CAN Fo 46-14 O-X 99 AENA

Status of Insects in the Geraldton District

Hall, K.C. and Davis, C.N.

Information Report 0-X-99 (Forest Research Laboratory, Ontario Region)



TABLE OF CONTENTS

INFORMATION REPORTS - INSECT AND DISEASE SURVEYS

Ontario, 1968

Foreword, J. E	. MacDonald
----------------	-------------

1010	mora, or ar management		
Fore	st Region and District	Information Report No.	Page
A.	SOUTHEASTERN FOREST REGION		A 1-43
	Lindsay District, M.J. Thomson* Tweed District, F. Livesey Kemptville District, M.J. Applejohn	O-X-83 O-X-84 O-X-85	A 8 A 21 A 32
В.	SOUTHWESTERN FOREST REGION		B 1-51
	Lake Simcoe District, R.L. Bowser* Lake Erie District, G.T. Atkinson Lake Huron District, V. Jansons	0-x-86 0-x-87 0-x-88	B 9 B 24 B 39
C.	SOUTH-CENTRAL FOREST REGION		<u>c 1-44</u>
	North Bay District, L.S. MacLeod* Parry Sound District, C.A. Barnes Pembroke District, R.A. Trieselmann	0-X-89 0-X-90 0-X-91	C 9 C 21 C 30
D.	CENTRAL FOREST REGION		D 1-39
	Sault Ste. Marie District, H.J. Weir* Sudbury District, E.L. Houser Chapleau District, W. Ingram	0-x-92 0-x-93 0-x-94	D 7 D 17 D 27
E.	NORTHERN FOREST REGION		E 1-43
	Cochrane District, H.R. Foster* Kapuskasing District, J. Baker Swastika District, J. Lombard	0-x-95 0-x-96 0-x-97	E 12 E 23 E 33
F.	MIDWESTERN FOREST REGION		<u>F 1-31</u>
	Port Arthur District, K.C. Hall* Geraldton District, C.N. Davis White River District, K.C. Hall, C.N. Davis	0=X-98 0-X-99 0-X-100	F 8 F 18 F 28
G.	WESTERN FOREST REGION		<u>G 1-29</u>
	Sioux Lookout District, P.E. Buchan* Kenora District, J.A. Mason Fort Frances District, J. Hook	0-X-101 0-X-102 0-X-103	G 9 G 15 G 22

Photographs

Regional Supervisors *

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

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 Iarose 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 GERALDTON DISTRICT

	Page
Spruce Budworm	F 18
Larch Casebearer	F 18
Wandering Sawfly	F 19
A Birch Leaf Miner Fenusa pusilla	F 19
Western Tent Caterpillar Malacosoma californicum pluviale	F 19
Red Pine Sawfly <u>Neodiprion nanulus nanulus</u>	F 19
Red-headed Jack-pine Sawfly Neodiprion virginianus complex	F 19
Pitch Nodule Maker Petrova albicapitana	F 20
A Birch Leaf Beetle	F 21
Leaf-folding Sawflies	F 21
Yellow-headed Spruce Sawfly Pikonema alaskensis	F 21
White Pine Weevil Pissodes strobi	F 21
Larch Sawfly Pristiphora erichsonii	F 22
Amber-marked Birch Leaf Miner Profenusa thomsoni	F 23
Spruce Bud Gall Midge Rhabdophaga swainei	F 24
Summary of Miscellaneous Insects	F 25

K.C. Hall, C. Davis

Spruce Budworm, Choristoneura fumiferana Clem.

Emphasis on spruce budworm surveys was sparked in 1968 by marked increases in population levels of this insect in central and southeastern Ontario. An intensive survey was carried out in 1968 to determine spruce budworm populations in the Geraldton District. Single larvae were recovered from black spruce in Kilkenny Township and from white spruce in Booth Township and at one location 10 miles east of Longlac. Branch samples were taken from balsam fir trees at four locations in the district and examined for spruce budworm egg masses. Results indicate that light defoliation will occur in 1969 in the Rossport and Limestone Lake areas (Table 4).

TABLE 4

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

Location	Per cent defoliation	No. of egg masses per 100 sq. feet of foliage	Infestation forecast for 1969
Rossport (Twp. 86) Limestone Lake Surgeon River	5 5	91 25	Light Light
(Colther Twp.) Longlac	3 2	0	Nil Nil

Larch Casebearer, Coleophora laricella (Hbn.)

Population levels of the larch casebearer remained low at quantitative sample points in 1968 (Table 5). Populations increased slightly in Croll Township where a count of 1.1 larvae per 18-inch branch tip was recorded.

TABLE 5

Summary of Larch Casebearer Larval Counts in the Geraldton District from 1966 to 1968

Note: Counts were based on the examination of 4, 18" branch tips from each of 4 trees at each location.

Location (township)	Av. d.b.h. of	Av. no.	larvae per 18"	branch tip
(downship)	sample trees in inches	1966	1967	1968
87 Croll	6	0.2	0.4 0.2	.06 1.1

Wandering Sawfly, Dimorphopteryx melanognathus Roh.

This defoliator was found in small numbers along the north shore of Lake Superior in 1968. Low populations were observed on small scattered white birch at Rainbow Falls Park in Township 85, in Pic Township and near St. Evens. Defoliation did not exceed 5 per cent at any location.

A Birch Leaf Miner, Fenusa pusilla (Lep.)

A small infestation of this miner persisted at Orient Bay in 1968. Quantitative sampling, however, showed that the numbers of mined leaves declined from 72 per cent in 1967 to 28 per cent in 1968. A medium infestation persisted on open-grown birch trees in an area of approximately 10 acres and a light infestation occurred in the surrounding area.

Western Tent Caterpillar, Malacosoma californicum pluviale (Dyar)

Population levels of this insect were low in the district in 1968. Quantitative sampling showed the highest numbers in Pic Township where 8 tents were found along 1 mile of roadside. Willow, cherry and white birch regeneration were common host species.

TABLE 6

Summary of Western Tent Caterpillar Counts per Measured Mile of Roadside in the Geraldton District in 1968

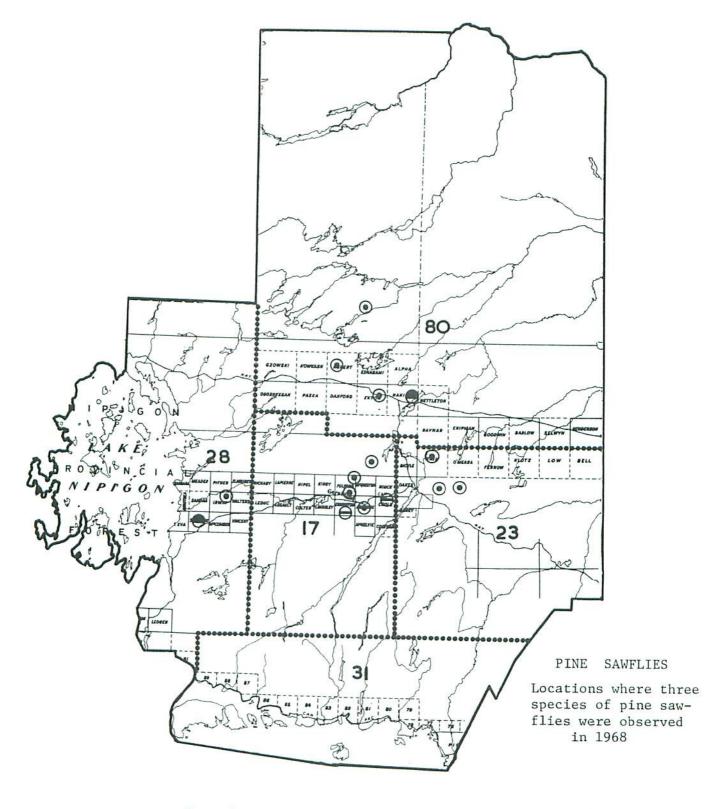
Host	Total tents 1968
will interest statements in	
wB	2
W density and the self-	2
	William admired 1
. D	2
pCh	8
	wB W wB wB

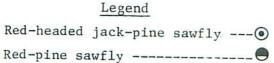
Red Pine Sawfly, Neodiprion nanulus nanulus Schedl.

Population levels of this sawfly remained low in the district in 1968. The highest number of colonies occurred on several young open-grown jack-pine trees in Summers Township where an average of 7 colonies per tree caused complete defoliation of the old foliage on five trees. Scattered colonies were observed in Nakina Township.

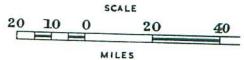
Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

This sawfly was found commonly on open-grown jack pine in the Geraldton, Longlac and Nakina divisions in 1968. In McQuesten Township an average of 15 colonies per tree on 10, 10-foot trees caused complete defoliation (Table 7).





Black-headed jack-pine sawfly $-\Theta$



Heavy defoliation was also observed on several 15-foot trees near False Creek. No colonies were observed elsewhere in the district. Open-grown trees were usually infested but some light defoliation was noted in fully-stocked stands.

TABLE 7

Summary of Larval Colony Counts of Red-headed Jack-pine Sawfly in the Geraldton District in 1968

Location	Av. d.b.h. of sample trees in inches	No. of trees examined	Av. no. of colonies per tree 1968
McQuesten Twp. 20 mi. E. Longlac Ashmore Twp. Fulford Twp. Phipps Lake Exton Twp.	4	10	15
	3	4	2
	2.5	20	1
	5	100	.04
	3	100	.04
	4.5	100	.03

Pitch Nodule Maker, Petrova albicapitana Busck

Population levels of this insect were low at all sample points in 1968 (Table 8). The highest numbers were recorded near Longlac where quantitative sampling revealed 45 new nodules on 100 jack pine trees in a young plantation. High populations that occurred in the Beardmore area in the past few years declined to endemic levels in 1968. This insect was found predominantly on open-grown trees in plantations but low numbers were also noted in well-stocked stands. In some areas, especially north of Geraldton, the main stems of trees that were weakened by the nodules were broken off by high winds in late summer,

TABLE 8

Summary of Nodule Counts of Pitch Nodule Maker in the Geraldton District in 1968 Note: Counts represent all inhabited nodules on 100 trees.

Location	Av. d.b.h. of sample trees in inches	Total nodules 1968
Longlac	1	45
Goldfield Rd.	1	11
Nakina Twp.	1-1/2	18
Twp. 84	0.5	2
Stevens	2	3

A Birch Leaf Beetle, Phratora hudsonia Brown

A light infestation persisted in Township 86. Although populations of this comparatively rare leaf beetle remained low, the area of infestation increased from several acres in 1967 to five square miles in 1968 extending from Rainbow Falls to Rossport Provincial Park. Light defoliation was observed on all white birch whereas scattered open-grown trees sustained moderate to heavy defoliation. Defoliation generally was confined to the lower branches of host trees.

Leaf-folding Sawflies, Phyllocolpa spp.

Populations of this insect declined sharply throughout the district in 1968. The most noticeable decline was recorded in a sample from trembling aspen along the Diversion Channel Road where 74 per cent of the leaves were folded in 1967 compared with 10 per cent in 1968 (Table 9). The highest population was observed in Croll Township. These sawflies occurred largely on trembling aspen and balsam poplar reproduction. Quantitative samples showed that only 20 to 42 per cent of the folds contained larvae.

TABLE 9

Summary of Leaf Folding Sawfly Counts in the Geraldton District in 1967 and 1968

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

	Tree	Per cent leaves affected		Per cent folds	
Location	species	1967	1968	inhabited 1968	
Diversion Channel	tA	74 wall and a	10	20	
Chorus Lake	tA	34	15	33	
Klotz Lake	tA	28	3	33	
Taffy Lake	bPo	22	4	25	
Pic Twp.	tA	19	3	33	
Croll Twp.	bPo		19	42	

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

High populations of this common pest occurred in scattered pockets of small white spruce in Ashmore and Rupert townships and at Klotz Lake. In Rupert Township, one 15-foot open-grown tree suffered approximately 40 per cent defoliation. Elsewhere in the district light defoliation was common and generally confined to ornamental and roadside trees.

White Pine Weevil, Pissodes strobi (Peck.)

White pine weevil populations increased at most sample points in the district in 1968 (Table 10). Quantitative sampling showed the high population in a young open-grown white spruce plantation in Kowkash Township where 26 per cent of the trees were weeviled (see map). A sharp population increase was

noted at Flynn Lake where 1 per cent of the trees in a young roadside plantation was weeviled in 1967 compared with 10 per cent in 1968. A heavy infestation was observed in Walters Township and medium populations occurred near Stevens and on the Goldfield Road.

Heavy damage caused by this insect was confined to young open-grown plantations. A heavy infestation was observed in a natural stand of 18- to 30-foot spruce in Walters Township. It is interesting to note that the insect was most abundant on spruce trees in the Geraldton District whereas in the Port Arthur District pine trees are most commonly infested.

TABLE 10

Summary of Damage by the White Pine Weevil in the Geraldton District from 1966 to 1968

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

Location	Host(s)	Av. height in feet	Per cent	trees	weeviled
Total and a series of the control of	The second secon	111 1000	1900	1967	1968
Flynn Lake	bS, wS	J.	7.2	-	1
Stevens	bS	7	13	<u>T</u>	10
Maple Road	bS	0	Ţ	9	9
Booth Twp.	bS	0	0	2	5
Walters Twp.	bS	7		-	3
Legault Twp.		18	tino prop		16
Caramat	bS	6		_	2
MI 66 Goldfield Rd.	bS	7		_	ĩ
of Goldfield Rd.	bS	8	***	-	13
MI 36 Goldfield Rd.	bS	8	-	_	2
Yowkash Twp.	wS	3		100	
		er fiert in 19- 1	And the second	_	26

Larch Sawfly, Pristiphora erichsonii (Htg.)

Larch sawfly populations increased throughout the district in 1968. A heavy infestation persisted in a 5-acre semi-mature stand of larch in Croll Township (see map). Defoliation increased from about 40 per cent in 1967 to 90 per cent in 1968 in this stand. Moderate infestations, with up to 50 per cent defoliation, were observed in Ledger, Colther and Croll townships and at Toupee Lake (Table 11). Elsewhere in the district most stands suffered light defoliation.

TABLE 11 was used if subside solutions of the

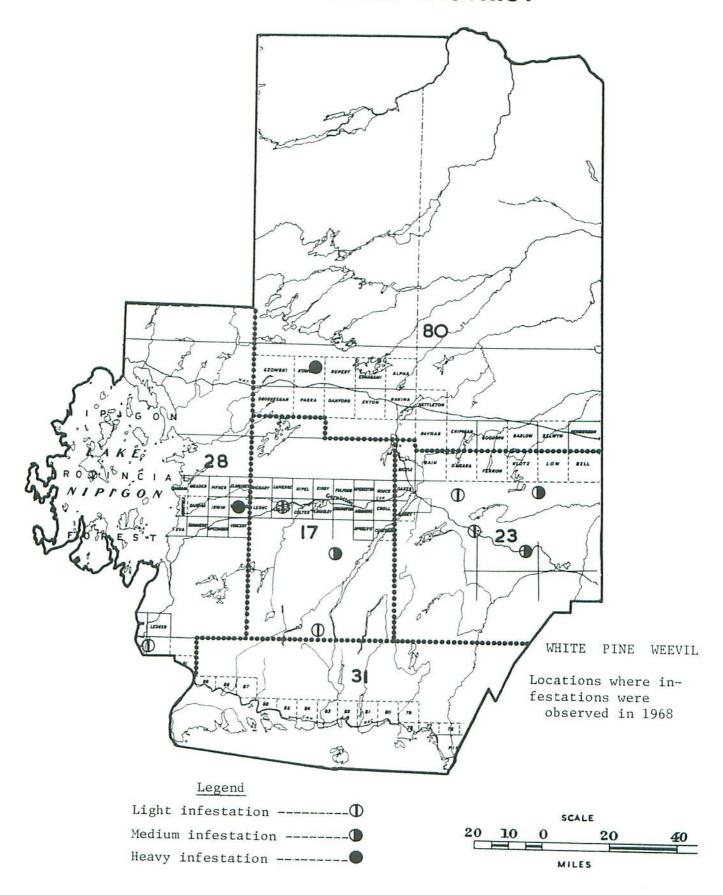
Larch Sawfly Curled Tip Counts in the Geraldton District in 1968

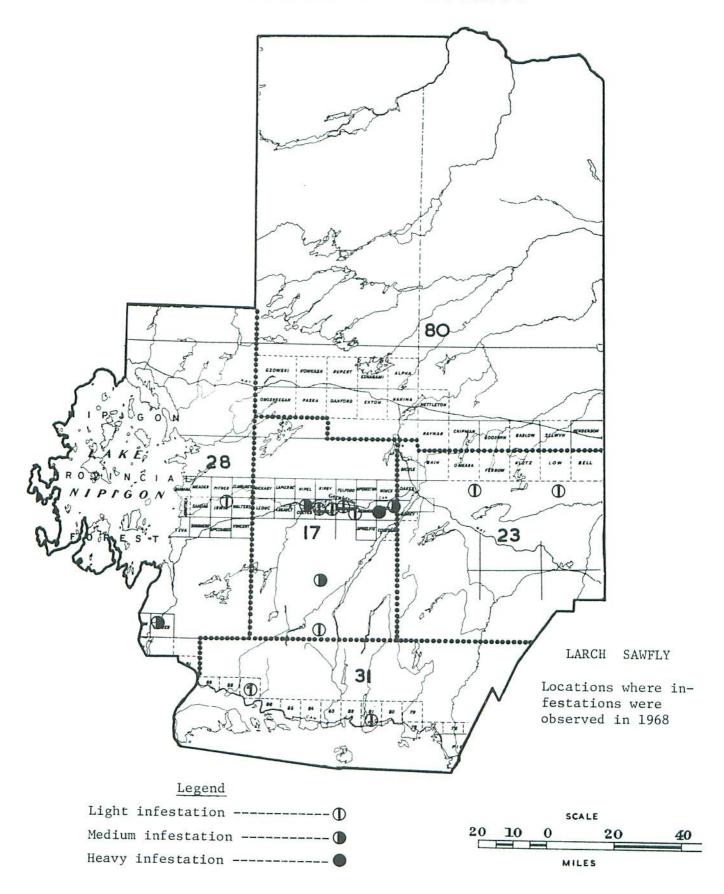
Note: Degree of infestation is based on a sequential sampling system using numbers of curled tips.

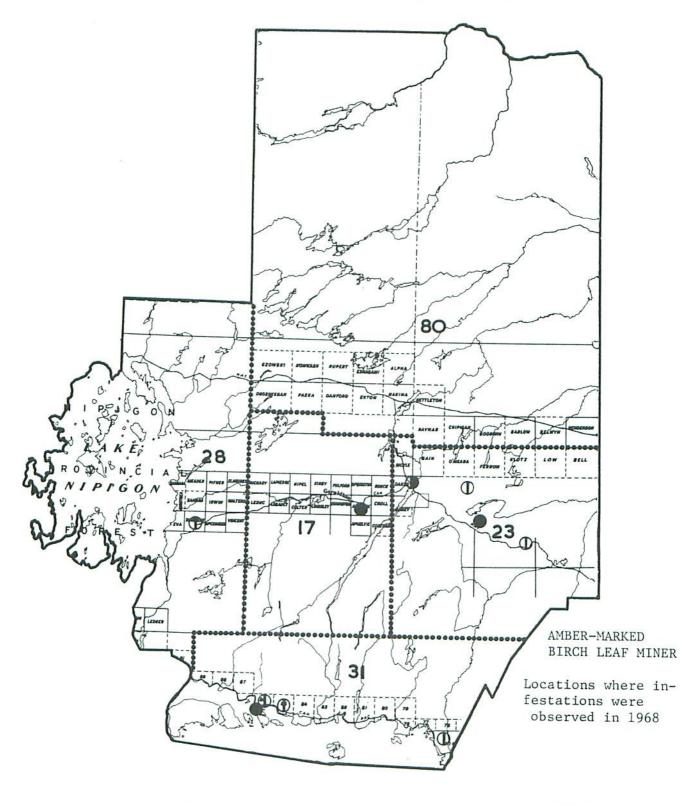
CHECKET, THE THICK THE	Av. d.b.h. of sample	Per cent	Degree of	
Location	trees in inches	curled tips	infestation	
C 25 M	I 5 OF ECLERC	29.7	Severe	
Croll Twp.	4.5 8.0	21.0	Moderate	
Ledger Twp.		17.0	11000100	
Colther Twp.	8.0	16.6	11	
Croll Twp.	7.5		11	
Toupee L.	ts seems on 7.0 soltenimese	15.0	T. J. L.	
40 mi. E. Longlac	5.0	4.1	Light	
Irwin Twp.	7.5	3.6	"	
Lindsley Twp.	5.5	3.1	11	
Lindsley Twp.	5.0	2.9	11	
Lydia L.	7.0	2.5	11	
Errington Twp.	4.0	2.5	n i	
	6.0	1.7	11	
Twp. 87	8.0	1.4	n	
Twp. 81 Errington Twp.	6.0	8d 0	ti di	

Amber-marked Birch Leaf Miner, Profenusa thomsoni (Konow)

Populations of this leaf miner declined at all sample points in 1968 (Table 12). However, heavy infestations persisted near Caramat and in Ashmore Township (see map). Severe browning and early mortality of foliage occurred in Ashmore Township where high numbers of larvae per leaf were observed. A medium infestation persisted in Daley Township. A heavy infestation near Stevens declined sharply in 1968. Severe defoliation was usually confined to open-grown or fringe trees but light to moderate damage was noted in some forest stands.







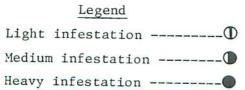




TABLE 12

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

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

Location	Per cer	nt of leave	es mined
THE CONTRACT	1966	1967	1968
Caramat	2/	4.	and the last of the last on
Daley Twp.	26	84	71
Stevens	38	42	38
Beardmore	960 mgs	74	2
Pic Twp.	-	12	1
Twp. 86	M0000	8	7
Twp. 85	case any	5	i
20 mi. E. Longlac	sunnerg	GMC ONED	1
Ashmore Twp.		ONC CALL	2
ormore impo	(MC 94)	940 MD	86

Spruce Bud Gall Midge, Rhabdophaga swainei Felt

Populations of this insect increased at all sample points in the district (Table 13). The highest population was observed in a black spruce plantation on the Goldfield Road where 22 per cent of the terminal buds were infested. The largest population increase was noted in Croll Township where 16 per cent of the terminal buds were infested in 1968 compared with 3.7 per cent in 1967. Up to 75 per cent mortality of terminal buds occurred in one small plantation in Sandra Township. Heavy infestations were usually confined to open-grown hosts.

TABLE 13

Summary of Damage by the Spruce Bud Gall Midge in the Geraldton District from 1966 to 1968

Note: Counts were based on the examination of 5 branch tips from each of ten trees.

T	Tree	Per cent	terminal h	ouds infested
Location	species	1966	1967	1968
Croll Twp. Goldfield Rd. Irwin Twp. Pic Twp. Twp. 84 Stevens Twp. 82	bS bS bS wS bS bS	2.0 8.0 1.3 7.3 6.8	3.7 8.5 10.6 9.8	16.0 22.0 10.0 17.0 10.0 11.0

F 25

TABLE 14

Summary of Miscellaneous Insects Collected in Geraldton District in 1968

Insect	Host(s)	Remarks	
Acleris variana Fern.	wS	Single larva, Hwy. 11 East	
Acteris variana rem.	110	a literal	
Adelges abietis Linn.	wS	Low numbers, Twp. 83	
Adelges lariciatus Patch	wS	Low numbers, Rupert and Ashmore	
		twps.	
Anomogyna elimata Gn.	M	Occasional larva throughout	
Milomog in Ollinson		district	
Anoplonyx luteipes Cress.	tL	Recovered commonly in low numbe throughout district	
Aphrophora parallela Say.	ĵР	Common on open-grown trees	
Archips cerasivoranus (Fitch)	pCh ₃ cCh	Low numbers on roadside trees, Caramat and Goldfield roads	
Arge pectoralis (Leach)	wB	Single colony, Pic Twp.	
Cecidomyia sp.	tA som any	Low numbers, Ashmore Twp.	
Chorîstoneura conflictana Wlk.		Low numbers, Goldfield Road and Summers Twp.	
Cimbex americana Leach	Мо	Small numbers, Twp. 86	
Cinara ontarioensis Brad.	jP	Heavy populations on small oper grown trees, Longlac area	
Dasineura balsamicola Lint.	bF	Common in low numbers throughout district	
Dichelonyx elongatula (Schon.)	ъРо	Moderate to heavy numbers throughout district	
Dioryctria reniculella Grt.	wS	Low populations at numerous sample points	
Dryocoetes affaber Mann	jP	Single tree affected, Fulford Twp.	
Epinotia cruciana Linn.	W	Light population, Twp. 82	

F 26
TABLE 14 (continued)

Insect	Host(s)	Remarks
Epinotia solandriana Linn.	wB ₉ bPo ₉ tA	and the part and t
Eupithecia sp.	tL	Low population, Twp. 77
Euura hospes Walsh	W	Small numbers, Terrior Lake
Euura salicispisum (Walsh)	W	Low numbers, Ashmore Twp.
Fenusa dohrnii Tischb.	Al	Moderate population, Twp. 87, elsewhere, light
Galerucella decora Say	tA	Low numbers, Ashmore Twp.
Gonioctena americana (Schaef.)	tA	Low numbers, Ashmore Twp.
Halisidota maculata Harr.	W	Small numbers, Coltham Twp.
Herculia devialis Grt.	bS	Moderate infestation of old cones, Conglomerate Lake
Iyphantria cunea Dru.	W	One colony recovered, Coltham Twp.
pimorpha pleonectusa Grt.	tA	Single larvae, Goldfield Road
ithocolletis salicifoliella Cham.	tA	High population, O'Sullivan Lake, low populations elsewhere
ayetiola rigidae 0.S.	W	Low numbers at several location
eodiprion maurus Roh.	jP	Single colony, Fulford Twp.
eodiprion pratti banksianae Roh.	jP	Single colonies, Errington and Croll twps.
yctobia limitaria Wlk.	tL,wS	Low numbers, townships 81 and 7
ymphalis antiopha L.	W	Low numbers at three widely separated points
rthosia revicta Morr.	bF	Two larvae in mat sample, Croll Twp.
anthea acronyctoides Wlk.	tL	Single larva, Ashmore Twp.
apilio glaucus Linn.	Мо	Three larvae, Twp. 86.

F 27
TABLE 14 (concluded)

Insect	Host(s)	Remarks
Phratora purpurea purpurea Brown	bPo,tA	Two colonies, Twp. 86
Pineus similis Gill.	wS	Low numbers, Ashmore Twp.
Pontania salicis-pisum (Thomas)	W	Single larva, Coltham Twp.
Sciaphila duplex Wlshm.	tA	Low numbers, Goldfield Rd. and Summers Twp.
Semiothisa sexmaculata Pack.	tL	Low numbers, Ashmore Twp.
Semiothisa submarmorata Wlk.	tL	Two larvae, Ashmore Twp.
Syngrapha selecta Wlk.	bF	Single larva from each balsam plot
Trichiocampus irregularis Dyar	bPo	Two colonies, Twp. 86
Zeiraphera canadensis Mut. and Free.	wS	Low populations, numerous locations
Zeiraphera destitutana (Walker)	wS	Low numbers, Rupert and Fulford twps. and Twp. 81
Zeugophora abnormis Lec.	bPo	Small numbers, Booth Twp.

- waste entimined and estat