Status of Insects in the Lake Huron District

Jansons, V.

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INFORMATION REPORTS - INSECT AND DISEASE SURVEYS

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FOREWORD

The Forest Insect and Disease Survey maintains a continuing interest in improving existing sampling methods and in developing new techniques for rating forest pests and appraising damage. In 1968, a new approach for evaluating incidence and levels of infection of a number of tree diseases was explored. This involved determining degrees of damage in random and non-random plots in relation to the basal area of infected stands, the ultimate objective being to provide information on the impact of the organisms on forest stands in Ontario. Studies during the winter to test the accuracy of the new sampling system will be useful for planning field work in 1969. Improvement of insect survey methods in 1968 was largely directed toward jack-pine budworm sampling with emphasis on egg population studies. To this end, the distribution of egg masses on individual branches and at various crown levels of sample trees was investigated as a basis for determining the nature and size of samples required to assess population levels. The value of these new approaches in disease and insect sampling will be proven with use in forthcoming field seasons.

Marked changes in insect and disease conditions were recorded in large areas of the Province in 1968. A sharp increase in population levels of the spruce budworm and jack-pine budworm occurred in many parts of Ontario. The largest areas of infestation of the spruce budworm were located in the Burchell Lake area in the Port Arthur District, in parts of the Chapleau, Kapuskasing and Swastika districts and in southeastern Ontario. Localized infestations were centered in Parkinson Township in the Sault Ste. Marie District and in Fairbanks Township west of Sudbury. Egg surveys in most of the above areas except Burchell Lake, indicated that infestations will increase in extent in 1969.

The chemical control operation undertaken by the Ontario Department of Lands and Forests against the spruce budworm in the Burchell Lake area dominated insect surveys in western Ontario during several periods from May until September. Technicians were involved in intensive sampling to delineate the area to be treated, to time the spray applications and to assess spruce budworm numbers before and after the control operation.

Infestations of the jack-pine budworm abated somewhat in the Kenora and Fort Frances districts but several years of severe defoliation, particularly on rocky sites, caused considerable crown damage. In parts of the Sault Ste. Marie and Pembroke districts very severe defoliation of both jack pine and red pine was reported. Other insects occurring in particularly high numbers in 1968 included the saddled prominent, larch casebearer and several species of cedar leaf miners.

Devastation of elm by Dutch elm disease continued in southern Ontario and numerous new centers of infection were found throughout a large part of the range of elm in central Ontario. A vector of Dutch elm disease, the smaller European elm bark beetle extended its range eastward along the north shore of Lake Ontario and St. Lawrence River. Hypoxylon canker of poplar proved to be a serious problem in many parts of Ontario. Evaluations revealed particularly high levels of infection in aspen stands in the Sault Ste. Marie and Sudbury districts. Scleroderris canker of pine again caused considerable

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mortality in young red pine and jack pine plantations in parts of central and northeastern Ontario. Fomes root rot usually associated with thinning operations, caused varying amounts of mortality in red pine plantations in southern Ontario. Four new centers of infection of this disease were found in Larose forest in the Kemptville District in 1968. Details on the above and other noteworthy insect and disease problems are contained in the report that follows.

J. E. MacDonald

STATUS OF INSECTS IN THE LAKE HURON DISTRICT

V. Jansons

A Cedar Leaf Miner, Argyresthia thuiella Pack

High populations of this leaf miner continued to cause discolouration of white cedar throughout the district. However, populations of the leaf miners Pulicalvaria thujaella Kft., Argyresthia freyella Wlshm. and Argyresthia aureoargentella Brower, found in areas where severe leaf mining occurred in recent years, declined to low levels. Considerable branch tip mortality continued at several locations in the district, particularly on Bruce Peninsula. In addition to the miner, a heavy cone crop in 1967 and winter drying in the spring of 1968 contributed to the very noticeable crown deterioration.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Population levels of this insect declined in the northern part of Bruce Peninsula. At one sample point in Lindsay Township defoliation of white spruce declined from 43 per cent in 1967 to 24 per cent in 1968. Infestations in St. Edmunds Township were generally light but larval populations increased noticeably at one location. An egg mass survey indicated that a medium infestation will recur in Lindsay Township in 1969.

A considerable increase in larval populations was observed on white spruce in the Grey Main Tract where the number of larvae per beating mat averaged 1.4 in 1967 compared with 8.8 in 1968. Light infestations persisted on white spruce in Macton Tract, Wellesley Township, and in Sandy Hill Tract in Woolwich Township.

Larch Casebearer, Coleophora laricella (Hbn.)

Following a general population decline in recent years the numbers of this insect increased sharply at two locations in the district in 1968. A heavy infestation occurred on European larch in the Dornoch Tract in Bentinck Township where an average of 54.5 larvae was recorded per 18-inch branch tip. A medium infestation was observed on European larch in the Ayton Tract in Normanby Township. Larval populations were mainly concentrated on the bottom branches where severe discolouration occurred. Minor increases were recorded on tamarack at four permanent sample points (Table 6). The total number of larvae on 18-inch branch tip samples from European larch varied from 7 to 31 at five other sample points.

TABLE 6

Summary of Larch Casebearer Larval Counts at Seven Points in the Lake Huron District from 1966 to 1968

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

Location (township)	Host	Av. d.b.h. of sample trees in inches	Av. no. larvae per branch tip 1966	1967	1968
Bentinck	eL	2	-	-	54.5
Normanby	eL	3	-	-	22.4
Bentinck	tL	5	6.1	4.2	6.3
Amabel	tL	4	13.2	.9	5.8
S. Dumfries	tL	6	3.7	1.7	4.3
Glenelg	tL	5	9.5	6.5	4.8
Blandford	tL	6	6.1	2.3	3.6

Walnut Caterpillar, Datana integerrima G. & R.

In 1968 a small increase in population levels of this insect was observed in the southern part of the district. Severe defoliation of single and small groups of black walnut continued for the third consecutive year in Stephen and Hay townships, along Highway 24 south of Galt, and in Eramosa Township. Light to moderate defoliation occurred on numerous trees north of Kincardine, at Innerkip and Bright in Blandford Township, and at several other locations in the district. Defoliation estimates are summarized in Table 7.

TABLE 7

Summary of Walnut Caterpillar Defoliation Estimates on Black Walnut in the Lake Huron District, 1967 to 1968

Location (township)	No. of trees examined	Estimated per cent defoliation 1967	1968
Hay	6	100	100
S. Dumfries	3	100	100
Eramosa	3	90	100
E. Nissouri	12	80	90
Kincardine	10	-	50
Ancaster	10	-	10
Blandford	15	-	20
Blandford	10	-	40

European Spruce Sawfly, Diprion hercyniae (Htg.)

Population levels of this insect increased in permanent sample plots in St. Edmunds, Albemarle and Minto townships. A light infestation was observed on Norway spruce plantings in the Cummock Tract in Nichol Township where a total of 216 larvae were collected on a 15-tray sample. At six other sample points populations declined as shown in Table 8.

TABLE 8

Summary of European Spruce Sawfly Larval Counts Taken from White Spruce Trees in the Lake Huron District from 1966 to 1968

Location (township)	Av. d.b.h. of sample trees in inches	Total no. or larvae per 15-tray sample		
		1966	1967	1968
St. Edmunds	7	147	10	62
Albemarle	8	62	6	28
Puslinch	5	--	12	14
Minto	6	14	2	13
E. Wawanosh	7	-	42	7
Euphrasia	4	33	21	7
Lindsay	8	--	16	5
W. Garafraxa	5	--	18	2
Woolwich	5	1	0	1

Introduced Pine Sawfly, Diprion similis (Htg.)

Populations of this insect remained at a low level as shown in Table 9. The highest count occurred in a sample plot in Eramosa Township where 14 larvae were recorded on a 15-tray beating sample.

TABLE 9

Summary of European Pine Sawfly Counts in the Lake Huron District from 1966 to 1968

Location (township)	Host	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample 1966	1967	1968
Eramosa	wP	3	—	—	14
Woolwich	wP	4	45	12	5
Euphrasia	wP	4	13	5	5
E. Wawanosh	wP	6	—	6	3
Keppel	ScP	7	17	5	0
Minto	wP	6	3	1	0

Maple Trumpet Skeletonizer, Epinotia aceriella Clem.

An infestation of this insect increased to heavy intensity in a 50-acre woodlot in Colborne Township where a medium infestation occurred in a sugar maple stand in 1967. Approximately 60 per cent of the leaves were infested in a sample from this stand. A new medium infestation occurred in a woodlot in Stanley Township where an estimated 30 per cent of the leaves were damaged. Populations declined to a low level in a large woodlot in Wilmot Township where a light infestation was observed in 1967. Small numbers of infested sugar maple leaves were observed at several other locations in the district.

Eastern Pine Shoot Borer, Eucosma gloriola Heinr.

Populations of this shoot borer declined to a low level in white pine plantations in Ashfield, Brant, Nassagaweya, Normanby and Puslinch townships Table 10. However, a new medium infestation was observed in a white pine plantation in Eramosa Township where 23 leaders were attacked on one hundred sample trees. At several other locations in the district the insect occurred more commonly than in recent years.

TABLE 10

Summary of Shoot Damage by the Eastern Pine Shoot Borer on White Pine Trees in the Lake Huron District from 1966 to 1968

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

Location (township)	Average height of trees in feet	Per cent of trees infested 1968	Total no. of infested shoots			Number of leaders infested		
			1966	1967	1968	1966	1967	1968
Eramosa	10	64	--	--	184	--	--	23
Normanby	6	26	--	195	37	--	30	4
Ashfield	10	11	--	204	21	--	20	3
Brant	8	43	140	64	92	35	4	0
Puslinch	12	0	80	16	0	4	4	0
Nassagaweya	12	41	--	152	58	--	15	0

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

A sharp decline in population levels of this needle miner occurred in jack pine plantations in the Ayton Tract in Normanby Township, and in McIntyre Tract in Kinloss Township where heavy infestations were reported for two consecutive years. In the Ayton Tract the incidence of mined needles declined from 80 per cent in 1967 to 45 per cent in 1968. Small numbers of mined needles were observed in jack pine plantations in Sullivan, Holland and Euphrasia townships.

Saddled Prominent, Heterocampa guttivitta Wlk.

In 1968, infestations of the saddled prominent increased in extent and intensity in two of the three outbreaks reported in 1967. At Lions Head in Eastnor Township the infested area increased from about 200 acres in 1967 to approximately two square miles in 1968. Defoliation of sugar maple in this area ranged from 80 to 100 per cent. New pockets of medium to heavy infestation were observed south of Barrow Bay in Eastnor Township and from Hope Bay south to Colpoy Bay in Albemarle Township (Map 1).

Larval populations increased in an extensive mixed stand northeast of Wiarton in Keppel Township where sugar maple, beech and white birch were severely defoliated. An examination of these infested stands in late September revealed that many of the completely defoliated sugar maple trees had partly refoliated.

A sharp decline in numbers of the insect was recorded in a sugar maple stand at the Camp Meaford Tank Range in St. Vincent Township where only 25 per cent defoliation was recorded in 1968 compared with 90 per cent in 1967.

Eastern Tent Caterpillar, Malacosoma americanum F.

Populations of this insect remained at a low level in 1968. Small numbers of scattered tents were observed in the central part of the district. The highest count, 35 tents per one mile of roadside, was recorded in Egremont Township (Table 11).

TABLE 11

Summary of Eastern Tent Caterpillar Colony Counts in the Lake Huron District from 1966 to 1968

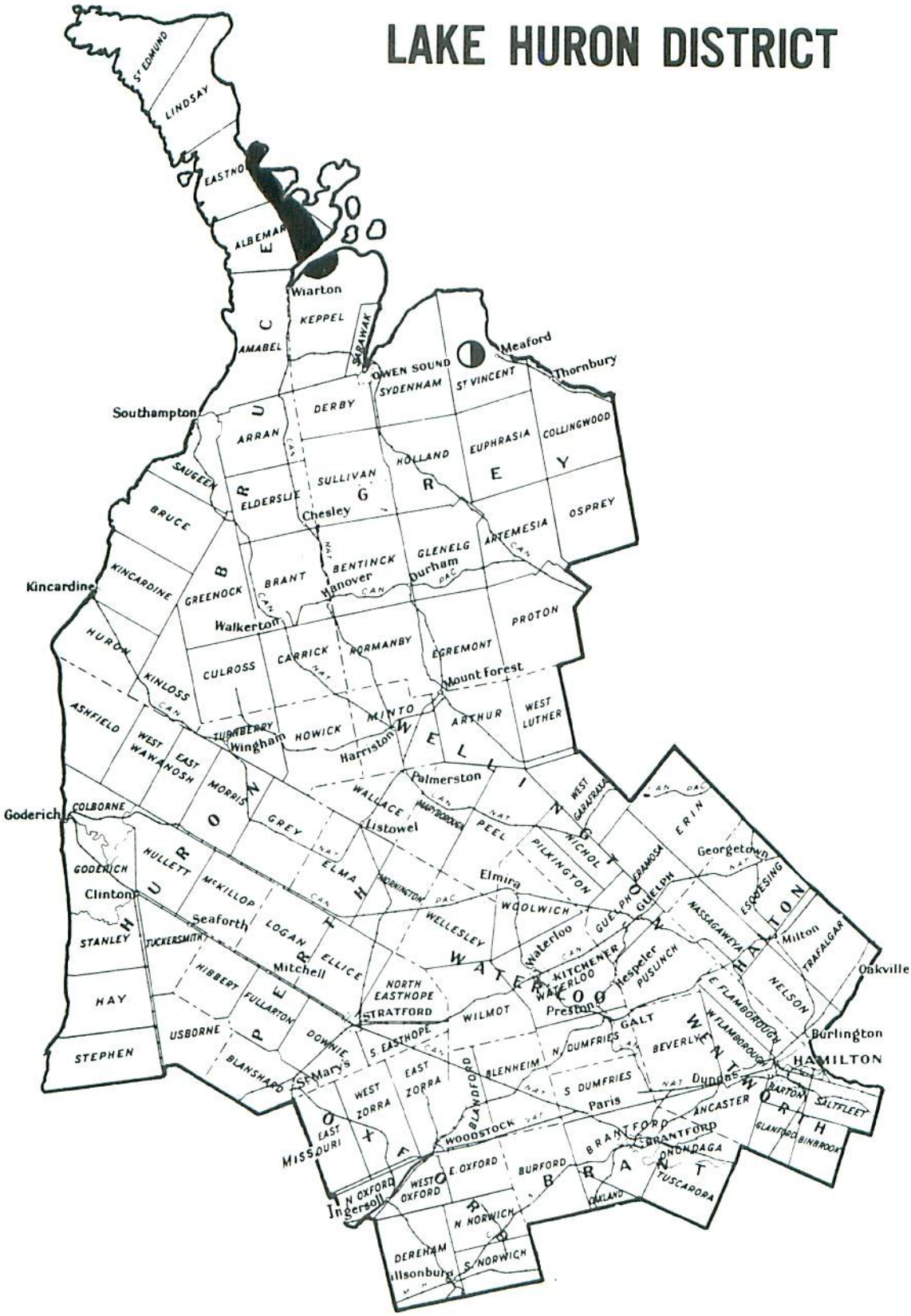
Location (township)	Host	No. of colonies per mile of roadside 1966	1967	1968
Egremont	ecCh	—	32	35
Brant	ecCh	54	16	21
Arran	ecCh	12	13	8
Amabel *	pCh	23	5	9
Sullivan	ecCh	6	7	4

* Square chain plot

European Pine Sawfly, Neodiprion sertifer Geoff.

Population levels of this insect increased at two locations in the district. In 1968 a medium infestation was observed on small Scots pine in the Meister Tract in Beverly Township. Defoliation ranged from 60 to 90 per cent on scattered trees. The second increase occurred on small trees in a Scots pine plantation south of Sauble Falls in Amabel Township, where defoliation ranged up to 40 per cent. Colony counts were comparable to 1967 (Table 12).

LAKE HURON DISTRICT



SADDLED PROMINENT

Areas where infestations were observed in 1968

Legend

Heavy infestations ---------- ■ Medium infestations ------ ◑

TABLE 12

Summary of European Pine Sawfly Colony Counts and Degrees of Infestation in the Lake Huron District from 1966 to 1968

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

Location (township)	Average height of trees in feet	Av. no. colonies per infested tree			Per cent of trees infested in 1968	Degree of infestation in 1968
		1966	1967	1968		
Amabel	7	—	—	2.2	85	Light
Nassagaweya	6	7	2	1.4	33	"
Sullivan	12	1	2	1.2	28	"
Eramosa	6	—	—	1.0	84	"
Stanley	10	2	2	1.0	16	"
E. Wawanosh	12	14	2	1.0	4	Trace

White Pine Weevil, Pissodes strobi Peck.

No major change in numbers of this insect was observed in the district as a whole in 1968. A medium infestation occurred in a small private plantation south of Harrison Lake in Sullivan Township where 16 per cent of white pine leaders were damaged. The incidence of infested trees declined at five permanent sample plots (Table 13).

TABLE 13

Summary of Shoot Damage by the White Pine Weevil in Plantations at Five Points in the Lake Huron District from 1966 to 1968

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

Location (township)	Av. d.b.h. of sample trees in inches	Per cent of trees infested		
		1966	1967	1968
Glenelg	5	40	33	8
Culross	3	24	8	7
Kinloss	2	—	6	2
Brant	6	2	3	0
Sullivan	1	—	1	2

Larch Sawfly, Pristiphora erichsonii Htg.

Populations of the larch sawfly increased at several locations in the district. A medium to heavy infestation continued for the second consecutive year in the Foulds Tract in S. Dumfries Township where defoliation of European larch increased from 30 per cent in 1967 to 50 per cent in 1968. Population increases also occurred on European larch in the Minto Tract in Minto Township, and on tamarack in Albemarle Township where light to moderate defoliation was observed on small groups of trees. Light defoliation of scattered tamarack trees continued at Bells Lake in Holland Township. Small numbers of colonies were found at several other locations in the district.

European Pine Shoot Moth, Rhyacionia buoliana (Schiff.)

In 1968 a new medium infestation of this insect was observed on a group of roadside Scots pine at the junction of highways 401 and 19 in West Oxford Township. The number of infested shoots on ten sample trees was estimated at 37 per cent. Small numbers of infested shoots occurred on red pine in the Sandy Hill Tract in Woolwich Township and on Scots pine in a small private plantation at Roseville in North Dumfries Township. No shoot moths were observed in the Kiawanis Plantation in Keppel Township where 2.3 per cent of the shoots sampled in 1967 were infested.

TABLE 14

Summary of Miscellaneous Insects Collected in Lake Huron District in 1968

Insect	Host(s)	Remarks
Acleris variana Fern.	wS	Light population increase; highest count 31 larvae per 15-tray sample in W. Garafraxa Twp.
Acrobasis betulella Hlst.	wB	Numerous on a group of small trees, Erin Twp.
Acronicta ovata Grt.	wO	Small numbers in beating samples
Adelges abietis Linn.	nS, wS	Heavy on several trees, Beverly Twp., small numbers Eramosa Twp.
Alsophila pometaria Harr.	siM	Small numbers
Altica ulmi Woods	wE	Pockets of light to moderate leaf skeletonizing common in Beverly Twp.

TABLE 14 (continued)

Insect	Host(s)	Remarks
Anchylopera burgessiana Zell.	wO, rO	Light to moderate population on numerous trees, S. Dumfries Twp.
Anisota rubicunda Fabr.	siM	One colony
Aphrophora parallela Say	ScP, jP wP	General population increase; light to medium infestations observed in Keppel, Sullivan, Amabel, Blenheim and Beverly twps.
Archips cerasivoranus Fitch	ecCh	General population decline; small numbers of scattered colonies in Saugeen Twp.
Arge pectoralis Leach	wB	Small numbers of colonies at several locations
Campea perlata Gn.	W	Small numbers
Choristoneura pinus pinus Free.	jP, ScP, rP	A light infestation persisted for the fourth consecutive year in Kiawanis Plantation, Keppel Twp. Several lightly infested trees, Sullivan Twp.
Cincticornia pilulae Walsh	wO	Small numbers
Coleophora serratella Linn.	Haw	Small numbers
Coleophora ulmifoliella McD.	wE	Small numbers
Datana ministra Dru.	wE	Moderate to severe defoliation of scattered young trees along Highway 97 in E. Zorra and Blandford twps.
Depressaria betulella Busck.	wB	Light infestation at one location in Erin Twp.
Dioryctria disclusa Heinr.	ScP	The number of infested cones declined to 26 per cent on a group of Scots pine in Amabel Township where high incidence of infested cones was reported in 1967

TABLE 14 (continued)

Insect	Host(s)	Remarks
Dioryctria reniculella Grt.	wS	Small numbers in association with spruce budworm
Diprion frutetorum F.	ScP, wP	Population remained at a low level; highest count 14 larvae per 15-beating tray sample in Amabel Twp.
Ectoedemia populella Busck.	tA	Small numbers, Beverly Twp.
Epinotia solandriana Linn.	wB	Thirty-five per cent of leaves infested in an extensive stand of young birch in St. Edmunds Twp. Light populations at several locations on Bruce Peninsula and in Collingwood Twp.
Erranis tiliaria Harr.	sM, Ba, wE	Light to medium infestation in St. Vincent Twp., defoliation confined to understory trees
Eupithecia filmata Pears.	wS	Small numbers in beating samples
Exoteleia dodecella Linn.	ScP	Populations low throughout the district; 1.6 per cent of buds infested at Roseville, N. Dumfires Twp.
Fenusa pusilla Lep.	wB	Light to medium incidence of leaf mining in Inverhuron Park, Bruce Township, at Red Bay in Albemarle Twp. and in Amabel Twp.
Halisidota caryae Harr.	Hi	One colony
Heterarthrus nemoratus Fall.	wB	Light incidence, St. Edmunds Twp.
Hydria prunivorata Ferg.	bCh	One heavily infested tree, Colborne Twp.
Hypagyrtis piniata Pack.	wS	Small numbers in Spruce plots

TABLE 14 (continued)

Insect	Host(s)	Remarks
Hyphantria cunea Dru.	wE, W	Populations remained low; single scattered colonies in Glenelg, W. Garafraxa, and Brant twps.
Lepidosaphes ulmi Linn.	tA	Scale insects numerous on one small tree, Puslinch Twp.
Lithocolletis caryaefoliella Clem.	Hi	Small numbers at one location, S. Dumfries Twp.
Lithocolletis hamadryadella Clem.	rO, wO	Severe leaf mining throughout a five acre white oak plantation in Esquesing Township and on small scattered groups of white and red oak in Oakland and S. Dumfries twps.
Lithocolletis ostryaella Cham.	I	High incidence throughout a large woodlot in Burlington Twp., small numbers in N. Dumfries Twp.
Lithocolletis robiniella Clem.	b. locust	Small numbers E. Zorra Twp.
Malacosoma disstria Hbn.		Six female and 63 male adult moths collected in light trap
Monoctenus fulvus Nort.	eCe	Small numbers in beating samples, Bells Lake
Nematus fulvicrus Prov.	W	Scattered colonies
Nematus salicisodoratus Dyar	W	Several lightly infested trees, Kincardine Twp.
Neodiprion abietis complex	bF	Small numbers of colonies at Bells Lake, Glenelg Twp.
Neodiprion lecontei Fitch	rP	One colony, Waterloo Twp.
Neodiprion nanulus nanulus Schedl.	rP	Several colonies on fringe trees, Amabel Twp.

TABLE 14 (continued)

Insect	Host(s)	Remarks
Neodiprion pratti banksianae Roh.	jP	Colonies more common than in 1967; highest count 13 colonies on 10 sample trees in Hewgill Tract, Euphrasia Twp.
Nyctoela frigidana Wlk.	W	Small numbers
Oligonychus ununguis Jac.	wS	Heavy infestations of mites on small plantings in Peel Twp.
Ortholepis pasadamia Dyar	wB	Small numbers
Parandra brunnea Fab.	siPo	This rare woodborer found in an old log, Kincardine Twp.
Parectopa robiniella Clem.	b. locust	Leaf miners numerous throughout a plantation, W. Garafraxa Twp.
Phyllocolpa sp.	tA, W	Leaf folders common in Holland Twp.
Pikonema alaskensis Roh.	wS	Population at a low level throughout the district
Pikonema dimockii Cress.	wS	Small numbers in beating samples
Pleroneura borealis Felt.	bF	Small numbers
Profenusa thomsoni Konow	wB	Light incidence, St. Edmunds Twp.
Proleucoptera albella Cham.	cPo	Small numbers of leaf miners, S. Dumfries Twp.
Psilocorsis fletcherella Gibs.	tA	Small numbers at several widely scattered locations
Pulicalvaria abietisella Pack.	He	Light to medium incidence of mined needles on a group of trees in Puslinch Twp.
Pulicalvaria macleodi Free.		
Pulicalvaria piceaella Kft.	wS	Severe needle mining on numerous trees in one row of spruce plantings in Rockton Tract, Beverly Twp.
Reticulitermes flavipes Kollar		Colonies occur in the southwestern section of Kincardine

TABLE 14 (concluded)

Insect	Host(s)	Remarks
Rhynchaenus rufipes Lec.	W	Severe leaf mining on several clumps, St. Edmunds Twp.
Sciaphila duplex Wlshm.	tA	Light population in the Elora Gorge area, Pilkington Twp.
Semiothisa bisignata Wlk.	nS	Small numbers
Spilonota lariciana Heinr.	eL	Small numbers common throughout the district
Symmerista canicosta Francl.	wO	Light population at one location, S. Dumfries Twp.
Tetralopha asperatella Clem.	sM	Light population in association with maple trumpet skeletonizer, Colborne Twp.
Thera juniperata L.	J	Light populations at several sampling points
Zeiraphera canadensis Mut. & Free.	wS	A medium infestation continued for the fourth consecutive year on open grown trees in St. Edmunds Township where 22 per cent of examined shoots were infested at one sample point. Small numbers of damaged shoots in Sandy Hill Tract, Woolwich Twp.