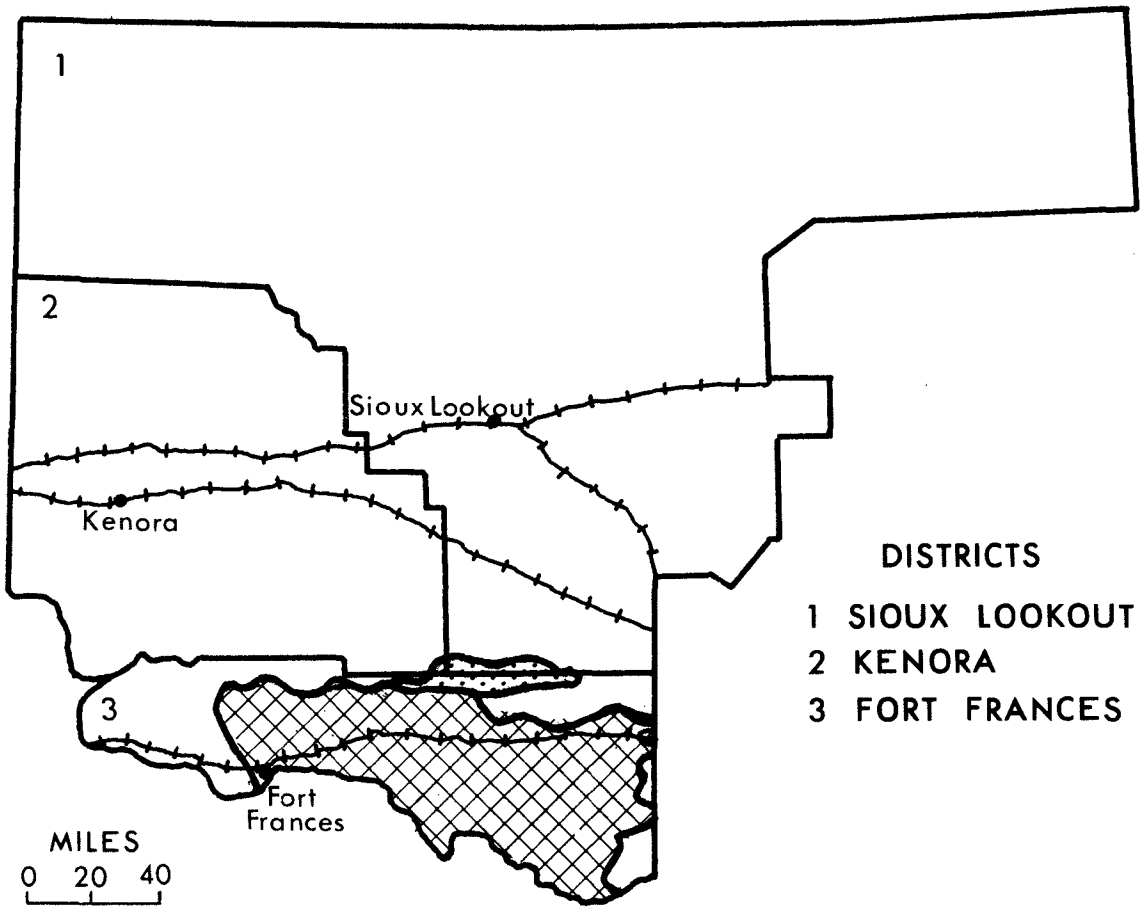
TABLE 2

Summary of Forest Tent Caterpillar Cocoon Dissection in the Western Region in 1966

Note: Counts are based on examination of 100 cocoons at each point, Fort Frances District.

Location	Per cent parasitized			Per cent diseased			Per cent mortality other causes			Total per cent cocoon mortality
	1964	1965	1966	1964	1965	1966	1964	1965	1966	1966
Atikokan	37	72	94	6	-	0	-	-	0	94
East District Boundary	-	-	88	-	-	4	-	-	0	92
Quetico Lake	-	70	81	-	-	4	-	-	6	91
Sandpoint Is. Rainy Lake	65	70	74	4	-	11	-	-	5	90
Crozier Township	-	-	75	-	-	5	-	-	1	81

WESTERN FOREST REGION



FOREST TENT CATERPILLAR

Area in which defoliation occurred in 1966

Legend

Light defoliation . . . . . .

Moderate to severe defoliation . . .

Egg band counts made at 14 widely-separated points in the region indicate that defoliation of aspen stands will range from light in the southern parts of Kenora and Sioux Lookout districts to severe in the southern part of the Fort Frances District in 1967. In all but two of the areas sampled, a decline in average number of egg bands per tree was recovered (Table 3).

Records show that high numbers of cocoon parasites and a general decline in numbers of egg bands after several years of heavy infestation herald the termination of an outbreak. This could apply in older areas of infestation in Fort Frances District in 1967.

TABLE 3

Summary of Forest Tent Caterpillar Egg Band Counts and Infestation Forecasts for 1967 in the Western Region

Location	Av. d.b.h. in inches	Av. no. egg bands per tree 1964	1965	1966	Forecast for 1967
Sioux Lookout District					
Little Gull Lake	5	-	-	2.0	Light
Kenora District					
Bernadine Lake	12	-	-	1.0	Light
Eltrut Lake	4	-	-	0.6	Light
Fort Frances District					
*Robinson Lake	8	-	4	100.0	Severe
Quetico Lake	4	-	23	15.0	Severe
*McKenzie Lake	4	-	-	19.0	Severe
Foresburg Lake	4	-	-	2.0	Light
Pipestone Lake	4	-	-	0.3	Light
*Windigoostigwan Lake	5	-	53	21.0	Severe
Atikokan Area	5		33	2.6	Light
*Sandpoint Is. Rainy Lake	5	7	17	30.0	Severe
Northeast Bay " "	5	19	31	4.3	Light
Northwest Bay " "	4	-	23	9.0	Moderate
Kingsford Twp.	4	-	-	2.3	Light

Note: * Only one tree sampled at each point.

A Needle Rust of Pine, Coleosporium asterum (Diet.) Syd.

Infection by this organism was generally light throughout the region, however, heavy infection occurred on Red Pine in Pott's Township and on jack pine in Miscampbell Township in Fort Frances District. Moderate infection was observed in Devonshire and Melgund townships in Kenora District. Usually the most severe infections occurred on seedlings and saplings but rarely caused mortality. Results of quantitative sampling carried out at seven points in the western region are shown in Table 4.

TABLE 4

Summary of Incidence and Severity of Coleosporium asterum on Pine in the Western Region in 1966

Location	Tree sp.	Av. d.b.h. in inches	No. of trees examined	Per cent of trees infected	Degree infection
Sioux Lookout District					
Peggy Lake	jP	2	25	56	Heavy
Dyment Twp.	jP	5	25	28	Moderate
Jordon Twp.	jP	4	25	24	Moderate
Fort Frances District					
Plateau Lake	jP	1	10	10	Light
Niobe Lake	jP	1	10	10	Light
Potts Twp.	jP	6	10	100	Heavy
Miscampbell Twp.	rP	2	10	100	Heavy

Foliage Rust of Spruce, Chrysomyxa ledi de Bary

An increase in the incidence of this organism occurred in Sioux Lookout and Kenora districts, but a decrease in size of areas affected and numbers of shoots attacked was observed in Fort Frances District.

Severe infection of the current year's foliage of pole size and regeneration black spruce occurred in stands from Savant to Pickle Lake and along the Norway Lake Road near the English River in Sioux Lookout District. Small areas of severe infection were also observed in Wabigoon and Mutrie townships in Kenora District and at Williamson Lake and Sapawee in the eastern part of Fort Frances District. Quantitative sampling in severely infected areas showed that 100 per cent of the current foliage was affected in some instances (Table 5).

Light to moderate infection was observed at several locations from Highway 17 to the town of Sioux Lookout in Sioux Lookout District; in Redvers, Keewatin and Docker townships in Kenora District; and in Kingsford and Sifton townships in Fort Frances District. Small numbers of affected shoots were observed at widely-scattered locations elsewhere in the region.

TABLE 5

Summary of Incidence of Infected Spruce Shoots at Ten Locations in the Western Region in 1966

Note: Counts are based on examination of current year's shoots from ten 18-inch branch tips of five sample trees at each point.

Location	Tree species	Av. d.b.h.	No. trees infected	No. available shoots	Per cent infected	Degree of infection
Sioux Lookout District						
10 mi. South of Savant	bS	2	5	412	100.0	Heavy
15 mi. North of Savant	bS	2	5	403	100.0	Heavy
Norway Lake Rd.	bS	2	5	392	100.0	Heavy
Suzanne Lake	wS	3	5	368	11.0	Light
Gullwing Lake	wS	4	5	335	14.0	Light
Pickle Lake	bS	1	5	362	100.0	Heavy
Fort Frances District						
Williamson Lake	bS	2	5	487	51.3	Heavy
Sifton Twp.	bS	1	3	422	37.4	Moderate
Kingsford Twp.	wS	1	5	241	6.7	Light
Sapawee Road	bS	1	5	407	78.2	Heavy

Foliage Rust of Mountain Ash, Gymnosporangium sp.

This disease was common throughout the region with heavy infections occurring at Rainy Lake in Fort Frances District; south of Red Lake in Sioux Lookout District; and in Temple Township and at Perrault Falls on Highway 105 in Kenora District. The results of quantitative sampling in Fort Frances and Sioux Lookout districts is given in Table 6.

TABLE 6

Summary of Infection of Mountain Ash Caused by Gymnosporangium sp. in the Western Region in 1966

Note: Based on the examination of 100 randomly chosen leaves.

Location	Per cent of leaflets infected	Degree of infection
Sioux Lookout District		
Highway 105	41	Moderate
Sturgeon Lake	18	Light
Detector Lake	12	Light
Highway 72	6	Light
Savant Lake	4	Light
Fort Frances District		
Rainy Lake	75	Heavy
Oliphant Lake	5	Light
Kairaskons Lake	8	Light

Hypoxylon Canker of Poplar, Hypoxylon mammatum (Wahl.) Miller

Little change in the status of this disease occurred in 1966. Surveys showed that, as in past years, diseased trees occurred in most trembling aspen stands throughout the region.

Examination of aspens in nine sample plots established in different age and site classes showed that, in 1966 the highest mortality occurred in uneven-aged stands on the shore of Northwest Bay, Rainy Lake in Fort Frances District (Table 7). Records from 1963 to 1966 indicate that Hypoxylon canker of poplar has caused approximately 62 per cent of the total mortality of poplars in stands where studies were made.

TABLE 7

Summary of New Infection and Per Cent Mortality in Sample Plots in Trembling Aspen Stands at Nine Locations in the Western Region in 1966

Location	Av. d.b.h. in inches	Site quality	Per cent incidence new infection 1966	Per cent incidence new mortality 1966	Total per cent mortality 1966	Total per cent mortality all causes 1966
Sioux Lookout District						
Red Lake	6	Fair	0	0	25	28
Ear Falls	6	Good	0	0	0	0
Fort Frances District						
Redgut Bay Rainy Lake	4	Good	0	0	4	6
Northeast Bay Rainy Lake	6	Poor	3	1	12	20
Northwest Bay Rainy Lake	4	Fair	4	4	13	20
Eltrut Lake	5	Fair	7	0	6	10
Kingsford Twp.	3	Good	0	1	1	12
Claxton Twp.	3	Good	0	0	0	4
Dobie Twp.	2	Good	0	0	0	2

Eastern Gall Rust, Peridermium spp.

This organism was prevalent throughout the region, but severe infection centres were observed in Mutrie and Keewatin townships, and near Sakwite Lake in the southern part of the Kenora District. Galls were commonly found near Williamson Lake north of Atikokan in Fort Frances District, and at six sidely-separated locations in Sioux Lookout District (Table 8).

TABLE 8

Summary of Infection of Peridermium sp. on Jack-pine Trees in 1966

Counts were based on the examination of 50 trees at each location, Sioux Lookout District.

Location	Av. d.b.h. in inches	Av. height in feet	Per cent of trees infected
Baird Twp.	2	12	28
Block 10	3	18	52
Corman Twp.	2	5	24
McIlraith Twp.	2	8	38
Pickle Lake	3	15	2
Sandbar Lake	2	7	30

Leaf and Twig Blight of Poplar, Pollacia radiosa Serv.

A decline in the incidence of this leaf and twig blight occurred in the region in 1966. Generally, smaller numbers of blighted shoots were observed in Kenora District, especially in Mutrie Township where examination of 100 regeneration aspen, averaging two feet in height, revealed 160 affected shoots.

Results from quantitative sampling show that incidence of infection was moderate to high in Sioux Lookout District and low to moderate in Fort Frances District (Table 9).

TABLE 9

Summary of Incidence of Leaf and Twig Blight on Regeneration in the Western Region in 1966

Counts were based on examination of available shoots on the top 3-foot section of the crown on each of ten trembling aspen trees at each point.

Location	Av. d.b.h.	No. trees infected	No. of available shoots	Per cent infected	Degrees of infection
Sioux Lookout District					
Block 10	1	10	43	51	Moderate
Norway Lake Road	1	10	51	31	Moderate
Skey Township	1	10	39	23	Light
Valora Road	1	10	63	38	Moderate
Wenasaga Road	1	10	59	50	Moderate
Fort Frances District					
Dewart Township	1	3	181	4	Light
Pratt "	1	10	143	49	Moderate
Shenston "	1	1	227	1	Light

Foliage Rust of Balsam-fir, Pucciniastrum epilobii Otth.

Little or no change in the levels of infection of balsam-fir was observed in the region in 1966. Small areas of severe infection occurred on fringe trees near Perrault Falls, along Highway 70 in Work Township, Kenora District, and 15 miles north of Pickle Lake in Sioux Lookout District. Light infection centres were observed near Vermilion Bay, Langdon Township, Blue Lake, Smellie Township, and on Rabbit Point Island in Lake of the Woods, Kenora District; near Bear Pass on Highway 11, Fort Frances District; and at six locations in Sioux Lookout District (Table 10).

TABLE 10

Incidence of Infection of Balsam Fir Foliage by P. epilobii Otth. at Six Points in the Western Region

Counts were based on examination of all available shoots on ten 18-inch branch tips, two from each of five trees at each point, Sioux Lookout District.

Location	Av. d.b.h. in inches	No. of trees infected	No. of available shoots	Per cent infected
Butterfly Lake	5	3	295	7
Centrefire Lake	4	5	418	10
Crow River	3	5	351	32
Frog Rapids	2	5	411	15
Gullwing Lake	3	5	384	13
Sandbar Lake	2	4	372	10

Scleroderris Canker of Pine, Scleroderris lagerbergii Gremmen

The fungus S. lagerbergii Gremmen, apparently the causal organism of a canker in pine, was associated with stem tissue necrosis of red pine stock planted in 1964 in Skey Township, near Ignace. Survey data of 1966 shows one per cent mortality and two per cent infection levels.

Drought Injury of Jack Pine

A general decline in the deterioration of jack pine trees caused by drought condition in 1964 has occurred in the southern part of the Lake of the Woods area. Records taken at three permanent sample plots show a reduction of tree mortality from 39 per cent in 1964 to 2 per cent in 1966 (Table 11).

TABLE 11

Summary of Jack-pine Mortality at Three Points Where Deterioration Attributed to Drought Occurred in the Western Region from 1964 to 1966

Location	No. of trees examined	Av. d.b.h. in inches	Approx. age of stand in years	Per cent stem mortality 1964	1965	1966	Total per cent mortality all years
Aulneau Peninsula*	223	3.8	25-30	19.6	2.6	0.4	22.6
Sabaskong Bay	95	6.2	60-70	39.9	11.5	0.0	51.4
Morson Twp.	171	2.3	20-25	35.6	11.6	2.3	49.5

* Fair site

TABLE 12

Other Noteworthy Diseases in the Western Region in 1966

Organism	Host(s)	Remarks
Armillaria mellea Fries Kummer	rP	Infected tree newly dead at Kathryn Lake Div. 25
Cronartium ribicola J.C. Fischer	ribes, wP	This disease found through most of Western Region
Cytospora chrysosperma (Pers.) Fries	bPo, W	Branch and tip mortality was light at several locations
Dibotryon morbosum (Schw.) Theiss. & Syd.	rCh	Found throughout region in varying degrees. Will cause tree mortality
Erwinia amylovora (Burr.) Winsl. et al	crab apple	Single tree heavily infected in Atikokan
Erysiphe aggregata (Pack) Farlow	Al	Fruit on clumps affected with this rust at Upper Goose Lake Div. 26
Hendersonia pinicola Wehm.	jP	One tree moderately affected in Aubrey Twp., Kenora District
Hypodermella ampla (J. J. Davis) Dearn.	jP	Heavy infection in Tweedsmuir Twp. Kenora District, Mine Centre, Fort Frances District
Hypoxylon mammatum (Wahl.) Miller	W	A single clump affected on an island in Lake of the Woods

TABLE 12 (Continued)

Organism	Host(s)	Remarks
Lophodermium pinastri (Schrad ex Fries) Chev.	jP	Found on one tree in Pratt Township Fort Frances District
Melampsora epitea Thuem.	W	This rust on the leaves and small stems occurs throughout the region in varying degrees
Melampsora medusae Thuem.	eL	Light infection in Sioux Lookout and Fort Frances districts
Melampsorella caryophyllacearum Schroet.	bF	Witches broom can be found in small numbers throughout the region
Melampsoridium betulinum (Fries) Kleb.	dB	Leaf spotting moderate along Badesdawa River north of Pickle Lake
Pezicula livida (Beak. & Br.) Rehm	rP	One tree infected in Zealand Township Kenora District
Pezicula ocellata (Pers.) Seaver	tA	Light infection in Desmond Township Kenora District
Polyporus hirsutus (Wulf.) Fries	wB	Found on slash north of Ignace
Rhytisma punctatum (Pers.) Fries	moM	This leaf disease is widespread and usually light to moderate infection occurs
Rhytisma salicinum (Pers.) Fries	W	Light infection caused by this leaf spot occurred at Wapesi and Upper Goose Lake in Sioux Lookout District

STATUS OF INSECTS IN THE SIOUX LOOKOUT DISTRICT

P. E. Buchan

Black-headed Budworm, Acleris variana (Fern.)

This insect increased in numbers from 1961 to 1964. A marked decline in population levels occurred in 1965 and 1966 (Table 13).

TABLE 13

Summary of Black-headed Budworm Larval Counts on 15 Mat Samples from 12 Points in the Sioux Lookout District in 1966

Location	Tree sp.	Av. d.b.h. in inches	Total number of larvae per sample 1964	1965	1966
Dewan Twp.	bF	4	6	6	2
Sowden Lake	wS	4	11	1	1
Split Lake	wS	4	7	3	2
Norway Lake	bS	5	5	71	3
White Otter Lake	wS	3	26	11	1
Ilsley Twp.	bS	3	20	6	2
McAree Twp.	wS	3	14	0	1
Vermilion Add. Twp.	bS	3	24	11	1
Gulliver Lake	wS	4	-	-	1
Gulliver Lake	bF	1	-	-	3
Greytrout Lake	bS	1	-	-	2
Suzanne Lake	wS	3	-	-	1

Jack-pine Budworm, Choristoneura pinus Free.

In 1966 a small pocket of light-to-medium infestation was observed at Crook Lake in the southwestern corner of the Ignace Division. This marks the first time in twenty years that a jack-pine budworm infestation has been recorded in the district east of Sioux Lookout. Previous infestations in 1945 and 1954 occurred west of Highway 105 in Division 26.

A Bark Beetle of Jack Pine, Conophthorus sp.

Light infestations of this insect occurred commonly on open-grown jack pine trees in the district. The numbers of damaged twigs increased appreciably in Revell and Vermilion Additional townships compared with 1965 and the insect was abundant in Pickerel Township (Table 14). Near Suzanne Lake the apical three inches of the terminals of numerous 4-foot jack pine were killed.

TABLE 14

Summary of Damage Caused by Conophthorus sp. on Jack Pine Trees in the Sioux Lookout District from 1964 to 1966

Location	No. of trees examined	Av. d.b.h. in inches	No. of trees attacked			Total no. of damaged shoots		
			1964	1965	1966	1964	1965	1966
Revell Twp.	50	4	16	19	24	23	29	35
Vermilion Add. Twp.	50	3	5	9	16	5	11	21
Highway 105	50	2	3	3	2	3	5	2
Echo Twp.	25	3	2	0	1	2	0	1
Sandbar Lake	100	2	-	1	3	-	1	3
Pickerel Twp.	50	3	-	-	25	-	-	37

European Spruce Sawfly, Diprion hercyniae (Htg.)

Population levels of this insect were about the same as in 1965, except at Sowden Lake where sampling revealed a negative count (Table 15). Two generations of this insect occur annually, the first in early July and the second in September. Early autumn frosts are a controlling factor during the second generation.

TABLE 15

Summary of European Spruce Sawfly Larval Counts made in July in the Sioux Lookout District in 1965 and 1966

Location	Tree species	Av. d.b.h. in inches	Total no. of larvae per 15-tray sample	
			1965	1966
Norway Lake Rd.	wS	4	4	3
White Otter Lake	wS	3	4	3
Sowden Lake	wS	3	4	0
Pekagoning Lake	bS	3	-	2

White-pine Shoot Borer, Eucosma gloriola Heinr.

Pockets of light infestation occurred at several locations in the District in 1966. Population levels varied at sample locations, the highest occurring at Sandbar Lake near Ignace and the lowest in McIlraith Township near Sioux Lookout (Table 16).

TABLE 16

Summary of Terminal and Lateral Shoot Damage by the White Pine Shoot Borer on 100 Jack-pine Trees at Each Point in the Sioux Lookout District from 1964 to 1965

Location	Av. d.b.h. of trees in inches	No. of trees attacked			No. of shoots attacked					
					Laterals			Leaders		
		1964	1965	1966	1964	1965	1966	1964	1965	1966
Echo Twp.	3	28	6	5	14	2	1	24	4	5
McIlraith Twp.	2	32	14	1	9	8	0	27	9	1
Sandbar Lake	2	11	23	23	3	8	8	9	18	19
Corman Twp.	2	6	1	17	1	0	0	6	1	17
Vermilion Add. Twp.	2	23	7	19	2	1	3	22	6	17
Cathcart Twp.	2	-	-	2	-	-	1	-	-	1

Hemlock Looper, Lambdina fiscellaria fiscellaria Gn.

Intensive surveys throughout the district revealed a marked decrease in population levels of this looper in 1966 (Table 17). This decline followed an increase in abundance of the insect between 1963 and 1965.

TABLE 17

Summary of Hemlock Looper Larval Counts in the Sioux Lookout District from 1964 - 1966

Location	Tree species	Av. d.b.h. in inches	Total no. of larvae per 15-mat sample 1964	1965	1966
Uchi Road	wS	3	1	1	1
Dien Lake	bF	4	4	8	2
Split Lake	wS	4	9	8	1
Echo Twp.	wS	3	3	2	2
Dewan Twp.	bF	5	14	24	4
Ilsley Twp.	wS	3	-	15	1
Sturgeon Lake	wS	4	-	6	1
Gour Twp.	bF	4	-	21	0
White Otter Lake	bF	3	-	-	2
Kabikwabik Lake	bF	4	-	-	1

Western Tent Caterpillar, Malacosoma pluviale Dyar

A marked decline in the population levels of this insect occurred in the district in 1966 (Table 18). This trend was most noteworthy in Vermilion Additional Township and along the access road north of Sioux Lookout.

TABLE 18

Summary of Western Tent Caterpillar Colony Counts in the Sioux Lookout District from 1964 to 1966

Location	No. of tents per mile of roadside 1964	1965	1966
Vermilion Add. Twp.	34	22	4
Deception Bay Rd.	11	25	3
Echo Twp.	9	2	0
Baird Twp.	6	2	0
Mi 38 Valora Rd.	10	3	2
Drayton Twp.	2	3	0
Suzanne Lake	1	-	2

A Jack-pine Sawfly, Neodiprion maurus Rohwer.

Population levels of this jack-pine defoliator have never attained infestation proportions in the district. The highest number recorded was in 1960 when as many as 18 colonies per tree were reported. In 1965 the insect occurred more commonly than for several years, but declined in 1966. Quantitative sampling revealed negative counts at all sample points except at Norway Lake Road where 1 colony was found. Six colonies were recorded at Irene Lake in Division 19.

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

Increases in population levels of this sawfly were recorded in 1966, particularly in Ignace Division. Light infestations occurred on jack pine in Dewan Township and at Mameigwess Lake (Table 19). Elsewhere in the district scattered colonies were observed commonly.

TABLE 19

Summary of Red Pine Sawfly Colony Counts on 10 Jack Pine Trees at Each Location in Sioux Lookout District in 1965 and 1966

Location	Av. d.b.h. of trees in inches	Total no. of colonies found 1965	1966
Dewan Twp.	3	6	8
Martin Road	2	2	2
Drayton Twp.	2	1	1
Pickerel Twp.	3	2	0
Lower Scotch Lake	4	-	5
Mameigwess Lake	3	-	8
Irene Lake	4	-	4

Black-headed Jack Pine Sawfly, Neodiprion pratti banksianae Roh.

No appreciable change in numbers of this insect was noted in 1966. The highest number of colonies was observed in Division 19 approximately 12 miles south of Highway 17 at Split Lake on the Norway Lake road (Table 20).

Early in the field season extensive surveys were carried out to locate egg clusters of this sawfly for Dr. C. R. Sullivan. The number of clusters found was insufficient and the eggs were used to obtain hatch data. Of 129 eggs collected 79 per cent hatched successfully. There was no parasitism in the egg stage.

TABLE 20

Summary of Black-headed Jack Pine Sawfly Colony Counts on 10 Jack Pine Trees at Four Locations in Sioux Lookout District in 1966

Location	Av. d.b.h. in inches	Total no. of colonies
Sowden Lake	4	1
Pekogoning Lake	5	5
Lower Scotch Lake	3	1
Split Lake	5	9

Red-headed Jack Pine Sawfly, Neodiprion virginianus complex

Since 1952 population levels of this insect have fluctuated more or less regularly with low numbers occurring for about a 3-year period followed by high numbers for two to three years.

A notable decline occurred in 1966 following two years of relatively high population levels (Table 21). The highest number of colonies was recorded near Raleigh Falls in Ilsley Township. At Greytrout Lake single larva of two species that are rarely found in the district, Neodiprion compar (Leach.) Neodiprion abbotti (Cress.) occurred in association with Neodiprion virginianus complex.

TABLE 21

Summary of Red-headed Jack Pine Sawfly Colony Counts on 10 Jack Pine Trees at Each Location in Sioux Lookout District from 1964 to 1966

Location	Av. d.b.h. in inches	Total no. of colonies found 1964	1965	1966
Norway Lake Road	2	13	23	2
Raven Lake	4	6	2	0
Pickerel Twp.	3	26	69	2
Drayton Twp.	2	17	12	1
Wenasaga Road	3	11	3	0
Moonlight Falls Road	3	17	2	1
Block 10	2	--	--	1
Jordon Twp.	4	13	2	0
Greytrout Lake	5	--	--	1
Ilsley Twp.	3	--	--	8

An Olethreutidae on Labrador Tea, Olethreutes costimaculana Fern.

A larval collection of this bud-mining insect near Red Lake in early June constitutes a first survey record of the insect in Ontario. Pupae were observed about June 20 and the first adult was recovered in a collection submitted at the end of June. The larvae occurred on Labrador Tea with from one to four infested buds per clump of shrubbery (see photograph). Damage was confined to the flower buds which remain erect on the stems. The surrounding leaves are drawn together by silken threads to form a distinctive feeding shelter.

Yellow-headed Spruce Sawfly, Pikonema alaskensis Roh.

Several small white spruce hedgerows in the town of Sioux Lookout were severely defoliated by this insect. Elsewhere in the district small numbers of larvae were collected in beating samples. Results of quantitative sampling are shown in Table 22.

TABLE 22

Summary of Yellow-headed Spruce Sawfly Larval Counts in Sioux Lookout District from 1964 to 1966

Location	Tree species	Av. d.b.h. in inches	Total no. of larvae found per 15 mat sample		
			1964	1965	1966
White Otter Lake	wS	4	18	5	4
Ilsley Twp.	wS	4	17	3	3
Ear Falls	wS	3	-	7	4
Sturgeon Lake Road	bS	5	1	3	2
Scotch Lake	wS	3	18	5	0
Norway Lake Road	bS	3	1	0	7
Split Lake	wS	3	-	-	2
Sowden Lake	wS	5	-	-	5
Papaonga Lake	wS	4	-	-	2

Green-headed Spruce Sawfly, Pikonema dimmockii Cress.

No appreciable change in the numbers of this insect occurred in the district in 1966. Quantitative sampling results were highest in Division 25 particularly in the Hudson-Sioux Lookout area (Table 23).

TABLE 23

Summary of Green-headed Spruce Sawfly Larval Counts on 15 Mat Samples from Each Point in Sioux Lookout District from 1964 to 1966

Location	Tree species	Av. d.b.h. in inches	Total no. of larvae found 1964	1965	1966
Block 10	bS	4	1	8	1
Wenasaga Road	wS	3	6	12	4
Drayton Twp.	wS	2	7	9	2
McAree Twp.	wS	4	14	14	15
Highway 105	wS	5	7	13	6
Upper Scotch Lake	wS	3	15	10	6
White Otter Lake	wS	4	7	13	6
Pickerel Twp.	wS	3	-	7	10
Webb Twp.	wS	4	-	7	10
Block 10	wS	4	-	-	18
Gullwing Lake	wS	3	-	-	19
Sowden Lake	wS	3	-	-	12

White Pine Weevil, Pissodes strobi Peck.

Little change in numbers of infested terminals occurred in the district in 1966. The highest number of weevilled trees were found at Sandbar Lake near Ignace and west of Hudson in McIlraith Township (Table 24). Damage by this weevil causes stem distortion and loss of linear growth. Jack pine is the preferred host in Sioux Lookout District.

TABLE 24

Summary of Damage by the White-pine Weevil to 50 Jack Pine at Each Point in Sioux Lookout District from 1964 to 1966

Location	Av. height in feet	Per cent of trees weevilled		
		1964	1965	1966
Echo Twp.	8	1	2	1
Norway Lake Road	8	4	2	6
Valora	14	6	6	3
Ignace Twp.	6	5	10	15
Corman Twp.	6	2	2	3
McIlraith Twp.	7	-	8	10
Baird Twp.	12	-	-	2

Larch Sawfly, Pristiphora erichsonii Htg.

For the second consecutive year an increase in population levels of this sawfly occurred on tamarack throughout the lower third of the district. Heavy infestations were observed near Dyment and Ignace and around Savant Lake and Wapesi Bay on Lac Seul. Moderate infestations occurred at several points along Highway 17 east of Ignace, and near Red Lake, Ear Falls and Sioux Lookout. Very light infestations were observed in the Pickle Lake Division (see map).

The results of dissection of cocoons collected from three locations in the district in the fall of 1965 are shown in table 25. The highest percentage of parasitism was caused by a dipteran, Bessa harveyi (Tns.).

TABLE 25

Summary of Larch Sawfly Cocoon Dissections in Sioux Lookout District

Location	No. of cocoons dissected	Per cent parasitized	Per cent mortality of unknown cause	Per cent sound cocoons
Ignace East	27	26	11	63
Ignace West	101	45	40	26
Sioux Lookout	100	63	9	28

Spruce Bud Gall Midge, Rhabdophaga swainei Felt.

Population levels of the insect remained low in the district in 1966 (Table 26). The highest number of infested buds was found in an area that had been burned over in 1961 north of Ignace. Fifty small black spruce trees were examined and 42 per cent of the buds were infested.

TABLE 26

Summary of Counts of Terminal Buds Infested by the Spruce Bud Gall Midge on Black Spruce in Sioux Lookout District

Location	No. of shoots examined on 50 branch tips	Per cent buds infested
Gulliver River	143	8
Block 10 Mi 3	156	7
Baird Twp.	161	6
Vermilion Add. Twp.	169	5
Block 10 Mi 20	155	7

TABLE 27

Summary of Miscellaneous Insects Collected in the Sioux Lookout District

Insect	Host(s)	Remarks
Acronicta dactylina Grt.	W	Low populations in district
Adelges strobilobius Kalt.	bS	Light at Upper Goose Lake
Agonopterix argillacea Wlshm.	W	Found in beating samples at Bigshell Lake
Allononyma diana Hbn.	bPo	Low numbers in Block 10
Anomogyna elimata Gn.	bF, wS	Found in beating samples in Div. 19, 25
Anoplonyx luteipes (Cress.)	tL	Small numbers north of Ignace
Archippus strianus Fern.	wS	Found while beating for abietis
Argyresthia laricella Kft.	tL	Seven larvae on sixteen branches eighteen inches long near Ignace
Argyresthia oreasella Clem.	SSe	These shoot borers found yearly in small numbers
Calligrapha multipunctata bigsbyana Kby.	W	Leaf eating beatles light along Highway 17

SIOUX LOOKOUT DISTRICT

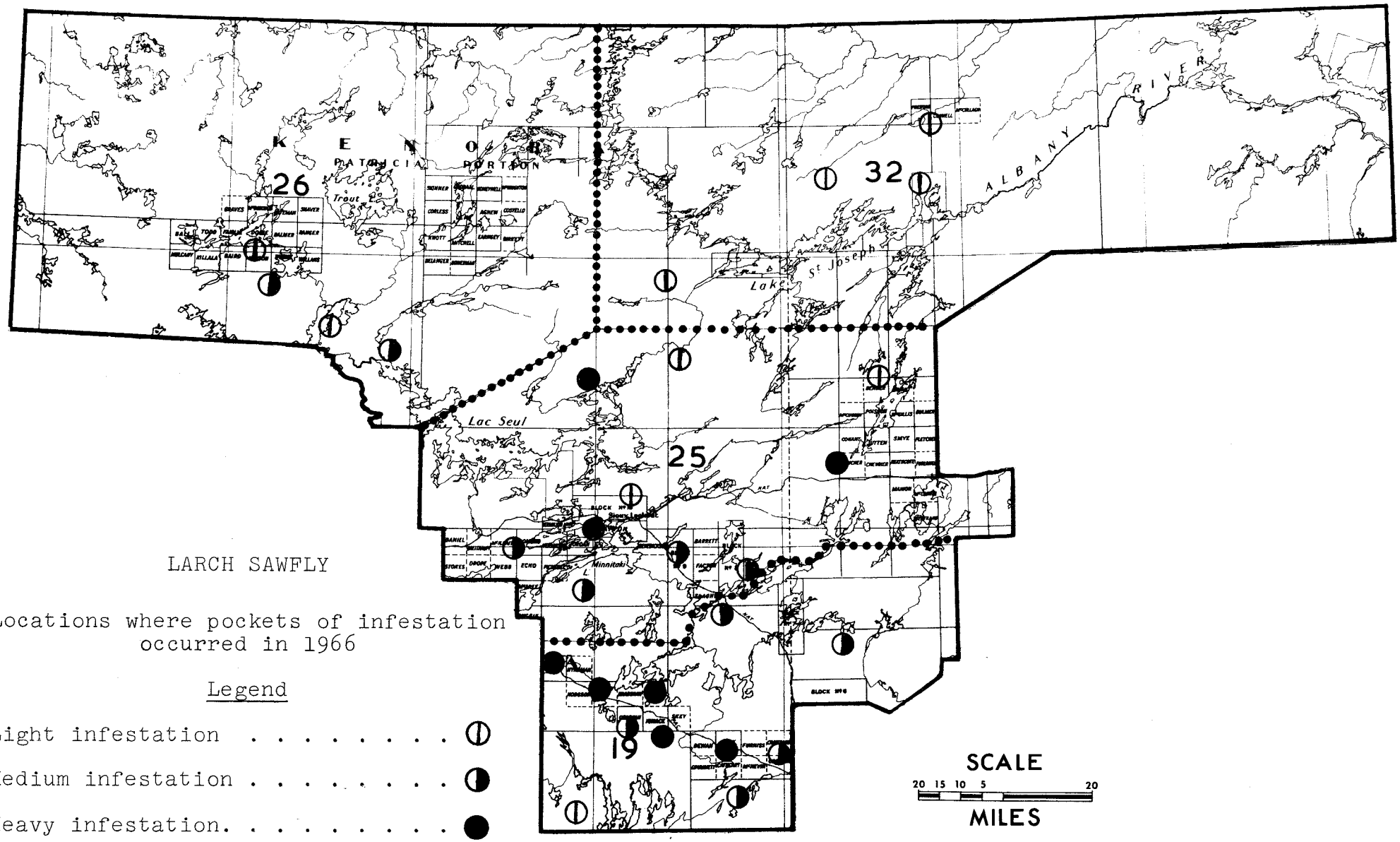


TABLE 27 (continued)

Insect	Host(s)	Remarks
Caripeta divisata Wlk.	wS	Collected while sampling for D. hercyniae
Choristoneura fumiferana Clem.	bF, wS bS	Sixteen larvae collected in 1966 the highest numbers near Gulliver Lake and Hudson
Chrysomela mainensis mainensis Bechne.	spAl	Single colony of these beatles near Suzanne Lake
Chrysomela crotchi Brown	tA	Light skeletonizing observed at few points in the district
Cimbex americana Leach.	wB	This sawfly occurs yearly in small numbers
Clepsis persicana Fitch	bF	Collected by beating in Ignace Div.
Coleophora betulivora McD.	wB	These casebearers very scarce last two years
Dasyneura balsamicola (Lintn.)	bF	Varying degrees of intensity occurred in the district
Datana ministra Dru.	wB	A single colony found at Raleigh Falls
Deilinia erythemaria Gn.	tA	Found in beating sample
Dendroctonus murrayanae Hopk.	jP	Collected in stumps in recently cut area
Depressaria betulella Busck.	wB	Low numbers in Pickerel Twp.
Dimorphopteryx pinguis (Nort.)	wB	This insect is found yearly in low numbers
Dioryctria abietivorella Grt.	jP	Collected while sampling for nodule insects
Dioryetria reniculella Grt.	wS	Small numbers Gulliver Lake
Dryocaetes autographus Ratz.	bS	These bark beetles found while with Dr. Thomas
Ectropis crepuscularia Schiff.	bF jP wS	Found commonly through district in beating samples
Epiconaptera americana Harr.	W	Appears often but not commonly
Epinotia corylana McD.	SAL	Moderate numbers of infested fruit McCrea Lake Division 32
Epinotia cruciana Linn.	W	A single larva in Jordan Twp.
Epinotia septemberana Kft.	Lab. tea	Adult found in June near Ignace
Epinotia solandriana Linn.	wB	Low numbers of this leaf roller at several locations

TABLE 27 (continued)

Insect	Host(s)	Remarks
Epinotia solicitana Wlk.	wB	Damage caused by this tip miner evident along Bendo Lake road
Eudeilinia herminiata Gn.	Dogwood	These larvae appear to mine and fold or crease the leaves, low in numbers
Eupithecia filmata Pears.	wS, bF, bS	Small numbers of this looper were found at 14 points in the district
Eupithecia palpata Pack.	jP	Collected at three locations in the district
Euura hospes (Walsh)	W	This gall making sawfly is widespread, in low numbers at Fry Lake
Fenusa dohrnii (Tischb.)	SAL	Small numbers of these blotch miners found in Pickerel Twp.
Feralia jocosa Gn.	wS, bF bS	A noticeable reduction in collection numbers occurred after two consecutive years of increase
Halsidota maculata Harr.	sAL	Occurs yearly in low numbers
Haploa confusa Lyman.	tA	A single larva found south of Sioux Lookout at Mileage 25
Hydriomena divisaria Wlk.	wS	Found in a beating sample for D. hercyniae
Hylemya brassicae Bouche	Cauli-flower	Heavy infestation 30 miles south of Sioux Lookout
Hylobius piceus DeG.	bF	This adult beetle taken in a beating sample
Hylobius warreni Wood	jP	Found near English River in stump of newly cut tree
Hylophora cecropia Linn.	Ground	A single adult found on forest floor in Block 10
Hylurgops pinifex Fitch	bS, jP	Large numbers of these beetles in newly cut area east of Ignace
Hypagyrtis piniata Fitch	wS, bS	Found on beating mat at both points
Ips pini Say	bS, jP	Adult bark beetles in low numbers in Division 19
Lithocolletis betulivora Wlshm.	wB	Small numbers of these leaf miners found
Lithocolletis salicifoliella Chamb.	tA, W lTa, bPo	Found on regeneration type trees throughout district

TABLE 27 (continued)

Insect	Host(s)	Remarks
Lithophane tepida Grt.	rCh	One larva found near Wenasaga Lake
Lobophora nivigerata Wlk.	tA	Three larvae beat from five aspen near Frog Rapids
Lycia ursaria Wlk.	W	Low numbers along the Berens River in Div. 26
Mindarus abietinus Koch.	bF	Low numbers of this aphid near Ignace in Dewan Twp.
Monoctenus fulves (Nort.)	wC	Small numbers at Pilot Lake
Nematus erythrogaster Nort.	aL	Small numbers of these sawflies in Block 10
Nematus limbatus Cress.	W	Fairly large colony near Wenasaga Lake
Nematus ribesii (Scop.)	red current	Domesticated shrubs in Sioux Lookout moderately infested
Neodiprion abietis (Harr.)	wS	Populations very low in the district
Neodiprion abbotti Cress.	jP	This seldom found sawfly collected at Greytrout Lake Div. 19
Neodiprion compar (Leach)	jP	Has not been found in the district for over a decade
Neodiprion maurus Rohwer.	jP	1 and 6 colonies respectively in Corman Township and at Irene Lake Division 19
Neodiprion nigroscutum Midd.	jP	Absent from 1965 collecting points, found at Irene Lake in 1966
Neurotoma inconspicua (Nort.)	rCh	4 colonies in 1 mile of roadside near English River
Nycteola cinereana N. & D.	bPo	Occurs yearly in small numbers
Nyctobia frigidana Wlk.	W	Occurs through June 15 - July 30 highest numbers found in Vermilion Add. Twp.
Nyctobia limitaria Wlk.	bF	Found in beating samples throughout southern part of district
Orthosia hibisci Gn.	wB	Low numbers occur in district

TABLE 27 (continued)

Insect	Host(s)	Remarks
Parornix conspicuella Dietz.	wB	Found on regeneration birch along a bush road
Peridroma saucia Hbn.	jP	This cutworm was causing moderate mortality in the Ignace tubeling program
Petrova albicapitana Busck.	jP	Occurs yearly, 100 trees examined, nine infested 2 miles north Pickle Lake
Phenocaspis pinifoliae Fitch	rP	Found in association with pine tortoise scale
Phyllocolpa agama (Roh.)	W	Low populations of this leaf folder at Bendo Lake
Phyllocnistis populiella Cham.	tA	Occurs from June to August
Phytophaga piceae Felt	wS	Small numbers of twig galls found in 1966
Pineus similis Gill.	wS	Gall forming aphid in low numbers
Polygraphus rufipennis Kby.	bS	This bark beetle occurs throughout district
Pristiphora lena Kincaid	wS, bS	Light infestation at Sandy Beach Lake and Dien Lake near Sioux Lookout. 25 and 10 larvae on 15 mats at each point respectively
Profenusa thomsonii (Konow	wB	Largest numbers occurred again in Drayton Twp.
Protoboarmia porcelaria indicataria Wlk.	bF	Found yearly in small numbers
Pyrrhia umbra experimens Wlk.	W	Collected in a beating sample
Rhopobota naevana Hubn.	Blueberry	Leaf skeletonizers causing noticeable damage on ground plants
Rhynchaenus uniformus (Brown)	W	Possibly first record of these leaf miners, one shrub infested Wright Lake Div. 32
Scoliopteryx libatrix Linn.	W	Taken in a beating sample along 11th Base Line
Semiothisa dispuncta Gn.	bF, wS	These loopers can be found throughout most of district

TABLE 27 (continued)

Insect	Host(s)	Remarks
Sphinx gordius Cram.	wB	A few larvae found each year
Syngrapha selecta Wlk.	wS	Occurred in quantitative sampling for insects on white spruce
Tetralopha vacciniavora Munroe	Blue-berry	One large nest of this insect found
Toumeyella numismaticum P. & M.	jP	Numbers and distribution increased, found at 6 points
Trichiocampus irregularis Dyar.	W	Light defoliation by these skeletonizers in Pickerel Twp.
Trichiosoma triangulum Kby.	W	Occurred in beating samples
Trisetacus grosmanni Keifer	bF	Small numbers of infested buds at each location

STATUS OF INSECTS IN THE KENORA DISTRICT

Harvey J. Weir

Jack-pine Budworm, Choristoneura pinus Free.

The jack-pine budworm was a major pest in the district in 1966. The moderate infestation reported in 1965 near Atikwa and Lawrence lakes increased in extent from 120 square miles in 1965 to 5000 square miles in 1966 (Map 2). The northern boundary of medium to heavy infestation extended from Tetu Lake on the Ontario-Manitoba border southeast to Sakwite Lake on the southern boundary of the district. Most of the jack pine stands southwest of this line were moderately to severely defoliated. A small area of light defoliation occurred around Eagle Lake and eastward to Sanford Township. Quantitative samples taken at 12 locations are shown in Table 13.

TABLE 13

Summary of Jack-pine Budworm Larval Counts
in Kenora District in 1966

NOTE: Counts are based on the total number of larvae on 15 tray samples from the lower branches of five jack-pine trees at each location.

Location	Average d.b.h. in inches	Total no. of larvae	Degree of infestation
Coyle Township	5	32	Moderate
Desmond Township	6	21	"
Docker Township	6	7	Light
Hawk Lake	3	62	Heavy
Keewatin	8	48	"
Pellatt Township	6	51	"
Kirkup Township	8	63	"
Mutrie Township	6	4	Light
Sakwite Lake	6	22	Moderate
Sanford Township	8	3	Light
Tustin Township	3	73	Heavy
Zealand Township	6	1	Light

An egg survey was carried out at four locations within the area of infestation. Assuming that each egg mass contained approximately 35 eggs, the counts indicate that high larval populations could recur in 1967 (Table 14).

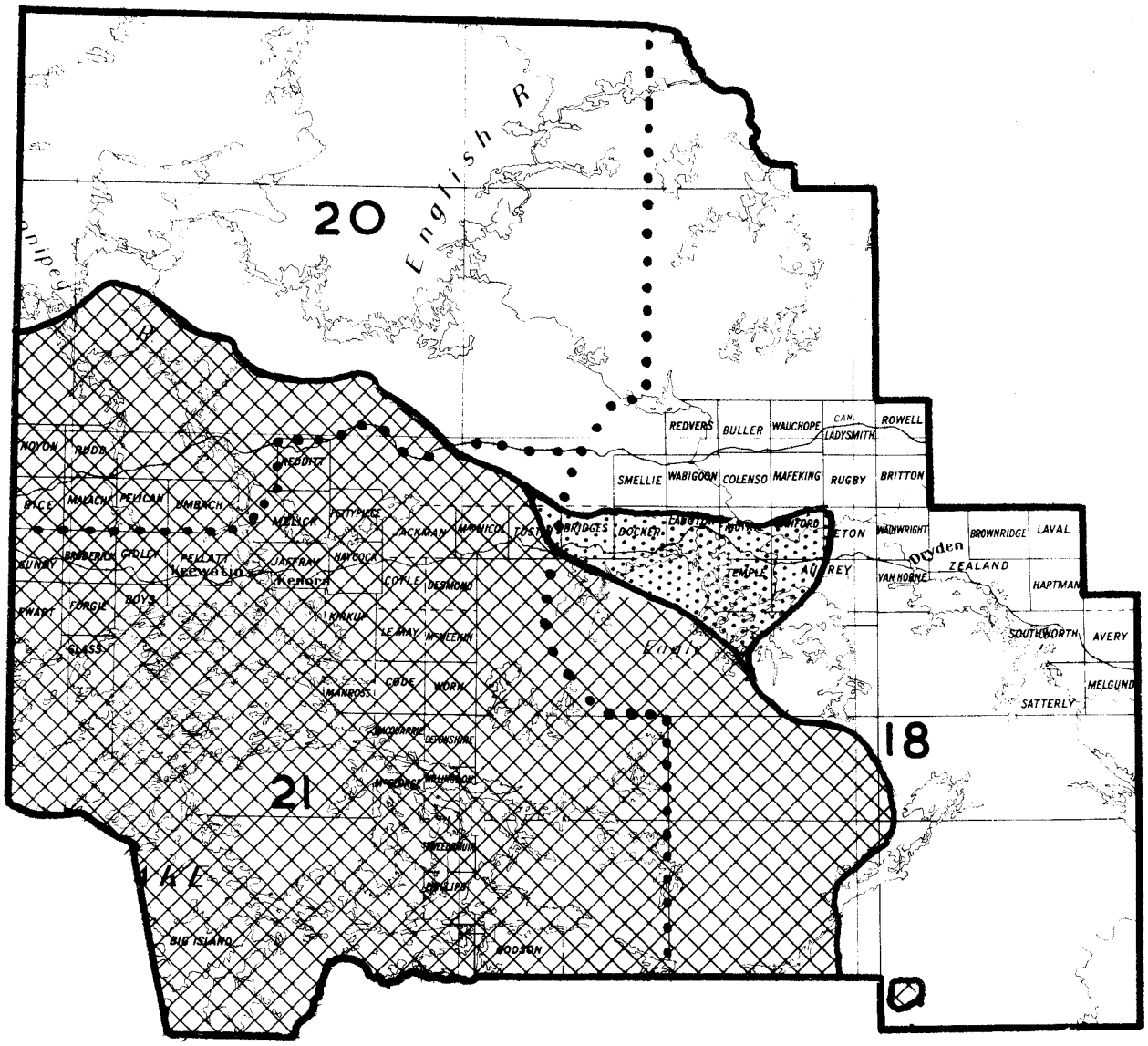
TABLE 14

Summary of Jack-pine Budworm Egg Mass Counts
in Kenora District in 1966

NOTE: Counts are based on the examination of two 18-inch branch tips from the mid crown of three trees at each location.

Location	Average d.b.h. of sample trees in inches	Average no. of egg masses per 18" branch tip
Harris Township	10	2.3
Hawk Lake	6	1.2
Keewatin	8	2.2
Phillips Township	7	2.8

KENORA DISTRICT



JACK-PINE BUDWORM

Areas within which defoliation occurred in 1966

Legend

Light defoliation . . . . . .

Moderate to severe defoliation . .

Arge sp. on Alder

A general increase in populations of this sawfly occurred in the district. Severe defoliation of alder occurred along the shores of Teggart, Sakwite and Lawrence lakes in Division 18. Light defoliation occurred on Sabaskong Bay, Lake of the Woods and near High and Low lakes on Highway 71. Very low populations have occurred in the district since 1959.

Aspen Leaf Beetle, Chrysomela crotchi Brown

Little change in population levels of this insect occurred in the district in 1966. Heavy infestations were observed on poplar reproduction near Blue Lake in Smellie Township and near Perrault Falls on the northern boundary of the district. Moderate infestations were observed near Oxdrift on Highway 17 and Nestor Falls on Highway 71. Light infestations occurred in Mutrie and Satterly townships and near the town of Kenora (see Photograph).

Conophthorus sp. on Jack-pine

Populations of this shoot borer increased on jack-pine reproduction in 1966. Light infestations occurred near Andy Lake and along the Mando Lumber Company road in McMeekin Township; at Waldhof Corners and along Highway 17 in Mutrie Township, and near Tobacco Lake in the Dryden Pulp and Paper limits south of Dinorwic.

Counts of infested twigs taken at five locations are shown in Table 15.

TABLE 15

Summary of Twig Damage by Conophthorus sp.
in Kenora District in 1966

Location	Average d.b.h. in inches	No. trees examined	No. trees infested	No. infested twigs
Andy Lake	1	150	4	21
McMeeken Twp. (Mando Road)	2	50	18	22
Mutrie Township (Gunne)	2	25	11	16
Mutrie Township (Waldhof Corners)	1	100	3	19
Tobacco Lake (Division 18)	2	100	16	27

Alder Leaf Miner, Fenusa dohrnii (Tischb.)

Light infestations of this leaf miner were observed at the Department of Lands and Forests Tree Nursery in Zealand Township, on old Highway 17 in Satterly Township and along Camp 33 road in the Dryden Paper Company limits south of Dryden. Counts at the above locations showed that six to to nine per cent of the leaves were infested.

Aspen Blotch Miner, Lithocolletis salicifoliella Cham.

Heavy infestations of this miner occurred throughout the district in 1966 following two consecutive years of light infestation. Conspicuous yellowing of infested foliage was observed at numerous locations, particularly in MacNicol, Tustin, McMeekin, and Melick townships and around Stormy Lake. In Melick Township willow bushes and aspen reproduction were moderately mined. Light infestations were observed in Docker Township, and at Rabbit Point and Wolf Island on Lake of the Woods.

One hundred leaves were examined at seven locations to determine the per cent of leaves mined. The results are summarized in Table 16.

TABLE 16

Summary of Aspen Blotch Miner Counts
in Kenora District in 1966

Location	Average d.b.h. of sample trees in inches	Per cent of leaves mined
Aubrey Township	1	67
Black Sturgeon River	1	100
Devonshire Township	1	68
Docker Township	1	3
Hawk Lake	1	89
Kirkup Township	1	83
Melick Township	1	100

Western Tent Caterpillar, Malacosoma pluviale Dyar.

Infestation of this caterpillar declined to very light intensity in 1966. In 1965, counts at 13 locations ranged between 14 to 87 tents per measured mile, whereas in 1966 only one count of eight tents was made near Willard Lake in Desmond Township.

Adverse weather conditions in the spring could have been a controlling factor in this widespread decline.

Balsam-fir Sawfly, Neodiprion abietis Complex

An increase in the number of colonies of this sawfly was observed in the district in 1966. Severe defoliation occurred for the second consecutive year in a stand of pole-sized trees on a small island in Vermilion Bay, Eagle Lake (see Photograph). Moderate defoliation was observed on small roadside stands of balsam fir on Highway 71 between Longbow Corners and Nestor Falls. Light defoliation occurred on Raspberry Island, Lake of the Woods, and along old Highway 17 in Forgie Township (Table 17).

TABLE 17

Summary of Balsam-fir Sawfly Larval Counts on Ten Trees at Each Location in Kenora District in 1966

Location	Average d.b.h. of sample trees in inches	Average no. of colonies per tree
Devonshire Township	3	1.3
Forgie Township	2	0.7
Langton Township	6	3.0
Raspberry Island (Lake of the Woods)	5	1.7
Tweedsmuir Township	6	2.2
Wellingdon Township	5	6.1

Pine Sawflies, Neodiprion maurus Roh., Neodiprion nanulus nanulus Schedl., Neodiprion pratti banksianae Roh.

Low populations of these three species have persisted in the district since 1956. Light infestations of N. maurus were observed near Blindfold Lake in Kirkup Township and near Black Sturgeon River in Melick Township. Colonies of N. nanulus nanulus were observed feeding on lakeshore jack-pine trees on Sakwite Lake in Division 18, and near Link and Hawk lakes along Highway 17 in Division 21. Scattered colonies of N. pratti banksianae occurred on an open-grown jack pine stand one mile east of Waldhof Corners in Mutrie Township (Table 18).

TABLE 18

Summary of Colony Counts of Three Pine Sawflies on Ten Trees at Each Location in Kenora District in 1966

Location	Average d.b.h. in inches	Average no. of colonies per tree		
		N.maurus	N.n.nanulus	N.p.banksianae
Hawk Lake	3		0.3	
Kirkup Township	6	0.7		
MacNicol Township	6		0.3	
Melick Township	5	0.2		
Mutrie Township	4			0.5
Sakwite Lake	6		0.5	

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

Little change in numbers of this insect was observed in 1966. Light infestations persisted on rocky points in the Astron Bay, and Sabaskong Bay areas of Lake of the Woods. New light infestations occurred at Partridge Point and on shoreline trees on Portage Bay on Eagle Lake (Table 19).

TABLE 19

Summary of Swaine's Jack-pine Sawfly Larval Colony Counts on Ten Trees at Each Location in 1966

Location	Average d.b.h. of sample trees in inches	Average no. of colonies per tree
Lake of the Woods		
Astron Bay	4	0.2
Rabbit Point Island	3	0.6
Rendevous Point	2	0.4
Eagle Lake		
Partridge Point	1	0.9
Portage Bay	4	2.3

Red-headed Jack-pine Sawfly, Neodiprion virginianus Complex

No significant change in population levels of this insect occurred in 1966. Light infestations occurred near High and Low lakes along Highway 71 in Tweedsmuir Township at Black Sturgeon River in Melick Township, one mile east of Waldhof Corners in Mutrie Township and along the shoreline of the West Arm of Eagle Lake (Table 20). One hundred cocoons were set out in rodent proof traps at two locations to determine the distribution of the parasites Pleolophus basizonus (Grav.) and Drino bohemica Mesn.

TABLE 20

Summary of Red-headed Jack-pine Sawfly Larval Colony Counts on Ten Jack-pine Trees at Each Location in 1966

Location	Average d.b.h. of sample trees in inches	Average no. of colonies per tree
Black Sturgeon River	5	0.1
Eagle Lake (West Arm)	6	0.6
Tustin Township	1	0.4
Tweedsmuir Township	6	0.2

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

A general increase in populations of this sawfly occurred throughout the district. Severe defoliation of roadside and lakeshore trees was observed at Minaki, near Eagle River village and on ornamental white spruce trees in the town of Dryden and in the village of Vermilion Bay. Complete defoliation caused some mortality of small ornamental spruce trees at a tourist lodge near Sioux Narrows in McGeorge Township. Moderate defoliation occurred along Highway 17 at Hawk and Link lakes and at the Dryden Nursery. Light infestations were observed on lakeshore trees at numerous other locations throughout the district (see Photograph).

White Pine Weevil, Pissodes strobi Peck.

Moderate to heavy infestations of this weevil were observed throughout the district. Heavy infestations occurred in mixed red and white pine plantations adjacent to the Dryden Nursery in Zealand Township and in the Dryden High School Conservation Club plantation in Van Horne Township. Moderate infestations occurred on regeneration of white pine in Sanford Township, jack pine in Devonshire Township and black spruce in Satterly Township. Light infestations were observed commonly on jack pine reproduction in the remainder of the district (Table 21).

TABLE 21

Summary of Leader Damage by the White Pine Weevil in Kenora District in 1966

Location	Host	Average d.b.h. of sample trees in inches	No. of trees examined	No. of infested leaders
Dryden Nursery	wP	1	150	120
Devonshire Twp.	jP	1	160	13
McMeekin Twp.	jP	1	150	2
Mutrie Twp.	jP	1	100	3
Sanford Twp.	wP	2	100	6
Satterly Twp.	bS	2	100	13
Van Horne Twp.	wP	1	100	22
Wabigoon Twp.	jP	2	100	27
Zealand Twp.	jP	2	100	10

Larch Sawfly, Pristiphora erichsonii Htg.

An increase in population levels of this insect occurred for the second consecutive year. Severe defoliation of tamarack stands was observed in MacNicol, Kirkup, Devonshire, Redditt, Docker, Aubrey and Zealand townships. Moderate defoliation was observed south of Dinorwic near Tobacco Lake, on the Camp 33 road in Dryden Pulp and Paper Company limits, near Pistol Lake on the Minaki road and on planted European larch near Black Sturgeon River on the Redditt road. Areas of light defoliation occurred near Perrault Falls and along Highway 17 in Tustin Township (see Map). The degree of predation by mammals in Docker and Tedditt townships was approximately 40 per cent.

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

An increase in populations of this leaf miner occurred in 1966. Light infestations were observed on an ornamental birch tree in the town of Dryden, on roadside trees in Temple and Satterly townships, and on lakeshore trees along Lee and Sakwite lakes in Division 18 (Table 22).

TABLE 22

Summary of Damage by the Amber-marked Birch Leaf Miner in Kenora District in 1966

NOTE: Counts are based on the examination of 100 leaves from five birch trees at each location.

Location	Average d.b.h. of sample trees in inches	Per cent of leaves mined
Lee Lake Division 18	1	19
Mutrie Township	1	6
Sakwite Lake Division 18	2	13
Satterly Township	1	2
Wainwright Township	5	3

Spruce Bud Gall Midge, Rhabdophaga swainei Felt.

Little change in population levels of this insect was observed in the district. Light infestations occurred near Willard Lake in MacNicol Township and Wabigoon Lake in Zealand Township, in a stand of black spruce reproduction along Highway 17 in Satterly Township, and along Highway 17 in Tweedsmuir and Devonshire townships (see Photograph). Counts showing the numbers of infested buds at sample locations are shown in Table 23.

TABLE 23

Summary of Bud Damage by the Spruce Bud Gall Midge in Kenora District in 1966

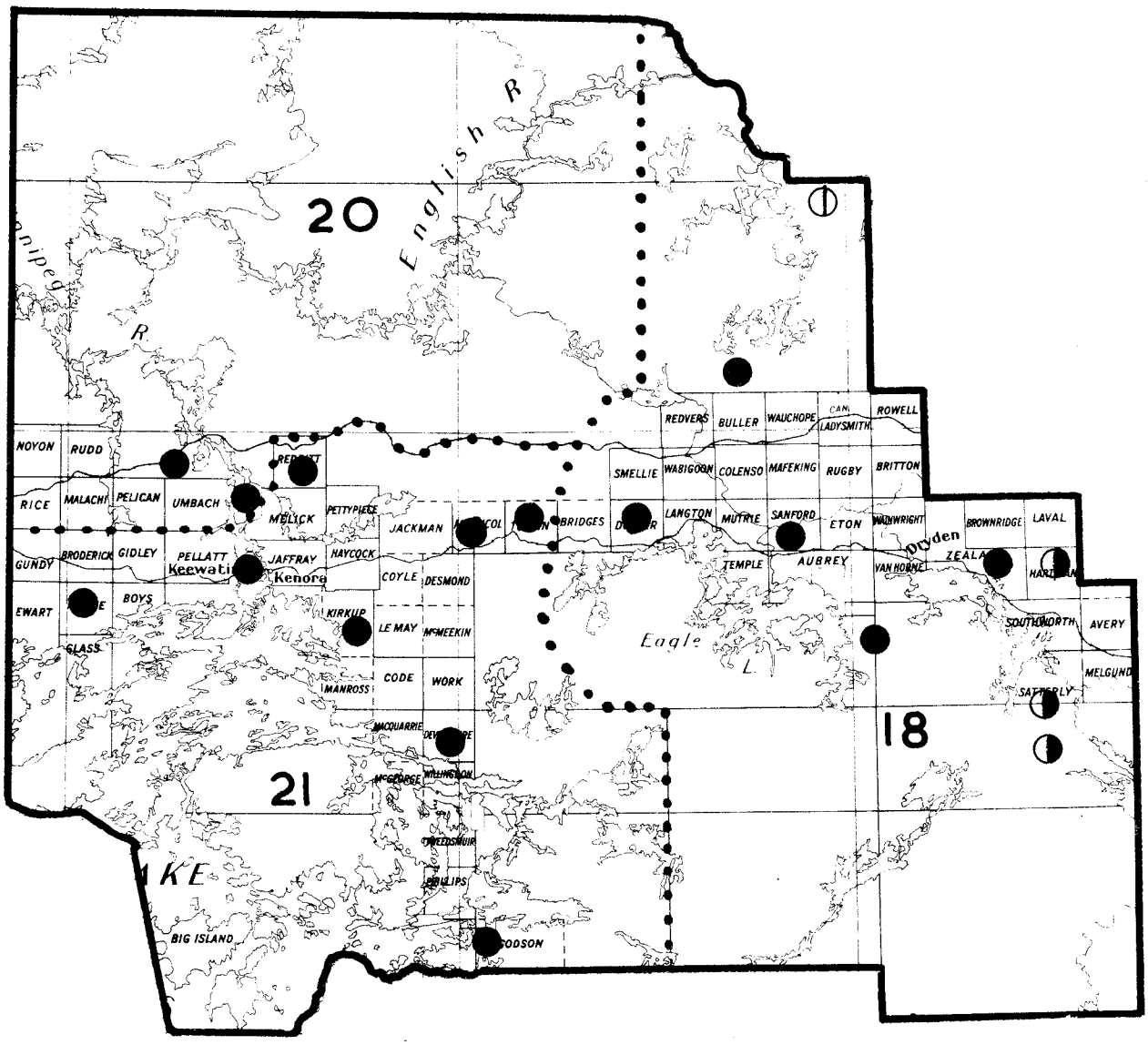
Location	Av. d.b.h. of sample trees in inches	No. of trees sampled	No. of available shoots in sample	No. of infested buds per sample
MacNicol Twp.	2	5	151	8
Satterly Twp.	2	5	173	16
Zealand Twp.	3	5	163	9

TABLE 24

Summary of Miscellaneous Insects Collected in the Kenora District

Insect	Host(s)	Remarks
Acronicta sp.	aMo, pCh	Common on bushes in McMeeken, Temple, Keewatin and Tweedsmuir townships.
Adelges strobiolobius Kalt.	bS	Numerous galls on roadside trees in McMeeken Township.

KENORA DISTRICT



MILES

0 20

LARCH SAWFLY

Locations where pockets of defoliation were observed in 1966

Legend

Light defoliation . . . . . ◐

Moderate defoliation . . . . . ◑

Severe defoliation . . . . . ●

TABLE 24 (continued)

Insect	Host(s)	Remarks
Anchylopera subaequana Zell.	W	Several shrubs heavily infested near Dyment.
Andricus petiolicola (O.S.)	bO	Numerous lakeshore trees moderately infested on Sabaskong Bay, Lake of the Woods.
Anisota virginiensis Dru.	bO	Light defoliation of one tree in McGeorge Township.
Aphrophora parallela Say	jP	Spittle masses numerous on understory in Mutrie and Kirkup townships.
Arge sp.	W	One tree lightly infested in Gundy Township.
Argyrotaenia pinatubana Kft.	wP	Tubes numberous on lakeshore trees on Raspberry Island in Lake of the Woods.
Baliosus ruber Web.	wB	Miners numerous on lakeshore trees on Rabbit Point Island, Lake of the Woods.
Bark Beetles	rP, wS, eC, jP	Bark beetles collected were: Dendroctenus obesus Mann. Dendroctenus valens Lec. Hylurgops pinifex Fitch Ips perroti Sw. Ips pertabatus Eich., Ips pini Say Orthotomicus callatus Eich. Phloeosinus canadensis Sw. Pityophthorus sp. Polygraphus rufipennus Kby.
Cecidomyidae	rP	Severe needle droop caused by this insect on red pine plantings near Gordon Lake.
Corythucha elegans Drake	wB	One tree moderately infested on Confusion Lake.
Croesus latitarsus Nort.	wB	Light defoliation of lakeshore bushes on Yellow Girl Bay, Lake of the Woods.
Dasyneura balsamicola (Lintn.)	bF	Moderate infestations on lakeshore trees on Bernadine, Eltrut and Eagle lakes.
Dimorphopteryx pinguis (Nort.)	wB	Common on white birch on Confusion, Eltrut and Kimber lakes.

TABLE 24 (continued)

Insect	Host(s)	Remarks
Diprion hercyniae (Htg.)	wS	A few larvae on beating tray sample on Lawrence Lake in Division 18.
Ectropis crepuscularia Schiff.	bF	Common on beating tray samples in Redvers Township.
Epinotia solandriana Linn.	wB	Leaf rollers numerous on roadside in Forgie Township.
Eucosma gloriola Heinr.	jP	Light infestation near Lee Lake, 23 infested shoots, 50 trees examined.
Gonioctena americana Schaeff.	tA	Light defoliation of one tree in Forgie Township.
Hemichroa crocea (Four.)	Al	Severe defoliation of lakeshore trees on Gordon, Frost and Katimisgamak lakes.
Hyphantria cunea Dru.	W	One colony found in Zealand Township.
Lambdina fiscellaria fiscellaria Gn.	bF	Common on beating tray samples.
Lithocolletis sp.	bO	Light infestations on Fire Island Point, Yellow Girl Bay, Beacon Island and Sabaskong Bay on Lake of the Woods.
Macremphytus intermedius (Dyar)	Do	Moderate defoliation of lakeshore shrubs on Beacon Island, Lake of the Woods.
Nematus limbatus Cress.	W	Single colonies on Rabbit Point Island, Lake of the Woods; Dryden Tree Nursery; and Dogtooth Lake.
Nepytia canosaria Wlk.	Juniper	Common on beating tray samples in Lake of the Woods area.
Neurotoma sp.	PCh	Nests observed on Teggart and Eagle lakes.
Nycteola cinereana N. & D.	bPo	Web spinning larvae common on reproduction in the Lake of the Woods area.
Nyctobia limitaria Wlk.	bF	Common on beating tray samples.
Orthosia hibisci Gn.	Spirea	Moderate infestation on Stormy Lake.
Pamphiliidae	rP, wS	Few nests observed in Zealand, Mutrie and Temple townships.
Papilio glaucus Linn.	bPo	Few larvae found in Langton Township and on Sydney Lake.

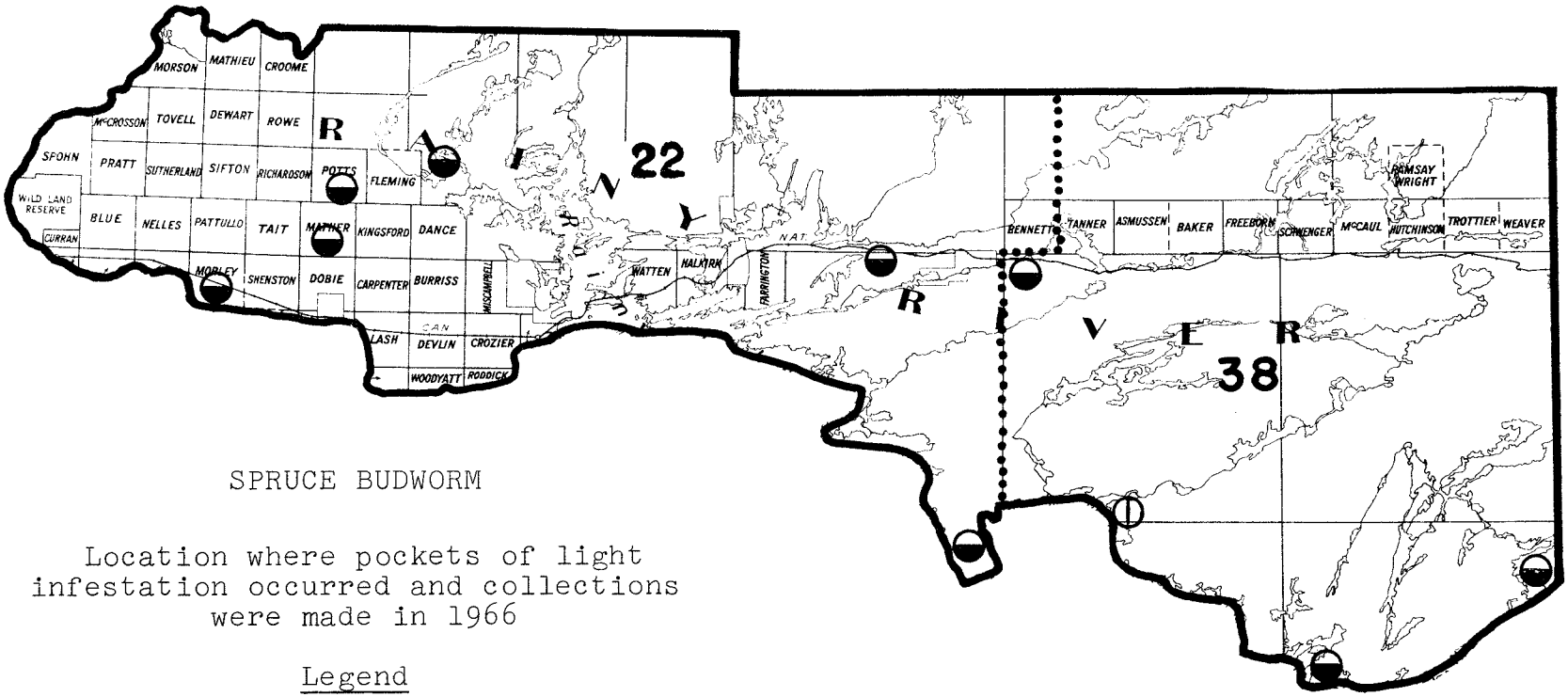
TABLE 24 (concluded)

Insect	Host(s)	Remarks
Petrova albicapitana, Busck.	jP	Common in Mutrie and Docker twps. and on Lee Lake and Lake of the Woods
Phenacaspis pinifoliae Fitch	jP	One tree moderately infested in Mutrie Township
Phyllocnistis populiella Cham.	tA	Serpentine miners numerous in Gundy and Forgie twps. and also on Stormy Lake
Pikonema dimmockii (Cress.)	wS	Common on beating tray samples throughout the district
Pineus floccus Patch	bS	Two trees heavily infested in McMeeken Township
Pineus similis Gill.	wS	Galls common on windbreak trees in Dryden Nursery
Pristiphora lena Kinc.	wS	Beating tray samples on Stormy Lake indicated 8 larvae on 15 trays.
Psilocorsis quercicella Clem.	bO	Heavy infestation on lakeshore trees in the Lake of the Woods area
Psilocorsis sp.	wB	Moderate infestation on lakeshore trees in Sabaskong Bay, Lake of the Woods
Rhyacionia frustrana Comst.	jP	Light infestation in McMeeken Twp., 67 infested trees, 150 examined
Semiothisa spp.	wP, bS	Found commonly on beating tray samples throughout the district
Tenthredinidae	W	Moderate defoliation of lakeshore bushes on Eltrut Lake
Tetralopha vacciniivora (Munroe)	Blue-berry	Numerous webs on ground cover near Lawrence Lake
Zellaria haimbacki Busck.	jP	Numerous larvae on beating trays in Mutrie Township
Zeugophora sp.	bPo, tA	Few mined leaves on reproduction in Satterly Township and near Lee Lake

STATUS OF INSECTS IN THE FORT FRANCES DISTRICT

M. J. Thomson

FORT FRANCES DISTRICT



SPRUCE BUDWORM

Location where pockets of light infestation occurred and collections were made in 1966

Legend

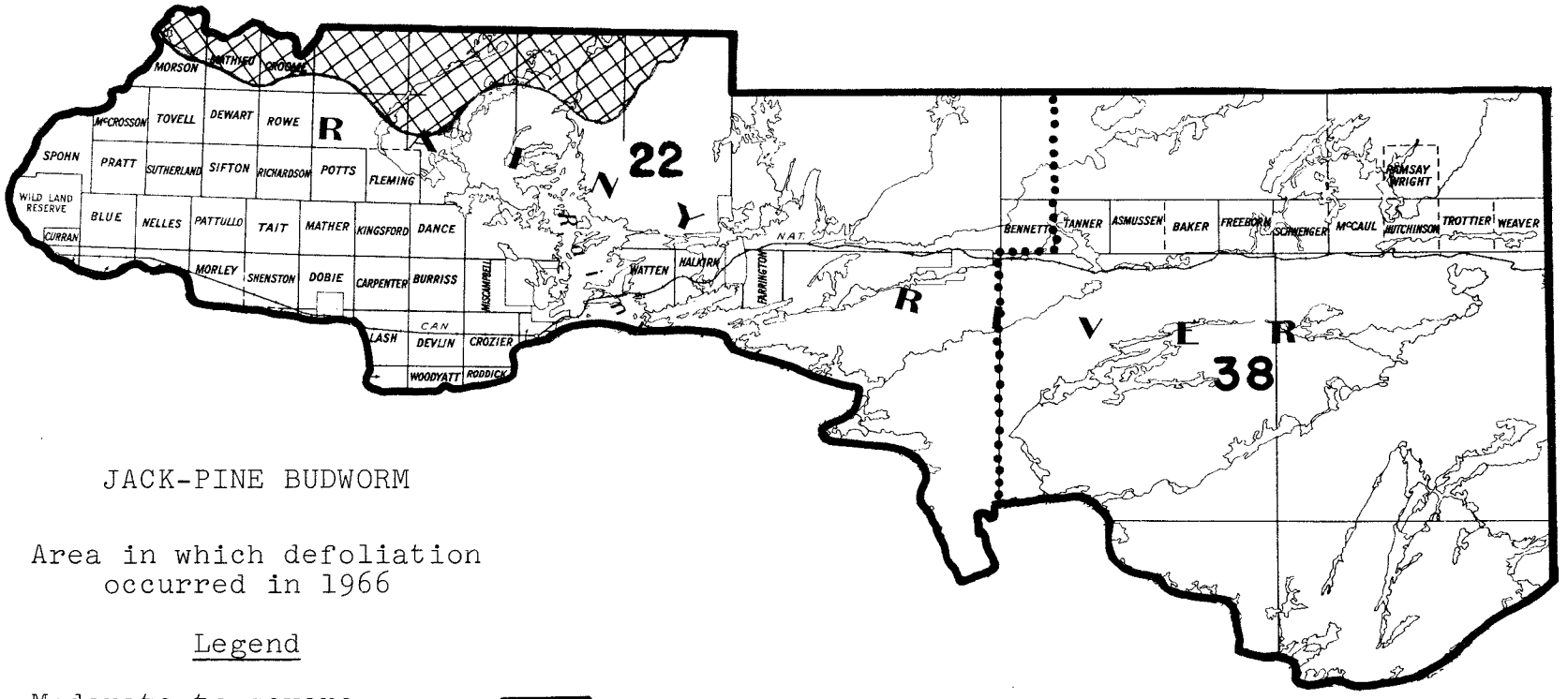
Light infestation. . . . . ◐

Collection points. . . . . ●

MILES

0 20 40

FORT FRANCES DISTRICT



JACK-PINE BUDWORM

Area in which defoliation occurred in 1966

Legend

Moderate to severe defoliation . . . .

MILES

0 20 40

Spruce Budworm, Choristoneura fumiferana Clem.

Although little change in population levels occurred, this insect was found more commonly than in 1965. Small numbers of larvae were collected at 11 widely-separated points in the district (Map).

Pockets of light infestation reported at Basswood and Trout lakes in 1965 declined sharply. A pocket of light infestation persisted at Lac La Croix, where records from 1962 to 1965 show that defoliation of the current foliage of balsam fir ranged from two to eight per cent, in 1966 defoliation increased to 11.4 per cent. Sequential egg mass sampling late in 1966 indicates that the infestation will increase in intensity in 1967.

Mortality of balsam-fir resulting from severe defoliation by spruce budworm recurred for the sixth consecutive year although a marked decrease in volume was recorded in 1966. Examination of balsam-fir in a permanent sample plot in the Cache Bay area of Saganaga Lake revealed that less than one per cent mortality by volume occurred whereas in the five years previous records show a cumulative total of 86 per cent mortality by volume.

Jack-pine Budworm, Choristoneura pinus Free.

An infestation of this insect spread from a focal point in the Lawrence, Rowan and Atikwa lakes area in 1965 to jack pine stands over an area of approximately 400 square miles in the northern part of Division 22 in 1966. The southern boundary of the infested area extended eastward from Point Brule on Lake of the Woods to Burditt, Sphene and Vane lakes, thence northward to Grave Lake on the Kenora-Fort Frances district boundary (Map). Aerial and ground surveys revealed that defoliation of jack pine was severe on hill tops and ridges and light in the valleys.

The insect is capable of causing severe damage if heavy defoliation persists for a few years (see photograph). According to R. R. Lejeune and W. F. Black, Canada Department of Agriculture, Bi-monthly Progress Report 3(2): 4.1947, jack pine staminate flowers are evidently the preferred feeding site for newly emerged larvae in the spring. "This concentration of budworm larvae on staminate flowers obtains until the supply of pollen is exhausted, following which there is a marked exodus from the flower to foliage of the current year, usually when larvae are in the fourth or fifth instar". Moreover, long term studies indicate that high budworm populations are usually associated with an abundance of jack pine pollen, a relationship that existed in 1966.

Larch Casebearer, Coleophora laricella Hbn.

A marked decrease in the abundance of this insect occurred in the district in 1966 compared with 1965 when it was found commonly in tamarack stands west of Fort Frances in Division 22. Only one collection was obtained in 1966 and it came from Crozier Township where quantitative sampling revealed an average of .25 casebearers per 18-inch branch tip.

Oak Twig Pruner, Elaphidionoides parallelus Newn.

Although the oak twig pruner occurs commonly in southern Ontario it had not been found within the range of oak in western Ontario until 1966 when light infestations were found on shoreline red oak trees at Brule Narrows and Redgut Bay on Rainy Lake. The insect is of little economic importance in oak stands but considerable damage sometimes occurs on shade and open-grown trees (see photograph).

The adult deposits eggs near the tip of the twigs in the axil of the leaf in early summer. The young larva mines down the stem of the twig until late summer when it severs the branch. The borer overwinters in the fallen twig.

White-pine Shoot Borer, Eucosma gloriola Heinr.

A decline in population levels of this shoot borer occurred for the second consecutive year in Morson Township and a slight increase was recorded near Williamson Lake in the eastern part of the district (Table 14). Quantitative sampling for three consecutive years in jack pine regeneration in Morson Township and at Williamson Lake showed that lateral shoots are most frequently attacked.

TABLE 14

Summary of Shoot Damage by the White-pine Shoot Borer
on 100 Regeneration Jack-pine Trees
at Each of Two Points from 1964 to 1966

Location	Av. d.b.h. in inches	No. of shoots damaged						Total number shoots damaged		
		Leaders			Laterals					
		1964	1965	1966	1964	1965	1966	1964	1965	1966
Morson Twp.	2	41	19	3	111	58	12	152	77	15
Williamson Lake	2	-	1	0	-	2	7	-	3	7

Balsam-fir Sawfly, Neodiprion abietis complex

A marked increase in population levels and incidence of this insect occurred in 1966 compared with 1965. Colonies were observed commonly on roadside and fringe balsam fir trees along Highway 11 from Bears Pass to the eastern boundary of the district and along Highway 71 in Claxton Township, south of Nestor Falls.

Quantitative sampling at five scattered points revealed that the highest average number of larval colonies occurred on open-grown balsam fir at French Lake Park (Table 15). Approximately 25 per cent defoliation of the lower third of the crowns occurred in this area. Light infestations were observed on groups of trees at thirteen points elsewhere in the district, but defoliation did not exceed five per cent in any of these areas.

TABLE 15

Summary of Balsam fir Sawfly Colony Counts at Five Points in Fort Frances District in 1966

Note: Counts are based on examination of 10 balsam-fir trees at each point.

Location	Av. d.b.h. in inches	No. of trees infested	Av. no. of colonies per tree
French Lake	5	10	6.1
Eye Lake	4	3	1.1
French River	4	1	0.1
Bears Pass	4	7	2.3
Claxton Twp.	4	4	0.7

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

Populations of this sawfly remained at a low level. Small numbers of colonies were found at three of five quantitative sample points (Table 16). Single colonies were observed on hard pines at six points elsewhere in the district.

TABLE 16

Summary of Red-pine Sawfly Colony Counts at Five Points in Fort Frances District, 1964 to 1966

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

Location	Tree species	Av. d.b.h. in inches	No. of trees infested 1964	1965	1966	Av. no. colonies per tree 1964	1965	1966
Russell Lake	rP	3	6	0	8	0.8	0.0	1.3
Winkle Lake	rP	6	4	3	0	0.9	0.7	0.0
Lac La Croix	rP	4	4	1	0	1.5	0.1	0.0
Rainy Lake	rP	8	-	-	1	-	-	0.1
East District Boundary	jP	2	-	-	1	-	-	0.2

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

A decline in numbers of this insect occurred in 1966. In 1965 larval colonies occurred commonly on shoreline trees throughout the western half of the district but in 1966 the insect was found only in the Rainy Lake area. Shoreline trees on a small privately-owned island in Rocky Islet Bay were lightly infested. Single colonies were found at McDonald Inlet and at Redgut Bay.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

A sharp decline in population levels of this sawfly occurred in 1966. Heavy infestations reported in 1965 in patches of jack-pine regeneration along Highway 11 from Nym Lake road to the east boundary of the district and medium infestations in Devlin and Richardson townships subsided in 1966. The heavy infestation reported for two consecutive years in a mixed jack and red pine plantation at French Lake road declined to light intensity. Quantitative sampling in the area revealed an average of 1.4 colonies per tree. Single colonies were observed at 10 widely-separated locations elsewhere in the district.

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

No appreciable change in population levels of this sawfly occurred. Small pockets of white spruce were severely defoliated in French Lake Park, at the entrance to Quetico Park from Highway 11, on hedgerows in the town of Atikokan in Division 38 and on shoreline trees along the Mile River in Division 22. Moderate defoliation was observed on shoreline trees at Jackfish Lake and in Burriss Township. Small numbers of fringe and open-grown trees were lightly defoliated in Spohn, Lash and Potts townships and in the Wild Land Reserve. Beating samples yielded small numbers of larvae at fourteen points elsewhere in the district.

White-pine Weevil, Pissodes strobi (Peck)

Although this weevil is widespread in the district, records show that populations have remained at a low level for the past several years. In 1966, only small numbers were found on regeneration fringe and open-grown white pine and jack pine trees at four quantitative sample points and at numerous locations elsewhere in the district (Table 17).

TABLE 17

Summary of Leader Mortality by the White-pine Weevil at Four Points in Fort Frances District

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

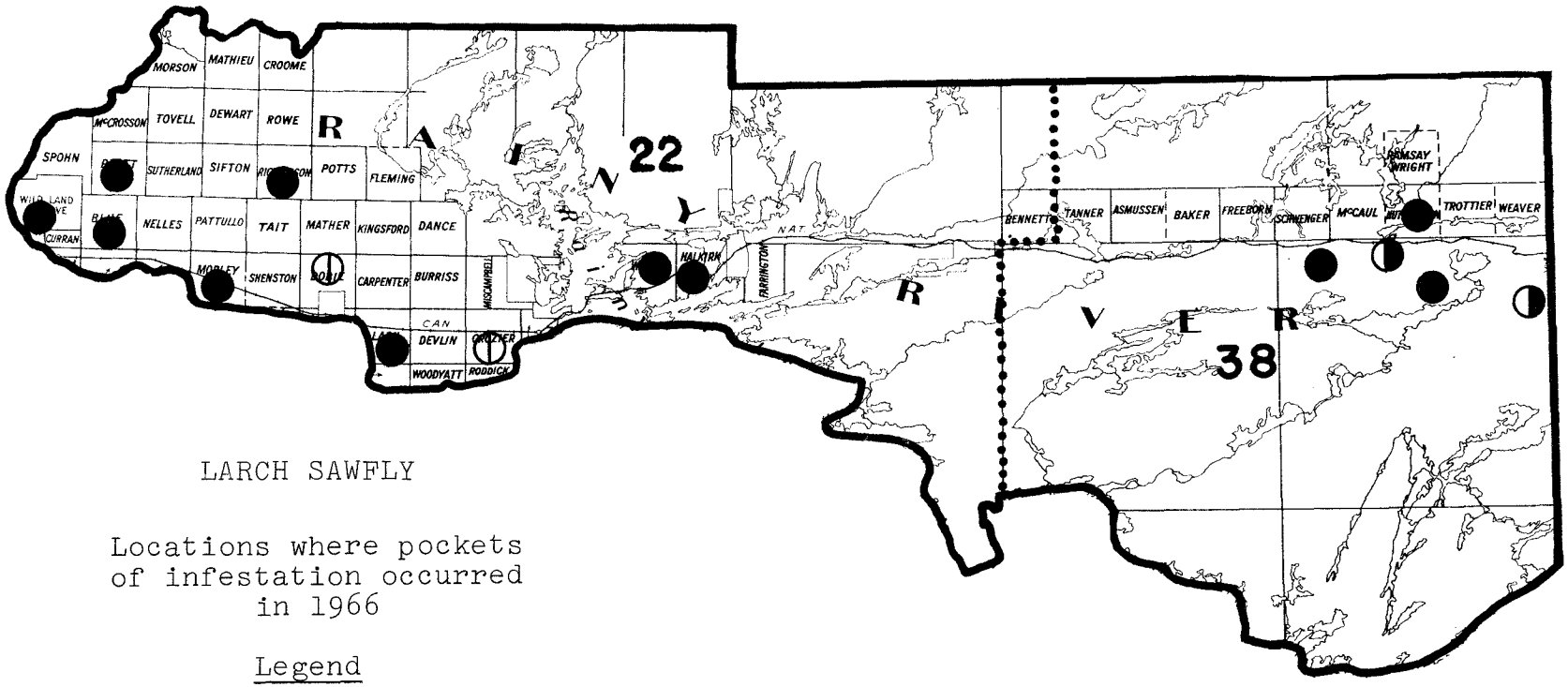
Location	Tree species	Av. d.b.h. in inches	Per cent of leaders killed 1964	1965	1966
Morson Twp.	jP	2	6	2	3
Miscampbell Twp.	wP	1	8	4	4
Williamson Lake	jP	2	9	0	6
Highway 11 at Pickerel River	jP	1	5	7	2

Larch Sawfly, Pristiphora erichsonii (Htg.)

Sharp increases in the extent and intensity of infestations of this insect were recorded for the second consecutive year (Map). Severe defoliation of tamarack trees occurred in the Wild Land Reserve and in Pratt, Blue, Morley, Richardson, Lash and Halkirk townships in Division 22 and in roadside stands along Highway 11 from Perch Lake near Elizabeth to the east boundary of the district. Small pockets of moderate defoliation were observed at three widely-scattered points elsewhere in the eastern part of the district. Light infestations were mapped in clumps of tamarack in Crozier and Dobie townships. Defoliation ranged from approximately 10 per cent in lightly infested stands to nearly 90 per cent in heavily infested areas in the eastern part of the district.

A collection of 100 sawfly cocoons was made in late summer of 1965 in a heavy infestation near Crystal Lake to determine the incidence of biological control factors and their effect on adult emergence in the spring of 1966. Laboratory examination revealed that 21 per cent were killed by the parasite Bessa harveyi (Tns.), 7 per cent died from a fungus disease and 14 per cent from unknown causes. The remaining 58 per cent of the cocoons contained healthy insects capable of emerging as adults.

FORT FRANCES DISTRICT



LARCH SAWFLY

Locations where pockets of infestation occurred in 1966

Legend

Light infestation . . . ◔

Medium infestation. . . ◑

Heavy infestation . . . ●

MILES

0 20 40

Spruce Bud Gall Midge, Rhabdophaga swainei Felt

Little bud damage has been caused by this insect in the past several years. Small numbers of infested buds were found at sample points and at numerous locations elsewhere in the district (Table 18). Damaged buds were most common on regeneration, open-grown and fringe trees.

TABLE 18

Summary of Counts of Terminal Buds Infested by the Spruce Bud Gall Midge in Fort Frances District 1964 to 1966

Note: Counts are based on examination of 50 branch tips, five from each of ten trees at each location.

Location	Tree species	Av. d.b.h. in inches	Per cent of buds infested 1964	1965	1966
Menary Twp.	wS	3	-	1.0	2.1
Sifton Twp.	wS	3	0.6	2.0	1.7
Factor Lake	bS	4	1.4	12.0	5.1
Hwy. 11 at East District Boundary	bS	1	0.0	1.0	7.5
Morson Twp.	wS	4	-	-	5.0

TABLE 19

Summary of Miscellaneous Insects Collected in Fort Frances District

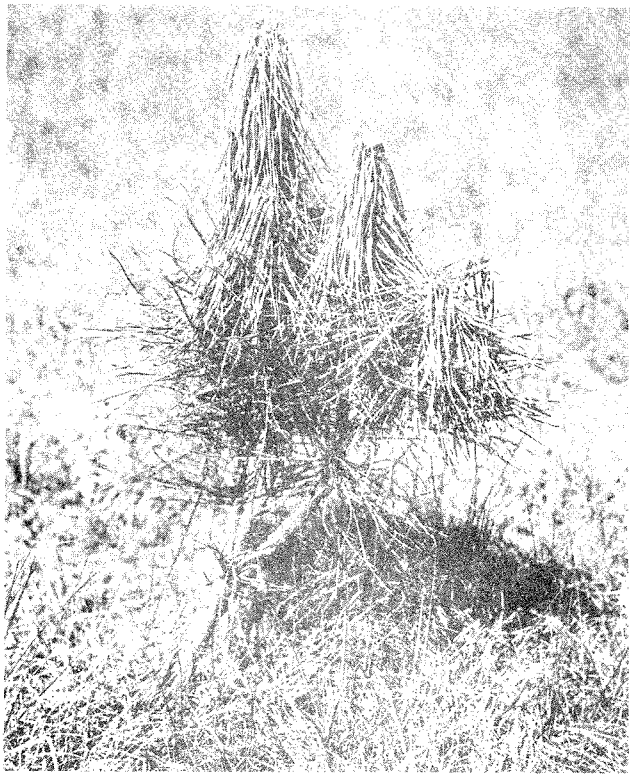
Insect	Host(s)	Remarks
Acleris variana Fern.	wS, bF, bS	Small numbers at five widely-separated points
Anisota rubicunda Fabr.	rM	Two colonies at Porter Inlet, Rainy Lake
Anisota virginiensis (Drury)	rO	Decline recorded for four consecutive years to reach an extremely low ebb in 1966
Archips cerasivoranus (Fitch)	rCh	Small numbers of colonies north of Rainy River
Aphrophora parallela (Say)	bF	Observed in small numbers at widely scattered points

TABLE 19 (continued)

Insect	Host(s)	Remarks
Argyrotaenia quadrifasciana Fern.	Haw	First recorded in the district in 1964, heavy at one point in 1966
Astylopsis variegatus Dill.	mM	First record of this rare insect in the district
Chrysomela crotchi Brown	tA, bPo	Declined from light-to-moderate infestations in 1964 to reach a low ebb in 1966
Coleophora sp.	Do	Very rare casebearer, collected in small numbers at Devils Cascade, Rainy Lake
Dasyneura balsamicola (Lintn.)	bF	More common than in past several years
Datana ministra Dru.	wB	Declines recorded for four consecutive years to reach an extremely low ebb in 1966
Dioryctria reniculella Grt.	wS	Spruce cone worm found in small numbers at Lac La Croix
Diprion hercyniae (Htg.)	wS	Reached a low ebb in 1966, 19 larvae collected at eight scattered points
Dryocoetes autographus Ratz.	bS	Bark beetle found in small numbers near McKenzie Lake, Division 38
Hylurgops pinifex Fitch	wP	Bark beetle collected from a decadent white pine near McKenzie Lake
Hyphantria cunea Dru.	Al	Smaller numbers than in previous year, six colonies found in Jackfish Lake area
Lambdina fiscellaria fiscellaria (Gn.)	bF, bS	A light infestation near the French River in 1965 declined to a low ebb in 1966
Lithocolletis hamadryadella (Gn.)	bO	Leaf miner at low ebb, found at only one point
Lithocolletis salicifoliella Chamb.	tA	Slight increase in numbers observed at three widely scattered points

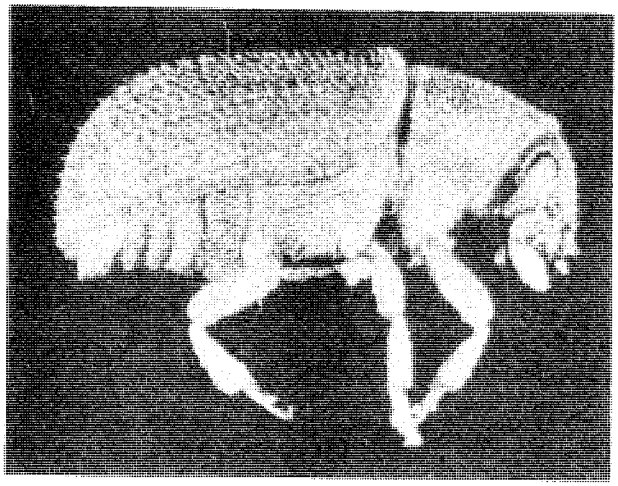
TABLE 19 (continued)

Insect	Host(s)	Remarks
Malacosoma pluviale (Dyar)	rCh	First incidence of this caterpillar in Division 22 in the past six years, two colonies were found in the Wild Land Reserve
Mindarus abientinus Koch.	wS	Although common on balsam fir, rarely found on spruce. Heavy infestation on hedgerow in town of Atikokan
Monoctenus fulvus (Nort.)	Juniper, eC	The cedar sawfly was found more commonly on ground juniper than on eastern cedar in the district in 1966
Nematus limbatus Cress.	W	Small numbers of colonies observed at three points
Neodiprion maurus Rohwer	jP	One colony of this relatively rare sawfly found
Neodiprion pratti banksianae Roh.	jP	Remained at much the same low ebb as in the previous year
Neodiprion pratti paradoxicus Ross	jP	One colony found in Devlin Township
Petrova albicapitana Busck.	jP	Fewer numbers observed than in 1965
Pikonema dimmockii (Cress.)	bF, wS, bS	Small numbers collected at ten widely scattered points
Profenusa canadensis (Marlatt)	Haw	High populations of this leaf miner occurred on roadside trees in Division 22
Profenusa thomsoni (Konow)	wB	Small numbers of mined leaves observed at five widely scattered points
Semiothisa spp.	wS, bS, bF, wP, tL, eC	Loopers collected in small numbers at sixteen points
Toumeyella numismaticum P. McD.	jP	Decrease in population level, one lightly infested tree found



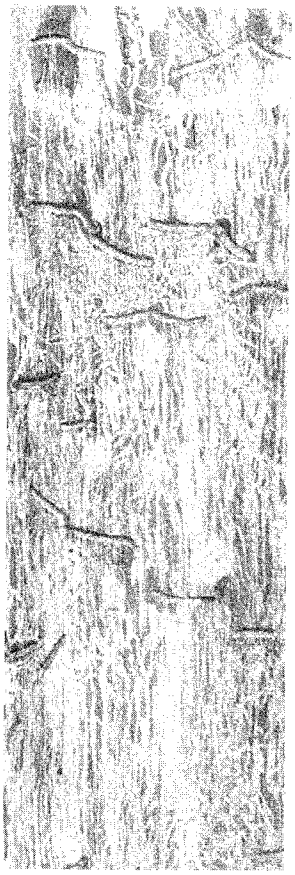
Damage to young red pine

Damage to older tree



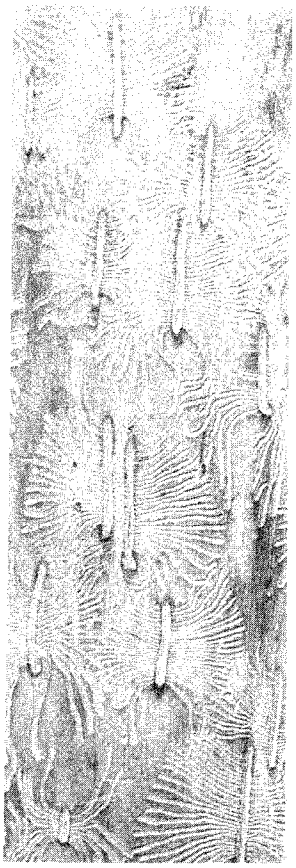
NATIVE ELM BARK BEETLE,
Hylurgopinus rufipes (Eichh.)

THE SMALLER
EUROPEAN ELM BARK BEETLE
Scolytus multistriatus (Marsh.)

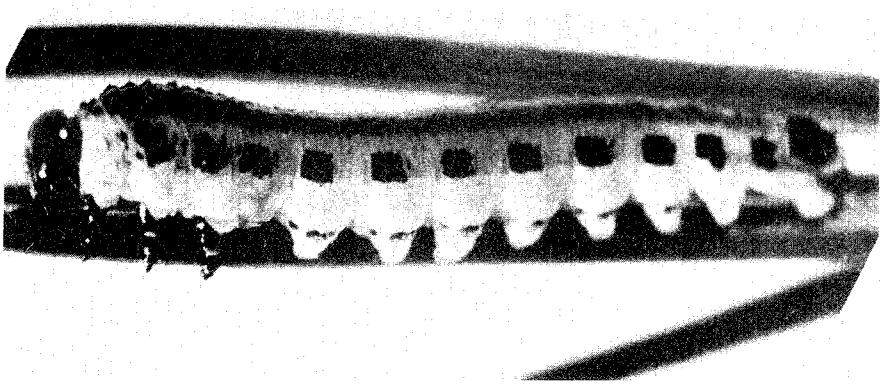


Hylurgopinus rufipes
galleries

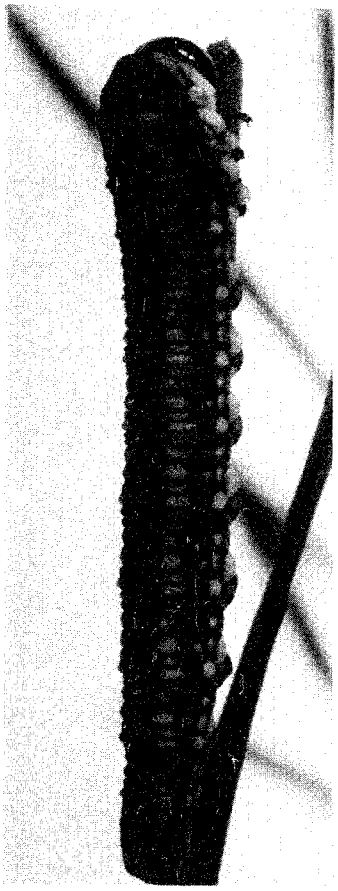
Damage to elm stand by
Ceratocystis ulmi (Buism.) C. Moreau



Scolytus multistriatus
galleries

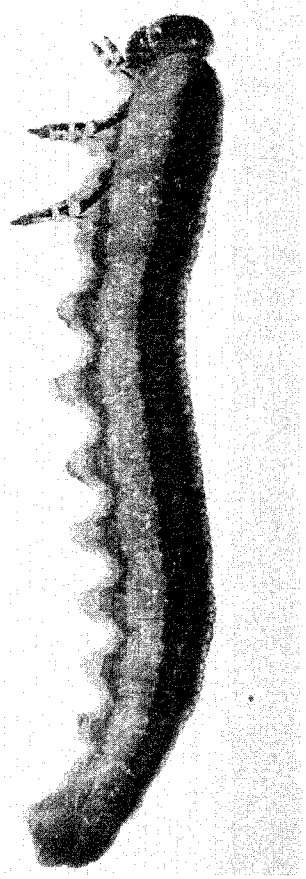


RED-HEADED JACK-PINE SAWFLY,
Neodiprion virginianus complex

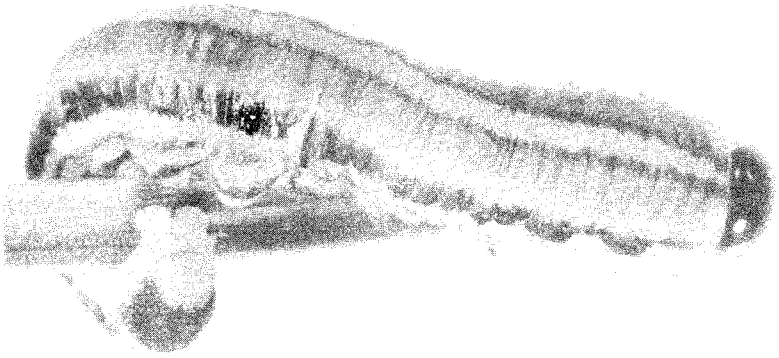


INTRODUCED
PINE SAWFLY,
Diprion similis (Htg.)

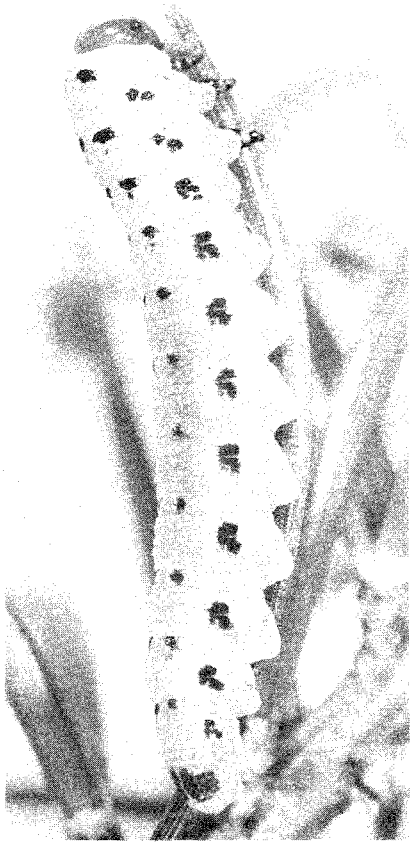
RED-PINE SAWFLY,
Neodiprion nanulus nanulus
Schedl.



NURSERY PINE
SAWFLY,
Diprion frutetorum (F.)

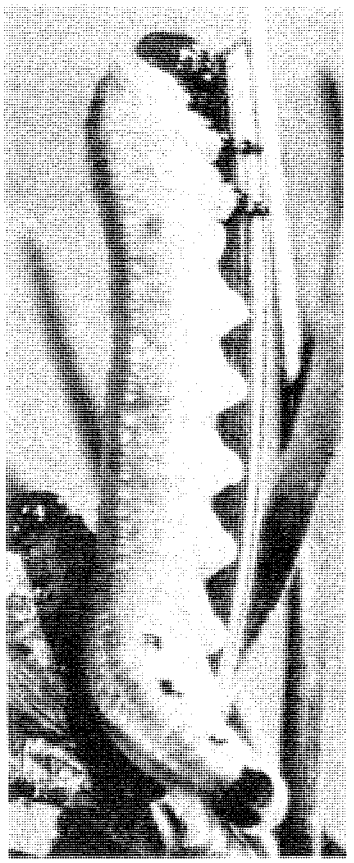


BLACK-HEADED JACK-PINE SAWFLY,
Neodiprion pratti banksianae Roh.



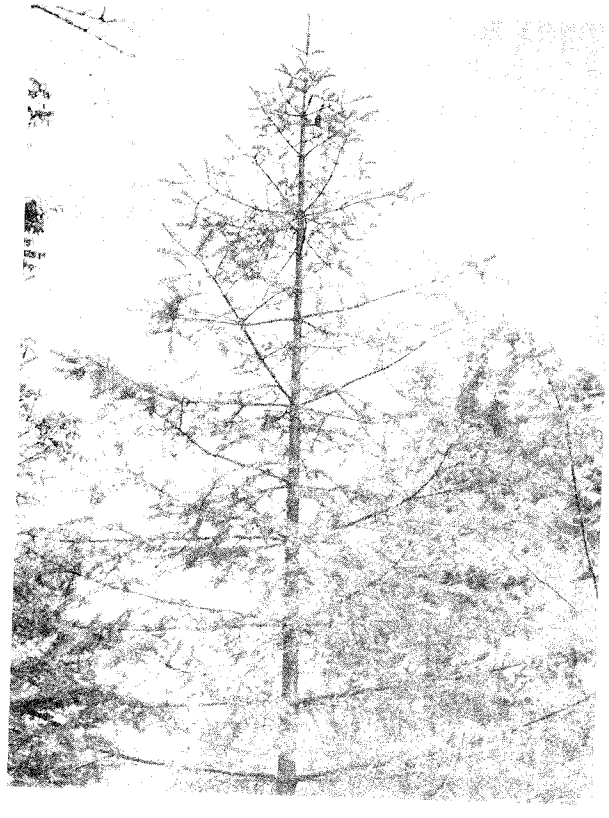
RED-HEADED
PINE SAWFLY,
Neodiprion lecontei Fitch

EUROPEAN
PINE SAWFLY,
Neodiprion sertifer (Geoff.)

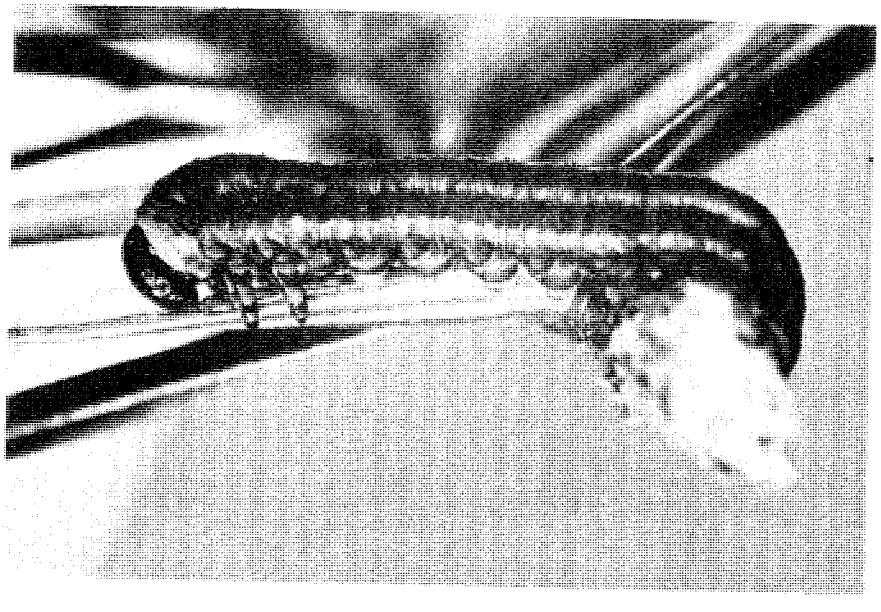


A SAWFLY,
Neodiprion pratti
paradoxicus Ross

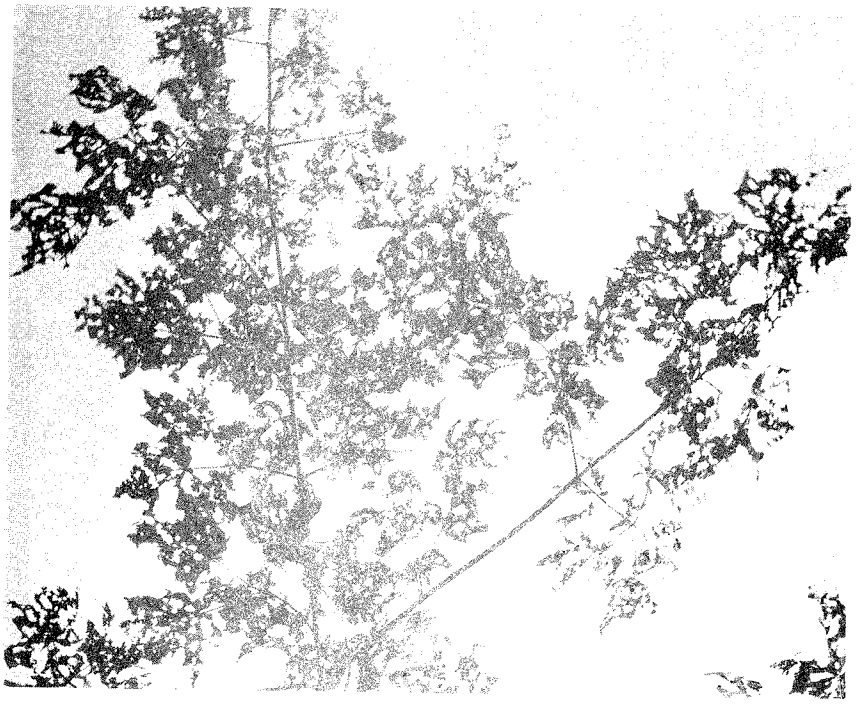
BALSAM-FIR SAWFLY,
Neodiprion abietis complex



Defoliation of balsam tree



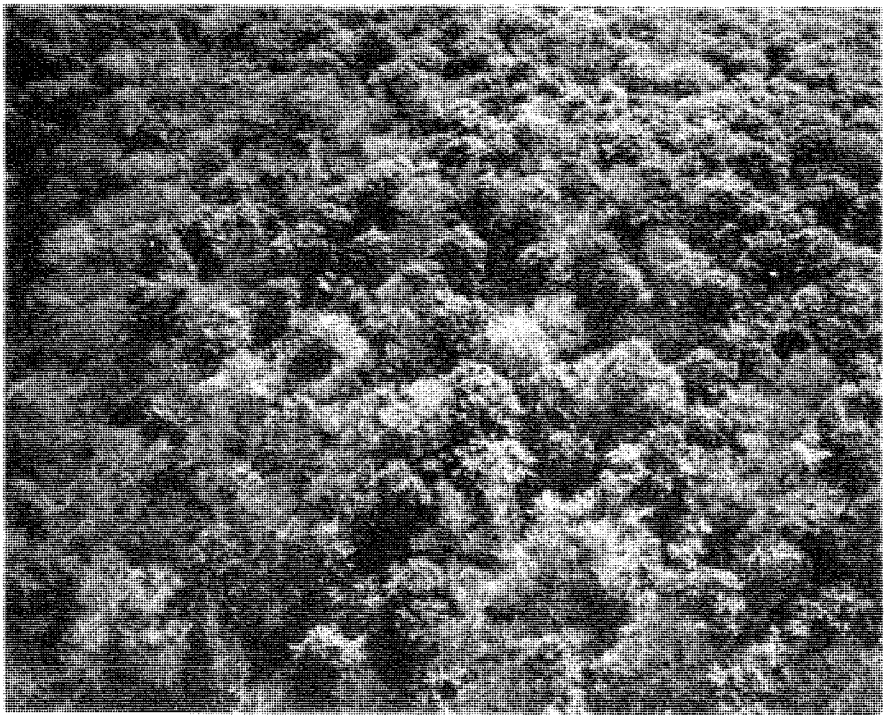
Full grown larva



Defoliation of sugar maple leaves

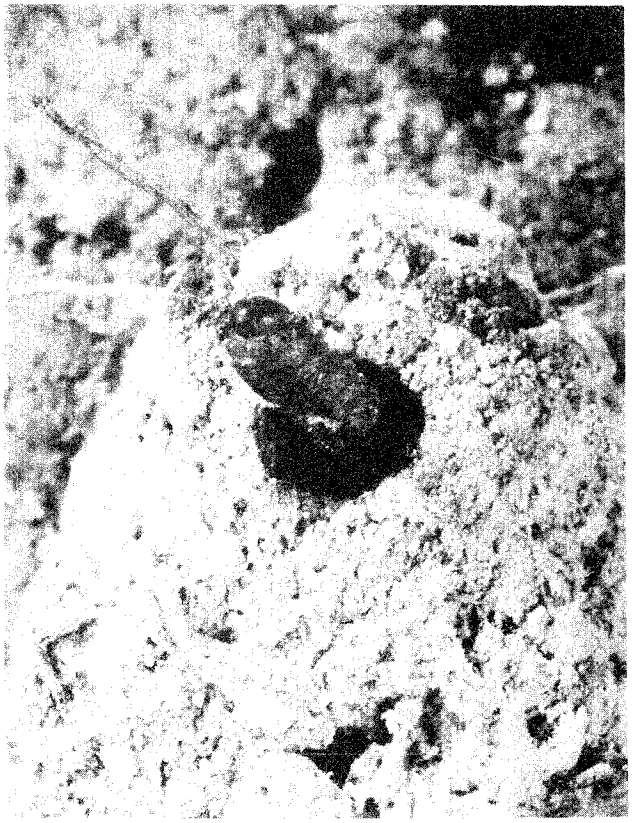
Heavy defoliation of sugar maple trees

WANDERING SAWFLY, *Dimophopteryx pingius* (Nort.)



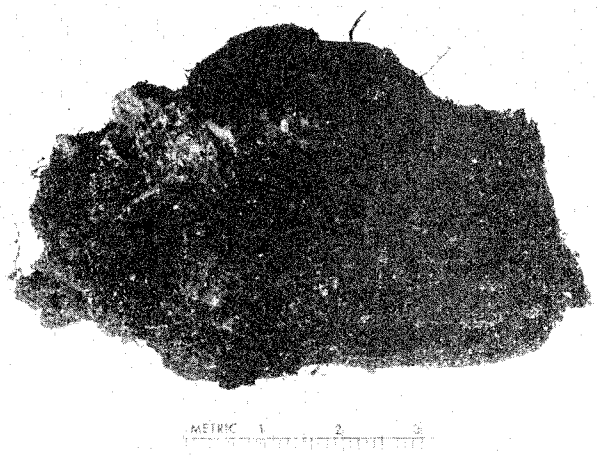
Severe defoliation of birch stand

Larvae defoliating birch leaf

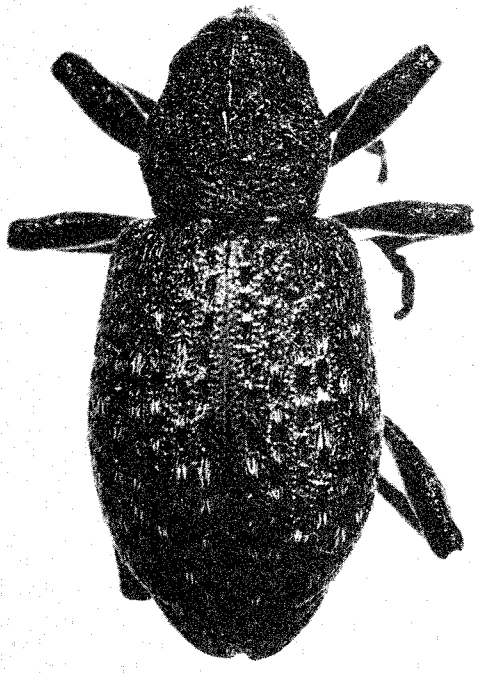


Pupa cell in soil

A ROOT WEEVIL, *Hylobius warreni* Woods

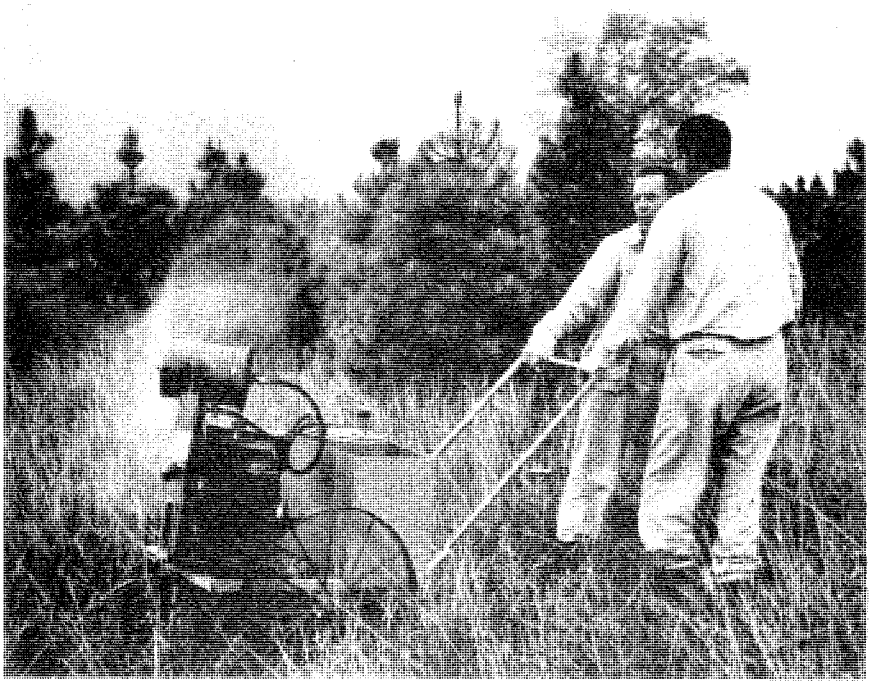


Pupa cell



Adult

Pupa cell opened



Spraying virus on Scots pine plantation to control sawfly larvae

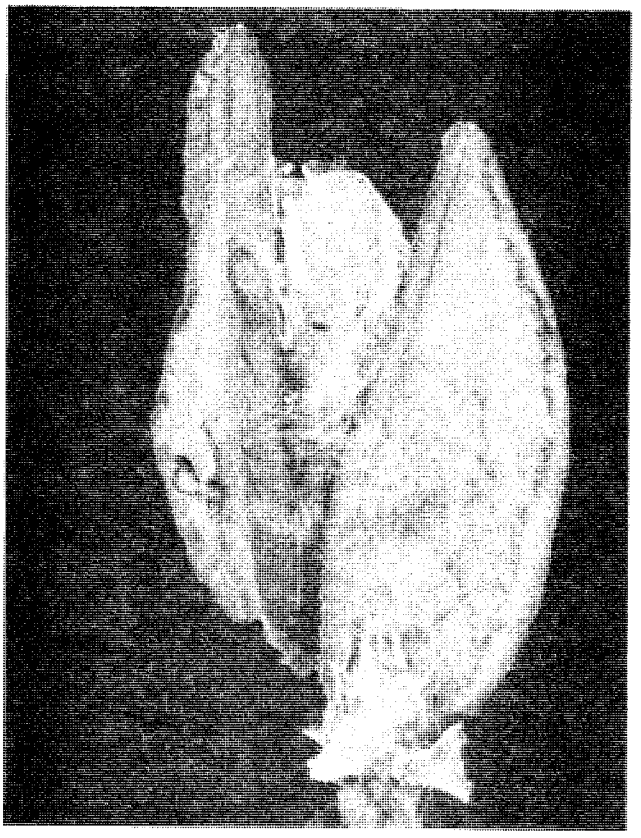
Inspection of Scots pine plantation to determine
effectiveness of control measures

LEAF AND TWIG BLIGHT OF POPLAR,
Pollacia elegans Serv.

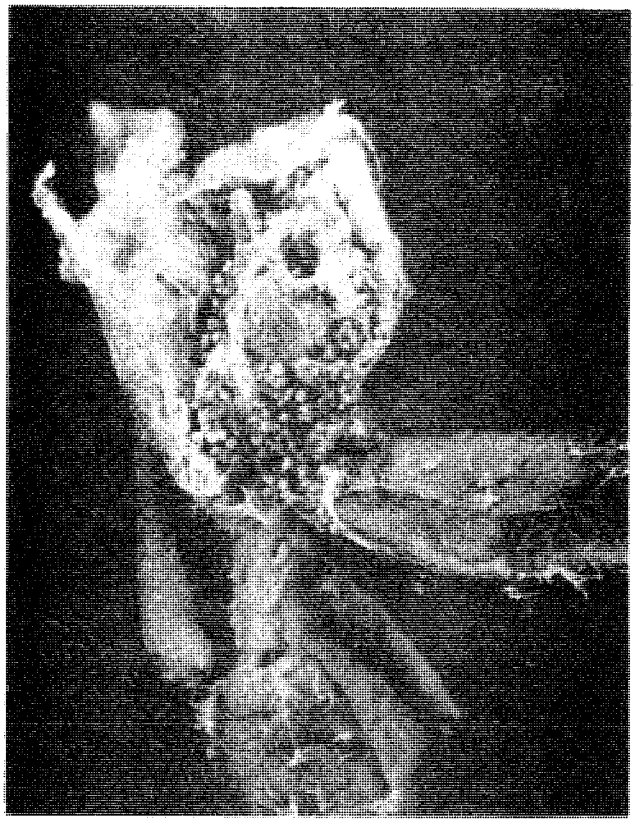
Trees heavily infected with twig blight

DWARF MISTLETOE, *Arceuthobium pusillum* Pk.

Black spruce trees showing witches brooms



Leaves held together by webbing spun by larva



Leaves opened to reveal feeding gallery