Status of Insects in the Lake Huron District

Bowser, R.L.

Information Report 0-X-10 (Forest Research Laboratory, Ontario Region)

1965

FOREWORD

J. E. MacDonald

Outbreaks of the forest tent caterpillar have highlighted reports dealing with forest insect surveys for the past several years. In 1965, the outbreak in Western Ontario reached its peak and poplar stands within an area of about 34,000 square miles were severely defoliated. Egg surveys in the fall revealed that a marked decline in infestation intensity will occur in Sioux Lookout and Kenora districts but high larval populations will persist in Fort Frances and Port Arthur districts in 1966. Trends in infestation intensities will vary from area to area in eastern Ontario, with the most noteworthy increase in the extent of infestations occurring in the Lake Nipissing outbreak.

The development of new infestations of Bruce spanworm and the European pine sawfly were of particular interest in 1965. Infestations of the former occurred in Sault Ste, Marie, Sudbury and Pembroke districts. Severe defoliation of hardwoods that resulted in relatively large areas represented first records of extensive infestations in Ontario. A major extension in the known distribution of the European pine sawfly was recorded when the insect was found in two Scots pine plantations on Manitoulin Island. This extension places the insect much closer to major stands of jack pine in northern Ontario.

For the third consecutive year low temperatures in the spring caused considerable mortality of the current year's shoots of balsam fir and white spruce at many locations in Ontario. Continued cold weather throughout the summer delayed the development of many insects and in some instances larvae failed to reach maturity before freezing temperatures occurred in the fall.

Tree disease surveys continued to reveal serious losses of white elm resulting from Dutch elm disease in southern Ontario. In northern Ontario two centers of infection occurred on Manitoulin Island and infected elm were found at one location near Spanish on the North Shore of Lake Huron. Intensive surveys to determine the distribution and incidence of this disease will be continued in 1966.

During the early years of the Survey in Ontario Field Technicians were largely concerned with determining the distribution and abundance of forest insects and appraising losses in forest stands. As a consequence the detection aspect of survey work was of a high order. Later, added responsibility for disease surveys and the development of more elaborate sampling procedures, reduced the time available for purely detection work. To compensate for this, greater emphasis has been placed on systematic aerial reconnaissance throughout the vast forested areas of central and northern Ontario.

The Survey welcomed the addition of a Forest Research Technician to its staff in 1965. This appointment now provides one field representative for each district in the Southeastern Region where formerly three men were responsible for survey work in four districts.

In the reports that follow, insects and tree diseases that are of interest in adjoining districts are dealt with on a regional basis. Others are dealt with in detail on a district basis.

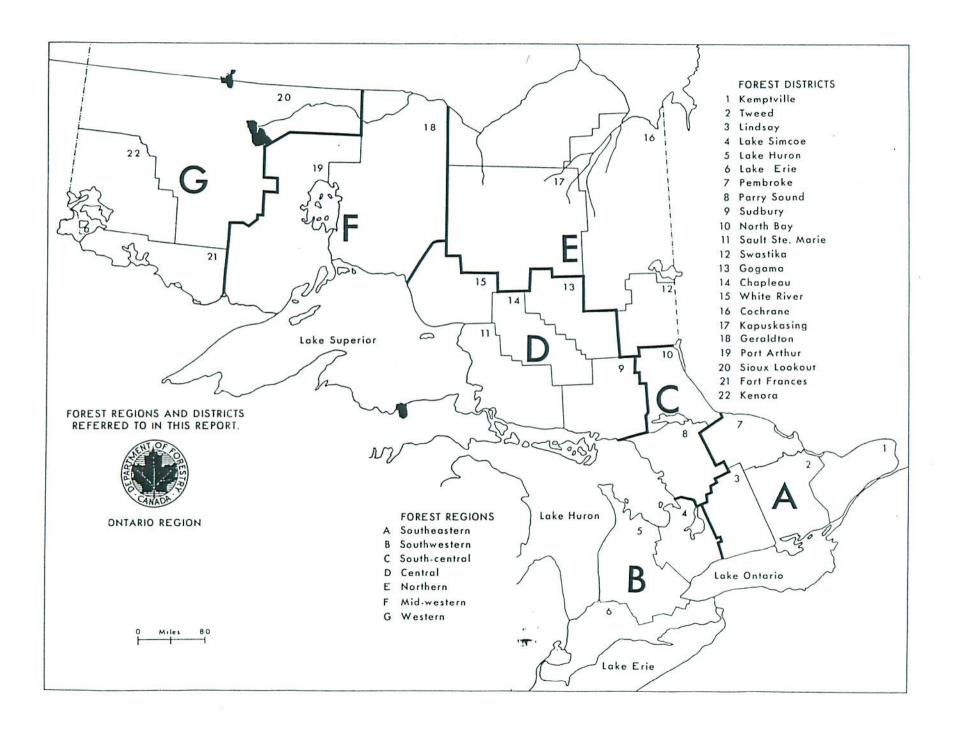


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STATUS OF INSECTS IN THE LAKE HURON DISTRICT

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R. L. Bowser

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STATUS OF INSECTS

Fall Cankerworm, Alsophila pometaria (Harr.)

A marked decline in larval populations of this defoliator of hardwoods occurred in 1965. Scattered light infestations generally caused less than 10 per cent defoliation of white elm and basswood trees in the central and southern parts of the district.

Spruce Budworm, Choristoneura fumiferana (Clem.)

A light infestation occurred for the second consecutive year in white spruce plantings in the Grey Main Tract, Glenelg Township. Small numbers of larvae were recovered in beating samples from white spruce trees in the Bruce Peninsula and from balsam fir trees in Artemesia Township.

Jack-pine Budworm, Choristoneura pinus Free.

Following two consecutive years of medium infestation in jack pine plantations in Keppel and Normanby townships larval populations declined to light intensity in 1965. The insect was found in small numbers in a red pine plantation in the Hall Tract, Blenheim Township, where a medium infestation occurred in 1964. Light infestations were noted commonly in scattered Scots, red, and jack pine plantings elsewhere in the district.

A Leaf Miner on Ironwood, Chrysopeleia ostryaella Cham.

Except in Beverly Township where a medium infestation persisted, populations of this leaf miner were generally lower than in 1964. The most significant decline occurred in Sullivan Township where the larval population decreased to light intensity following three consecutive years of heavy infestation. Although the insect was found in small numbers at several other locations, leaf damage was of little consequence. Parasitism, evident in collections from Beverly Township, may have contributed to the general decline.

Larch Casebearer, Coleophora laricella (Hbn.)

Minor to noteworthy increases in larval populations were observed at several locations in the district in 1965. The most significant increases occurred at quantitative sample points in Amabel and Blandford townships where light infestations increased to medium intensity. The larval population at a sample point in Glenelg Township decreased for the fourth consecutive year (Table 9). Medium infestations were also noted in a European larch plantation in the Sandy Hill Tract, Woolwich Township, and in a tamarack stand in West Luther Township. Random counts of the total number of larvae on two 18-inch branch tips at five widely-separated points varied from five to 57.

Two species of introduced parasites were reared from a collection of pupae from Holland Township. Twenty-three per cent were parasitized by <u>Agathis pumila</u> (Ratz.) and one per cent by Epilampsis laricinellae (Ratz.).

TABLE 9

Summary of Larch Casebearer Larval Counts at Six Foints in the Lake Huron District from 1963 to 1965

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

Location	Av. d.b.h. of sample	Av. no. 1	arvae per	branch tip
(township)	trees in inches	1963	1964	196
Lindsay	6	1.0	4.1	5.:
Amabel	5	7.2	11.2	21.
Bentinck	5	2.1	3.3	7.
Blandford	6	14.0	12.1	27.
S. Dumfries	6	29.1	20.5	22.
Glenelg	6	21.5	15.0	4

Pitted Ambrosia Beetle, Corthylus punctatissimus (Zimm.)

Adult populations of this beetle continued to cause light and moderate damage to sugar maple regeneration throughout the district. Surveys to determine the degree of damage were continued in two sampling areas (Table 10). Sampling was based on the examination of all coppice growth in two randomly selected square-yard plots in each area. The accumulated incidence of attack in the 5-millimeter basal diameter class in Puslinch Township increased from 12.4 per cent in 1964 to 20.8 per cent in 1965. In Sullivan Township damage in the 6-millimeter class was 19.6 per cent, virtually the same as in 1964.

Plots 1 and 2 were located in Puslinch Township and plots 3 and 4 were in Sullivan Township.

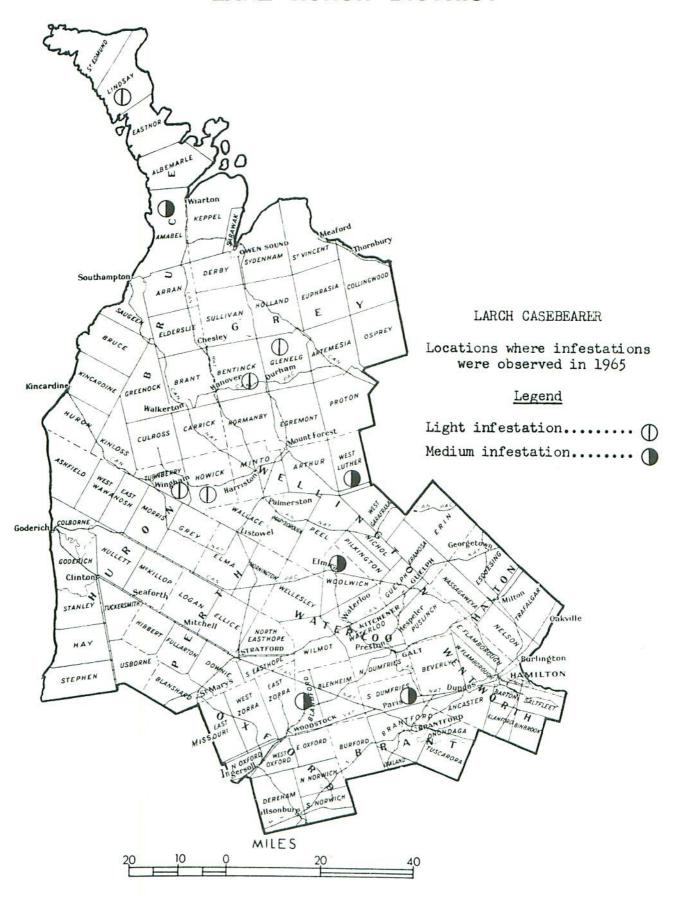
TABLE 10

Summary of Damage by the Pitted Ambrosia Beetle at Two Locations in the Lake Huron District in 1965

Note: All the sugar maple reproduction in square-yard plots was examined.

Plot No.	No. stems examined	Av. basal diam. in millimeters	Av. height of trees in inches	Per cent of trees infested
1	34	5.3	12.3	26.5
2	53	4.5	12.0	15.1
3	20	6.6	14.0	25.0
4	14	5.8	11.7	14.3

LAKE HURON DISTRICT



Walnut Caterpillar, Datana integerrima G. & R.

Population levels of this caterpillar increased generally in 1965. Moderate to severe defoliation of walnut trees occurred for the second consecutive year in the St. Mary's-Thamesford area and in Stephens Township, Huron County. An increase in population levels was observed in several areas in the southern part of Huron County, throughout Halton County, at numerous points in Oxford, Wentworth and Brant counties and at one location in south Wellington County. Thirty-five to 50 per cent defoliation occurred commonly in the above areas, and occasional trees suffered from 75 to 100 per cent defoliation. The heavy infestation in Arran Township declined to light-to-medium intensity in 1965.

Yellow-necked Caterpillar, Datana ministra (Drury)

A light-to-medium infestation of this caterpillar persisted on several large roadside white elm trees south of Thamesford in North Oxford Township. Defoliation ranged from 10 to 35 per cent on individual trees. Light infestations were noted between Bright and Hickson in East Zorra Township and near Grand Bend in Stephen Township. Five colonies were counted on one open growing basswood tree in Esquesing Township.

Nursery Pine Sawfly, Diprion frutetorum (Htg.)

Although only light infestations recurred, quantitative sampling showed minor increases in larval populations (Table 11). The total number of larvae in quantitative samples taken from Scots, white and jack pine at several widely-separated locations elsewhere in the district ranged from two to 11.

TABLE 11

Summary of Nursery Pine Sawfly Larval Counts
Taken at Four Locations in the Lake
Huron District from 1963
to 1965

Location	Tree	Av. d.b.h.		no. larva	
(township)	species	in inches	1963	1964	1965
Keppel	scP	6	16	9	18
St. Vincent	scP	5	2	0	6
Euphrasia	scP	4	4	2	5
Woolwich	wP	5	3	1	9

European Spruce Sawfly, Diprion hercyniae (Htg.)

Noteworthy increases in larval populations of this sawfly occurred in 1965 compared with 1964 at sample points in Albemarle and St. Edmunds townships where the total number of larvae per 15-tray sample increased from 13 to 62, and 47 to 78 respectively (Table 12). In contrast, at a sample point in Holland Township, the number of larvae per sample decreased from 82 to 30. Random sampling at several other locations revealed two to 30 larvae per sample.

TABLE 12

Summary of European Spruce Sawfly Larval Counts Taken from White Spruce Trees at Seven Points in the Lake Huron District from 1963 to 1965

Location	Av. d.b.h. of sample trees		Total no. larvae per 15-tray sample			
(township)	in inches	1963	1964	1965	sampled	
Albemarle	6	14	13	62	Sep 14	
St. Edmunds	6	45	47	78	Sep 14	
Glenelg	6	3	9	3	Sep 28	
Holland	4	86	82	30	Sep 13	
Woolwich	4	6	10	5	Sep 20	
Euphrasia	5	-	43	27	Sep 23	
Minto	5		9	11	Sep 28	

Introduced Pine Sawfly, Diprion similis (Htg.)

Numbers of larvae declined generally for the second consecutive year. This trend was most evident in Scots pine windbreaks in Keppel and St. Vincent townships (Table 13). Random sampling revealed a maximum of 27 larvae per sample.

TABLE 13

Summary of Introduced Pine Sawfly Larval Counts Taken at Seven Locations in the Lake Huron District from 1963 to 1965

Location	Tree	Av. d.b.h.		no. larva	77
(township)	species	in inches	1963	1964	1965
St. Vincent	scP	5	126	25	6
Artemesia	wP	4	9	7	8
Minto	wP	5	3	7	1
Keppel	scP	7	42	26	16
Woolwich	wP	6	3	10	11
Beverly	wP	4	4	2	1
Euphrasia	scP	4	13	14	6

Pine Bud Moth, Exoteleia dodecella Linn.

Light infestations were observed more commonly in Scots pine plantings than in 1964. Although bud damage increased slightly at some locations, no serious damage was observed in the district in 1965 (Table 14).

TABLE 14

Summary of Damage Caused by the Pine Bud Moth to Scots Pine Buds at Three Points in the Lake Huron District from 1963 to 1965

Note: Samples were based on the examination of buds from single branches from 10 trees at each point.

Location	Total no. of buds	Per cer	nt of buds :	infested
(township)	examined in 1965	1963	1964	1965
Beverly	470	22.5	4.2	6.2
Glenelg	443	2.6	3.0	2.1
North Dumfries	500	35.0	9.1	12.0

Eastern Tent Caterpillar, Malacosoma americanum (F.)

Light infestations persisted at numerous locations. The highest populations were noted in Brant Township where 84 tents were counted along one mile of roadside (Table 15). Eastern choke cherry, black cherry and apple were the preferred host trees.

Summary of Eastern Tent Caterpillar Colony Counts at Eight Points in the Lake Huron District from 1963 to 1965

Location	Number colo	nies per mile of r	oadside
(township)	1963	1964	1965
Brant	48	95	84
Albemarle*	0	O	0
Derby	14	16	24
Sullivan	136	39	23
Burford	21	3	
Amabel*	43	21	12
Guelph	53	33	19
Arran	19	24	38

^{*} square chain plot

Balsam-fir Sawfly, Neodiprion abietis (Harr.)

For the third consecutive year small pockets of light and medium infestation

occurred commonly in Grey and Bruce counties. As in 1964 balsam fir trees in infested areas generally suffered 50 to 75 per cent defoliation in the upper third of the crown. Light infestations recurred on balsam fir trees in the northern part of the Bruce Peninsula whereas few larvae were observed on white spruce in the area.

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

Light infestations of these two sawflies recurred in jack-pine plantations at several locations in Grey and Bruce counties. Of the two species N. pratti banksianae was most abundant. Defoliation in sample areas did not exceed 10 per cent (Table 16).

TABLE 16

Summary of Colony Counts of Two Jack-pine Sawflies and Estimates of Defoliation of Old Foliage at Three Points in the Lake Huron District from 1963 to 1965

Note: Counts were taken on 10 trees at each sample point.

Location	Av. d.b.h.	Av. height		no. colo		Estimated per cent
(township)	in inches	in feet	1963	1964	1965	defoliation
Amabel.	5	20	2.0	2.1	1.0	-5
Holland	3	20	1.0	1.0	2.1	5
Artemesia	4	20	•	6.0	4.1	-10

Spring Cankerworm, Paleacrita vernata Peck

Heavy infestations in Keppel Township, the Rocklyn-Goring and Flesherton areas declined generally to light and medium intensity in 1965. In the Hanover-Durham-Arthur area 30 to 50 per cent defoliation of occasional open-growing white elm trees occurred compared with 75 to 90 per cent in 1964. Damage was of little significance elsewhere in the district.

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

Light and medium infestations recurred in numerous white spruce plantations in Grey, Bruce, and Wellington counties in 1965 (Table 17). Although in some instances large numbers of trees were infested, the number of insects per infested tree was very low. Moderate defoliation was observed at scattered points in Bentinck, Glenelg, and Holland townships.

Small numbers of the insect were found in Huron, Waterloo, Oxford, and Halton counties.

TABLE 17

Summary of Infestations of the Yellow-headed Spruce Sawfly at Eight Points in the Lake Huron District from 1963 to 1965

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

Tract		Pe tre	Degree of infestatio		
	Township	1963	1964	1965	in 1965
Rennie	Euphrasia	68	75	60	L
Rocklyn	Euphrasia	54	15	8	L
Riddell	Bentinck	40	90	95	M
Crawford	Bentinck	14	50	62	L
Main	Glenelg	35	75	50	L
Kenny	Glenelg	42	35	52	L
Minto	Minto	20	16	4	L
Victory	Arthur	4	4	Ó	L

White-pine Weevil, Pissodes strobi Peck.

Moderate to high incidence of weevil damage was noted at several locations in the district in 1965. Twenty to 40 per cent leader damage occurred in parts of the Riddell Tract, Bentinck Township. The incidence of attack increased from 20 per cent in 1964 to 25 per cent in 1965 in a small section of the Grey Main Tract, Glenelg Township, and from five to 15 per cent in the Moir Tract, Culross Township. A general increase in leader damage occurred in several white pine plantations in the southern part of Bruce County. Light damage was noted in the Galt and Guelph areas.

Counts made to determine the degree of infestation at two sample points are summarized in Table 18.

TABLE 18

Summary of Shoot Damage by the White-pine Weevil in Plantations at Two Points in the Lake Huron District from 1963 to 1965

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

		Per c	ent of tr	rees	Per cent of trees
Location	Av. d.b.h. of sample	infested			infested all
(township)	trees in inches	1963	1964	1965	years
Brant					
private plantation	5	7	3	4	63
Culross Moir Tract	4	2	5	15	17

Undetermined Loopers, Semiothisa spp.

For the second consecutive year low populations of these loopers were found commonly in beating samples from pine, white spruce and balsam-fir trees (Table 19). The highest numbers occurred on jack-pine trees in E. Wawanosh Township. Larval populations on balsam-fir trees in Artemesia and Glenelg townships decreased from 4.6 larvae per tray in 1964 to 1.6 in 1965. The lowest numbers were recorded on white spruce trees.

TABLE 19

Summary of Semiothisa spp. Larval Counts Taken From Five Tree Species at 12 Points in the Lake Huron District in 1965

Tree species	No. areas sampled	Av. d.b.h. of sample trees in inches	No. of trays per sample	Av. no. larvae per tray
iP	1	5	15	2.7
bF	2	6	20	1.6
wP	4	5	15	1.0
scP	i	7	15	0.7
wS	4	5	15	0.25

TABLE 20
Summary of Miscellaneous Insects Collected in Lake Huron District

Insect	Host(s)	Remarks
Altica ulmi Wood	WE	Light infestations in Normanby and Albemarle townships.
Anitota senatoria A. & S.	рО	The medium infestation in N. Oxford Township declined to light intensity
		Light localized infestations in Trafalgar and Blenheim townships.
Archips cerasivoranus (Fitch)	ecCh	Small pockets of medium infestation in Lindsay Township. Light in Brant and Ashfield townships.
Arge pectoralis (Leach)	wB	Occasional light defoliation noted in the Bruce Peninsula and along the west shoreline.
Argyresthia aureoargentella Brower.	eC	Caused severe browning and twig mortality in the Bruce Peninsula.
Argyresthia freyella Wlshm.	eC	Found in small numbers in associa- tion with other cedar leaf miners.
Argyresthia laricella Kft.	$tL_{\mathfrak{p}}$ eL	Six and four per cent of new shoots infested at points in Amabel and Albemarle townships. Trace elsewhere

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TABLE 20 (continued)

Insect	Host(s)	Remarks
Insect	Company of the American	
Argyresthia thuiella Pack.	eC	Gaused moderate leaf damage in Holland and Brant townships.
Argyrotaenia pinatubana Kft.	wP	Low population in Woolwich Township.
Caripeta angustiorata Wlk.	wP, scP	Low populations common in plantations.
Cecidomyia reeksi Vock	ĵP _	Gaused heavy branch tip mortality in Keppel Township. Moderate damage recurred in Holland Township.
Coleophora ulmifoliella McD.	wE	Light infestation in Stephen Town- ship.
Conophthorus resinosae Hopk.	rP	Low population of beetles feeding in cones in St. Edmund Township.
Dioryctria disclusa Heinr.	r·P	Heavy infestations of this coneworm in mixed pine plantations in Brant Township.
Dioryctria zimmermani (Grote)	wP	Low populations at scattered locations.
Erannis tiliaria Harr.	Ba	Scattered low populations.
Exoteleia pinifoliella Chamb.	jΡ	Light infestations persisted in Lindsay, Derby, Holland, and Wool- wich townships. Small numbers in Keppel and Artemesia townships.
Fenusa dohrnii (Tischb.)	Al	Light infestation of this leaf miner in Erin Township.
Fenusa pusilla (Lep.)	wВ	A small heavy infestation in Esquesing Township. Light elsewhere.
Fenusa ulmi Sund.	wE	Localized pockets of light and medium infestation in Derby and Artemesia townships.
Gretchena delicatana Heinr.	I	Medium and heavy infestations common in northern part of district.
Halisidota caryae Harr. Heterarthrus nemoratus (Fall.)	Bu, I wB	Scattered colonies observed. Light infestations in the Bruce Peninsula.
Hyphantria cunea Dru.	Wild apple, wE, wB, Haw	Low populations in the district.
Lithocolletis ostryarella Chamb. Monoctenus fulvus Nort.	I eC	Light damage in Meverly Township. Low populations common in the district.
Neodiprion lecontei (Fitch)	rP, jP	A light-to-medium infestation occurred in Waterloo Township.
Neodiprion nanulus nanulus Schedl.	rP, jP	A light infestation occurred in St. Edmund Township.
Neodiprion pinetum (Nort.)	wP	A decrease in larval colonies was evident in the light infestation in Woolwich Township.
Nepticula sp.	Can. plum	A heavy infestation of this un- identified species of leaf miner occurred on three trees in the Sandy Hill Tract, Woolwich Township.
Nymphalis antiopa Linn.	wE, W, cPo	Single colonies observed in the district.

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TABLE 20 (continued)

Insect	Host(s)	Remarks
Pikonema dimmockii (Cress.)	wS	Found in small numbers in beating samples.
Pissodes approximatus Hopk.	wP	In association with a <u>Hylobius</u> sp. caused considerable branch mortality in young trees in SandyHill Tract, Woolwich Township.
Pleroneura borealis Felt	bF	Light damage in Osprey Township.
Pristiphora geniculata (Htg.)	Мо	Light, medium and heavy infestation common on individual and small clumps of trees.
Pseudexentera oregonana Wlshm.	tA	Medium infestations in Hay and Sydenham townships, light in Morris Township.
Pulicalvaria piceaella Kft.	wS	Low population levels observed at several locations in the district.
Pulicalvaria thujaella Kft.	eC	Small numbers feeding in association with other cedar leaf miners.
Rhabdophaga swainei Felt	wS	Light infestations in Grey County.
Semiothisa dispuncta Gn.	bF, wS	Found commonly in beating samples in September.
Sparganothis pettitana Rob.	Ba	Light infestations in Glenelg Township.
Sternochetus lapathi (Linn.)	bPo	Special collections taken in Normanby and St. Edmund townships.
Taniva albolineana Kft.	wS	Low population in the Creditville Tract, E. Oxford Township.
Trisetacus grosmanni Keifer	bF	20+ adults collected from beating sample in Glenelg Township.
Zeiraphera fortunana Kft.	wS	Low population in Euphrasia Township
Zeiraphera ratzeburgiana Ratz.	wS	Moderate and severe damage recurred in St. Edmunds Township.
Zellaria haimbachi Busck.	jP	Light infestations common.