Status of Insects in the Swastika District

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INFORMATION REPORTS - INSECT AND DISEASE SURVEYS

Ontario, 1968

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 SWASTIKA DISTRICT

J. Lombard

Spruce Budworm, Choristoneura fumiferana (Clem.)

An infestation of this major forest pest was observed from the air near Matachewan in August, 1968. Subsequently, extensive aerial and ground surveys revealed that the total area of infestation comprised approximately 250 square miles. Within this area, pockets of medium to heavy infestation covered about 60 square miles north of Matachewan with the most severe defoliation on mature balsam fir on rocky ridges. Light to moderate defoliation occurred in patches of residual balsam fir in an area of cutover and burn in the surrounding 130 square miles. Due to the scarcity of balsam fir and white spruce outside the infested area, no major outbreak of the spruce budworm is anticipated in this part of the district. However, particular attention will be given to a high hazard area along the south shore of Lake Abitibi adjacent to the Quebec boundary where mature stands of balsam fir and white spruce occur.

Infestations were also found in Tyrrell and Milner townships. Observations in these townships revealed that approximately 40 per cent defoliation of the current year's growth occurred in the area as a whole.

Egg surveys undertaken during the summer and fall revealed that a high level of hatch occurred. The results indicate that moderate to severe defoliation will occur in 1969 in the Indian Reserve Number 72 area and in Yarrow Township. Light infestations are expected to occur at other sample locations listed in Table 9.

TABLE 9

Defoliation of the Current Year's Growth of Balsam-fir and White Spruce Trees in the Swastika District and Defoliation Forecasts for 1969 Based on Egg Mass Density

Location (township)	Tree species	Per cent defoliation	No. of egg masses per 100 sq. ft. of foliage	Forecast for 1969
Bannockburn	bF	4	6.0	L
Cairo	wS	14	0.0	L
Cairo	bF	16	10.7	L
Lawson	bF	6	0.0	L
Van Hise	bF	8	7.0	L
Tyrrell	bF	1	3.0	L
Alma	bF	12	17.0	L
Yarrow	bF	45	99.0	M
Powell	bF	15	67.3	M

Larch Casebearer, Coleophora laricella Hbn.

Population levels of the larch casebearer increased at all sampling locations in 1968. A noteworthy example was in Marter Township where the average number of larvae per 18-inch branch tip increased from 0.5 in 1967 to 6.2 in 1968 (Table 10).

TABLE 10

Summary of Larch Casebearer Larval Counts at Five Points in the Swastika District in 1967 and 1968

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

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of larvae per branch tip 1967	1968
Hilliard	5	0.1	4.3
Hudson	5	0.3	2.8
Marter	4	0.5	6.2
Harker	6	1.7	1.0
Powell	4	2.6	8.3

European Spruce Sawfly, Diprion hercyniae Htg.

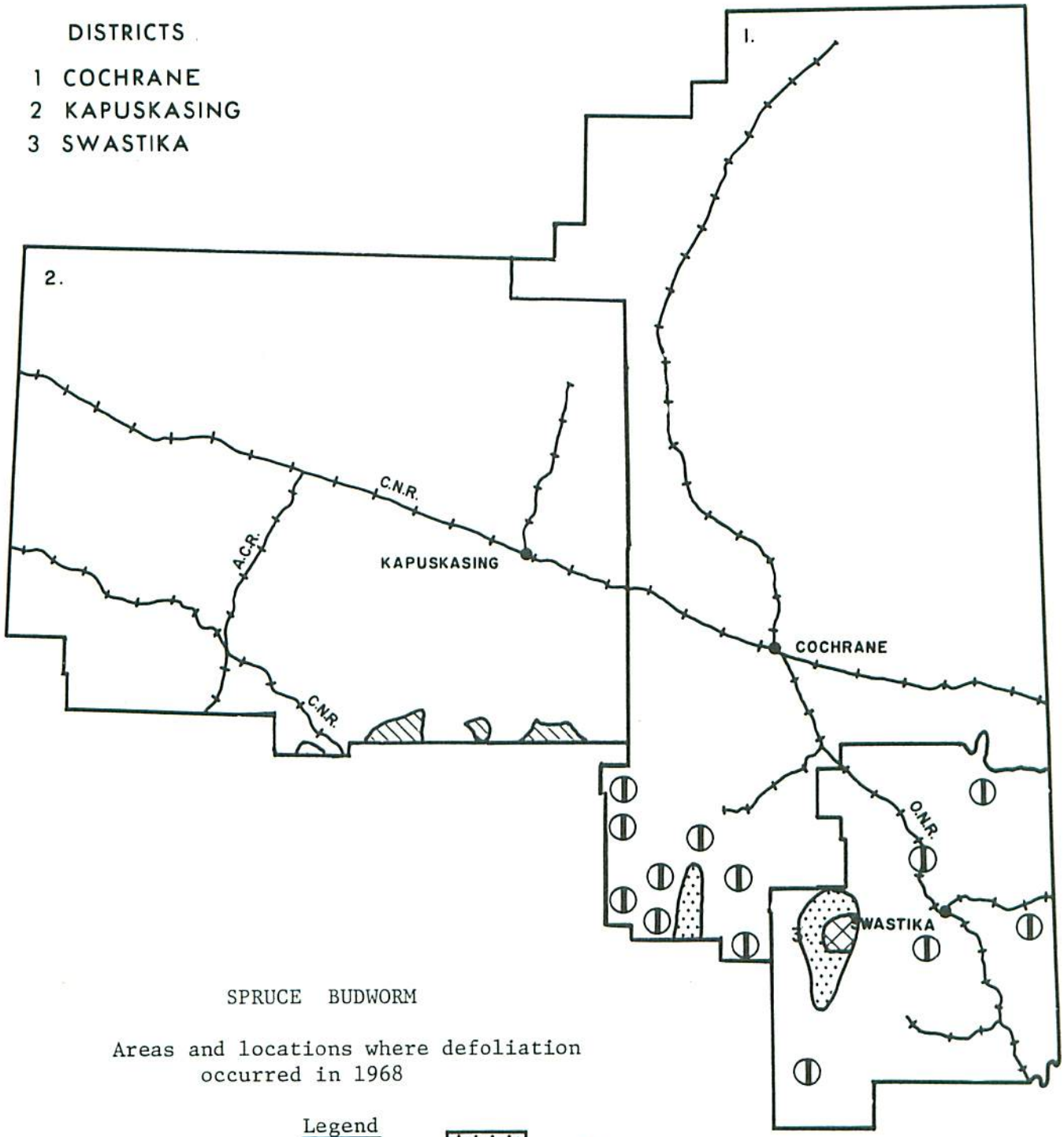
Population levels of this sawfly were generally lower than in 1967 (Table 11). A maximum of seven larvae was found in fifteen mat samples at widely-distributed sampling locations. No northward extension in distribution was observed in 1968. Defoliation was negligible at all sampling locations.

TABLE 11

Summary of European Spruce Sawfly Larval Counts on White Spruce at Four Points in the Swastika District from 1966 to 1968

Location (township)	Av. d.b.h. of sample trees in inches	Total number of larvae per 15-tray sample 1966	1967	1968
Bowman	6	43	20	7
Pacaud	5	23	7	0
Garrison	8	13	7	5
Kerns	4	54	45	7

NORTHERN FOREST REGION



SPRUCE BUDWORM

Areas and locations where defoliation occurred in 1968

Legend

Light defoliation ---------- and

Medium defoliation --------

Severe defoliation --------

MILES

0 20 40

Birch Leaf Miner, Fenusa pusilla Lep.

This leaf miner was abundant in some areas of the district, particularly on regeneration and on the lower branches of larger trees. Generally, the insect was found in low to medium numbers, however, pockets of severe defoliation occurred in Bompas, Grenfell, Burt, Eby, McFadden and Lamplugh townships. In the first four townships the insect was found usually on every leaf of white birch sucker growth with up to five mines per leaf.

Aspen Blotch Miner, Lithocolletis salicifoliella Cham.

The decline in population levels of the aspen blotch miner reported in 1966 and 1967 continued in 1968 (Table 12). One collection of the insect was taken from willow in Evanturel Township.

TABLE 12

Summary of Aspen Blotch Miner Counts in the Swastika District from 1966 to 1968

Note: Counts were based on the examination of 100 leaves selected at random from three trees at each location.

Location (township)	Tree species	Av. d.b.h. of sample trees in inches	Total no. mines per 100 leaves		
			1966	1967	1968
Marriott	+A	4	15	3	3
Teck	+A	2	7	2	1
Catharine	bPo	2	12	4	0
Kimberley	+A	4	12	8	0

Cedar Sawfly, Monoctenus fulvus Nort.

Quantitative sampling showed that the insect increased in numbers after a decline in 1967. The most significant increase was in Chown Township where 21 larvae were collected in 1968 compared with three larvae per sample in 1967.

TABLE 13

Summary of Cedar Sawfly Larval Counts in the Swastika District from 1966 to 1968

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample		
		1966	1967	1968
Eby	2	41	--	5
Dymond	2	5	--	13
Farr	3	6	2	9
Chown	2	11	3	21

Red-headed Jack-pine Sawfly, Neodiprion virginiarus complex

After a decline in 1967, red-headed jack-pine sawfly numbers increased in 1968. The heaviest infestation occurred in Chamberlain Township where 8.9 colonies were counted on small trees (Table 14). Scattered colonies were observed at widely-distributed points in the district.

TABLE 14

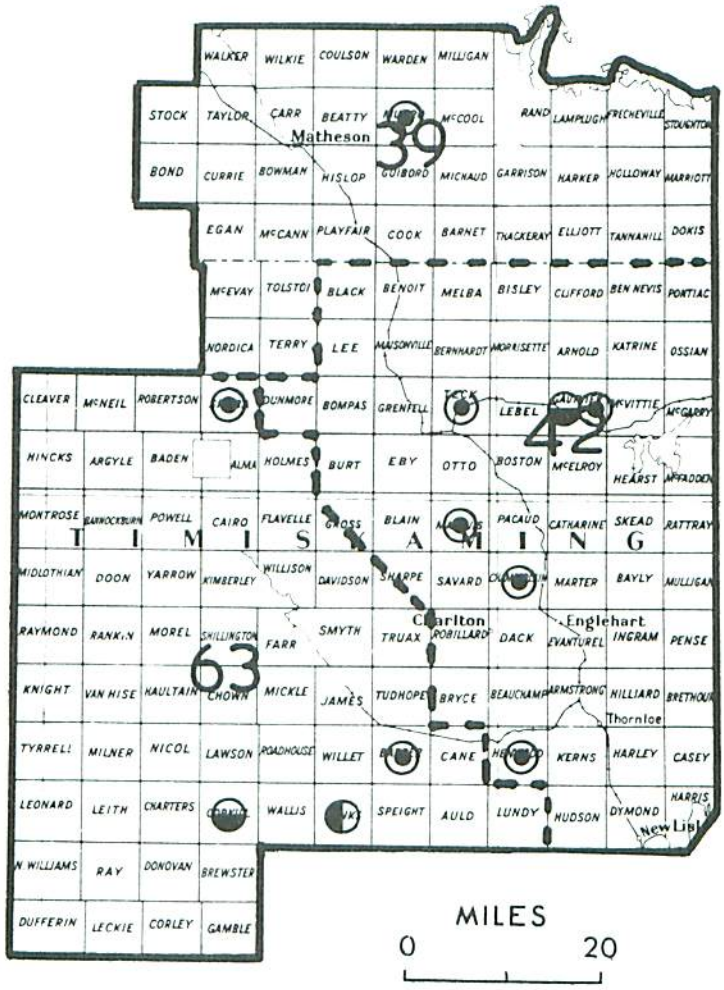
Summary of Red-headed Jack-pine Sawfly Colony Counts at Seven Locations in the Swastika District from 1966 to 1968

Location (township)	No. of trees sampled	Av. d.b.h. of sample trees in inches	Av. no. of colonies per tree		
			1966	1967	1968
Maisonville	10	7	10.2	7.5	1.3
Teck	10	5	0.8	3.6	4.3
Munro	10	5	1.1	0.2	1.4
Chamberlain	10	2	4.6	4.8	8.9
Brethour	10	4	3.8	1.6	1.5
Henwood	100	4	---	---	11.0
Gauthier	100	3	---	---	13.0

Yellow-headed Spruce Sawfly, Pikonema alaskensis Roh.

Heavy infestations persisted for the fourth consecutive year on roadside windbreaks and in small plantations. An examination of 50 trees in a white spruce plantation in Harley Township revealed 43 per cent defoliation. About sixteen per cent of the defoliation was on old foliage and some trees were stripped. Heavy infestations occurred on ornamental trees under three feet in height at numerous points.

SWASTIKA DISTRICT



PINE SAWFLIES

Locations where three species of pine sawflies were observed in 1968.

Legend

Red-headed jack-pine sawfly -------

Red-pine sawfly ----------

Swaine jack-pine sawfly ----------

White-pine Weevil, Pissodes strobi Peck

Infestations of the white-pine weevil were generally light in 1968. The only exception was in Grenfell Township where a medium infestation occurred in a young white pine plantation. No white-pine weevils were found at sample plots other than in Grenfell Township. The main host was black spruce and occasionally jack and white pine were attacked.

TABLE 15

Summary of Leader Damage by the White-pine Weevil in the Swastika District from 1966 to 1968

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

Location (township)	Tree species	Per cent of leaders infested 1966	1967	1968
Grenfell	wP	28	14	20
Benoit	jP	3	3	0
Currie	bS	9	2	0
Gauthier	jP	4	2	0
McGarry	bS	10	5	0

Larch Sawfly, Pristiphora erichsonii Htg.

Population levels of the larch sawfly increased considerably in 1968. This was particularly evident in Eby, Powell and Milner townships where individual open-grown trees were severely defoliated. An aerial survey of the district revealed pockets of medium infestation in Garrison and Banks townships. Generally, light defoliation was observed elsewhere in the district.

Amber-marked Birch Leaf Miner, Profenusa thomsonii Konow.

Results at five sample plots showed a moderate increase in population levels of this insect in 1968. Nearly 100 per cent of the leaves of white birch regeneration at sample points in Stock, Barber, McGarry, Maisonville and Eby townships were infested with one or more large mines. Larger trees in these townships were lightly attacked.

TABLE 16

Summary of Damage Caused by the Amber-marked Birch Leaf Miner in the Swastika District from 1966 to 1968

Note: Counts were based on the examination of a random sample of 100 leaves from three white birch trees at each point.

Location (township)	Av. d.b.h. of sample trees in inches	Total number of mines 1966	1967	1968
Otto	3	13	1	2
Arnold	3	14	0	4
Stock	3	6	3	23
Playfair	3	15	9	2
James	5	25	12	12

TABLE 17

Summary of Miscellaneous Insects Collected in the Swastika District in 1968

Insect	Host(s)	Remarks
Acilius semisulcatus Aube		One adult collected in Eby Twp.
Acleris variana Fern.	wS	Trace populations at widely distributed points throughout the district in 1968
Adelges lariciatus (Patch)	wS	Trace population in Benoit Twp.
Anacampsis niveopulvella Cham.	+A	Trace numbers in Garrison and Benoit twps.
Anchylopera burgessiana pruni Heinr.	pCh	Low numbers in Munro Twp.
Anomogyna elimata Gn.	W	Trace population in Evanturel Twp.
Antheraea polyphemus (Cram.)	+A	A few pupae in Eby Twp.
Aphania dextrana McD.	W	Light numbers in McGarry Twp.
Archippus strianus Fern.	wS	Single larva found in Lamplugh and McFadden twps.

TABLE 17 (continued)

Insect	Host(s)	Remarks
Archips cerasivoranus (Fitch)	ecCh	The high populations of 1966 and 1967 declined to trace levels in 1968
Badebecia urticana Hbn.	+A	Trace populations in McGarry and Garrison twps.
Bucculatrix ainsliella Murt.	O	Low population on ornamental bur oak in New Liskeard
Campaea perlata Gn.	bF	Small numbers on mat samples
Chaitophorus populicolus (Thos.)	+A	Single colony found in Eby Twp.
Chionaspis furfura Fitch	wB	One colony found in Bannockburn Twp.
Choristoneura conflictana Wlk.	+A,W	A few larvae found on beating mats
Choristoneura pinus pinus Free.	jP	After an increase in numbers in 1966 and 1967, population levels decreased to trace levels in 1968
Choristoneura rosaceana Harr.	wB	Single larva found in McGarry Twp.
Coleophora pruniella Clem.	wB	Trace numbers in Benoit Twp.
Dasineura balsamicola (Lintn.)	bF	Light numbers in Farr, Eby, and Powell twps.
Datana ministra Dru.	Ma,wB	Medium population on individual trees in Eby and Otto twps.
Depressaria groteella Rob.	Ha	Trace numbers in Lamplugh Twp.
Dicrodiplosis populi Felt	+A	Light population in Eby Twp.
Dioryctria abietivorella Grt.	jP	Single larva on jack pine in Grenfell Twp.
Dioryctria reniculella Grt.	wS	Trace population in the northern half of the district
Disonycha alternata Ill.	W	Heavy infestation in Guibord Twp.

TABLE 17 (continued)

Insect	Host(s)	Remarks
Ectropis crepuscularia Schiff.	jP	Single larva on beating tray in Gross Twp.
Epinotia solandriana Linn.	+A	Trace numbers in Nicol and Tyrell twps.
Eriophyes negundi Hodgk.	mM	Low population in Henwood Twp.
Eucordylea atrupictella Dietz.	wS	Trace numbers in Harris Twp.
Eucordylea blastovora McLeod	wS	Trace population in Harris and Lamplugh twps. and a low population in Bowman Twp.
Eupithecia filmata Pears.	bF	Trace population in Otto Twp.
Euura perturbans Walsh	W	Trace in Barber Twp.
Fenusa dohrnii (Tischb.)	Al	Trace in Carr Twp.
Feralia jocosa Gn.	wS	Single larva in beating samples in Pacaud and Garrison twps.
Filatima demissae Keif.	Se	Trace in McGarry Twp.
Gonioctena americana (Schaef.)	+A	Light infestation in Benoit Twp.
Gypsonoma haimbachiana Kft.	+A	Trace in Marriott Twp.
Halisidota maculata Harr.	W	Two larva found at Kenogami Lake
Harpipteryx xylostella Linn.	Hon	Light in Kirkland Lake
Hypagyrtis piniata Pack.	wS,L,bF	Found singly on beating mats in Milner, Eby and Harker twps.
Ipimorpha pleonectusa Grt.	+A	Trace in Garrison Twp.
Ips pini Say	jP	The pine engraver, unlike 1967, was not found to be attacking living trees. The insect was collected in James Twp. on logs that had been stored over winter
Lepidosaphes ulmi (Linn.)	Al	Heavy in McGarry Twp.

TABLE 17 (continued)

Insect	Host(s)	Remarks
Limenitis archippus Cram.	+A	Trace in Benoit Twp.
Lithocolletis betulivora Wlshm.	wB	Two insects collected in Otto Twp.
Lithocolletis sp.	Al	Light population in Barber Twp.
Malacosoma californicum pluviale Dyar	ecCh	Populations have declined since 1966. In 1968 the insect reached the endemic level.
Mayetiola rigidae (O.S.)	W	Trace in Kimberley Twp.
Mordwilkoja vagabunda Wlsh	+A	One collection made in Truax Twp.
Nematus fulvicrus Prov.	W	Single colony collected in Eby Twp. in 1966 and 1968
Neodiprion abietis complex	bF	Larval numbers increased in the district in 1968. A light population occurred in Lamplugh Twp. A few larvae were collected on beating mats at five other locations in the district
Neodiprion nanulus nanulus Schedl	jP	Populations of red-pine sawfly have reduced to trace level in 1968. Two collections of two larvae each were taken in Gauthier and Corkill twps.
Nycteola frigidana Wlk.	W	Trace numbers found in Playfair Twp.
Nymphalis antiopa L.	W,bPo,+A	Medium populations on isolated trees in Eby, Teck and Savard twps.
Orgyia antiqua L.	W	One larva found in Evanturel Twp.
Orthosia hibisci Gn.	+A	One larva found in Benoit Twp.
Parorgyia plagiata Wlk.	wS	Single larva on beating mat in Pacaud Twp.
Pemphigus populi-transversus Riley	bPo	Heavy infestation on isolated trees in Teck Twp.

TABLE 17 (continued)

Insect	Host(s)	Remarks
Pemphigus populi-venae Fitch	bPo	Heavy infestation in James Twp.
Petrova albicapitana Busck.	jP	Light throughout district. Moderate to severe in Munro Twp.
Phyllocnistis populiella Cham.	+A	Found sparingly on trembling aspen regeneration in Eby Twp.
Phyllocolpa sp.	bPo	Moderate population on understory balsam poplar in Marter and Catharine twps.
Pristiphora geniculata (Htg.)	Mo	Light defoliation throughout the district with severe defoliation in Eby, Teck, Grenfell and Label twps.
Pristiphora lena Kinc.	wS	Found singly on beating tray in Harris Twp.
Prociphilus tessellatus (Fitch)	Al	Heavy infestation in Barber Twp.
Protoboarmia porcelaria indicataria Wlk.	wS,bF	Collected singly on beating trays in Eby and Garrison twps.
Pyrrhia exprimens Wlk.	bPo	Light infestation in Holmes Twp.
Rhabdophaga strobiloides (O.S.)	W	Heavy population in Grenfell and Guibord twps.
Rhynchaenus rufipes Lec.	W	Heavy in Eby Twp.
Saperda populnea moesta Lec.	+A	Widely scattered in McGarry Twp.
Sciaphila duplex Wlshm.	+A	Light infestation in Benoit and Garrison twps.
Syngraph alias Ottol.	wS	Found singly in Eby and Marriot twps.
Trichiocampus irregularis (Dyar)	W	Heavy infestation in Harley and Teck twps.
Trishormomya salicisverruca O.S.	W	Light population in Barber Twp. on fringe willow

TABLE 17 (concluded)

Insect	Host(s)	Remarks
Xylomyges dolosa Grt.	+A	Light infestation in Benoit Twp.
Zeugophora spp.	+A,bPo	Light population in McGarry, Guibord, Harley and Van Hise twps.