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Central Forest Region, 1966
Status of Insects in the Sault Ste. Marie
District

McPhee, H.G.

Information Report O-X-43
(Forest Research Laboratory, Ontario Region)

1966

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O-X-36	--Kemptville District	J. Hook
O-X-37	--Pembroke District	R. A. Trieselmann
O-X-38	--Lake Simcoe District	A. A. Harnden
O-X-39	--Lake Huron District	R. L. Bowser
O-X-40	--Lake Erie District	J. R. Trinnell
O-X-41	--North Bay District	L. S. MacLeod
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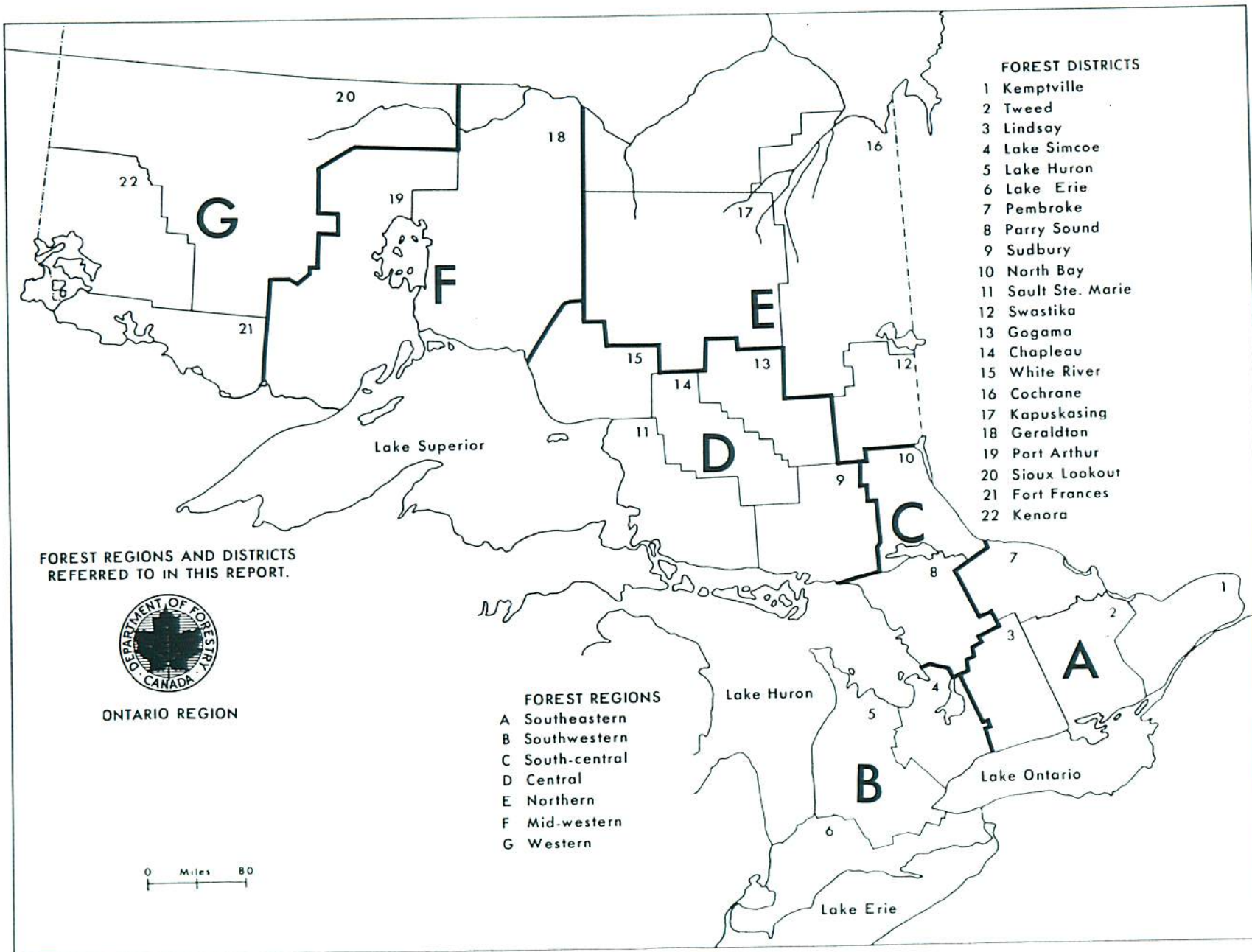
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* Regional Supervisors



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.

CENTRAL FOREST REGION

1966

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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
<u>Sudbury</u>										
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
<u>Sault Ste. Marie</u>										
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		Forecast for 1967
			1965	1966	
<u>Sudbury</u>					
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
<u>Sault Ste. Marie</u>					
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).

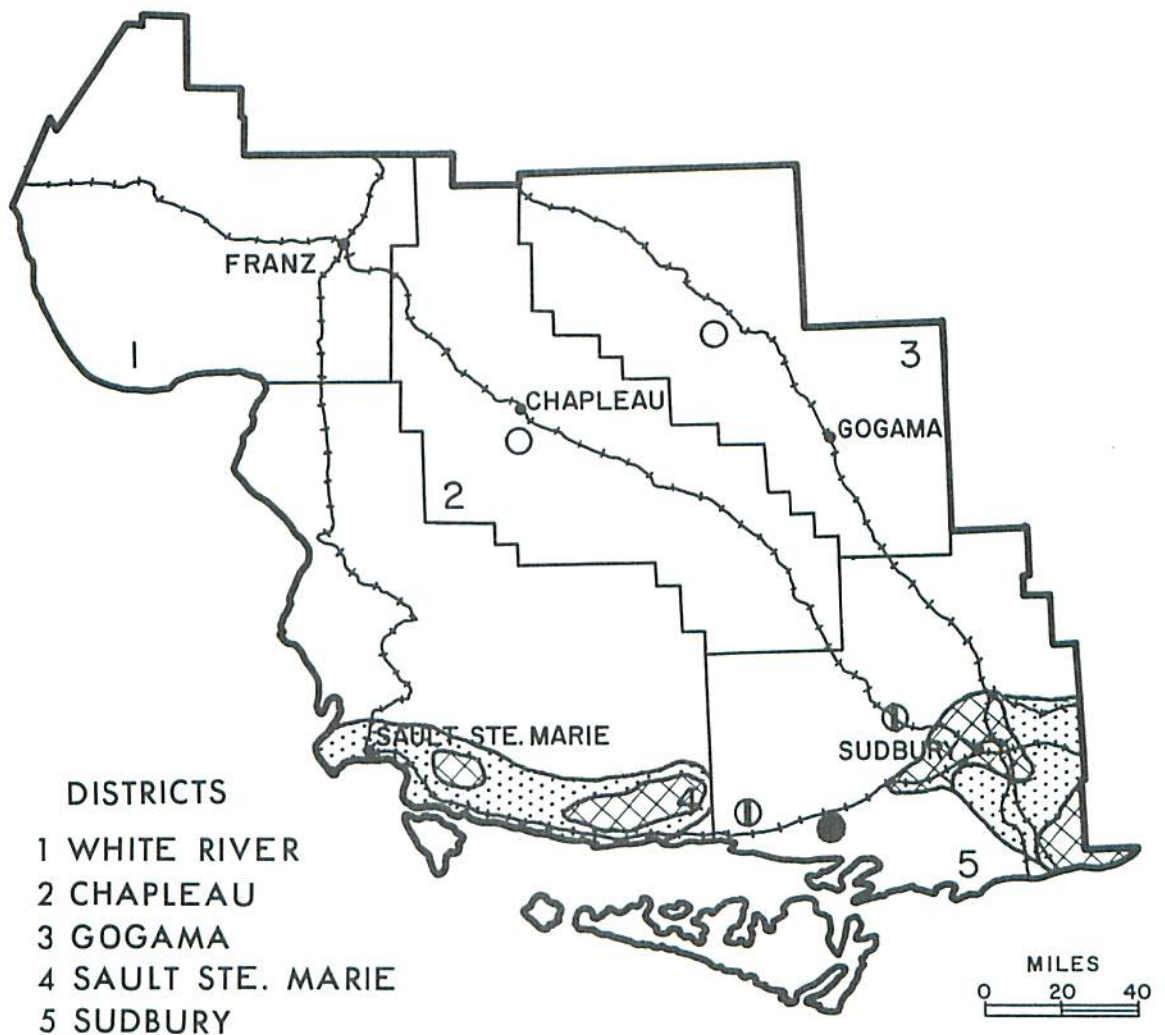
Chemical insecticides used on plantations in the Espanola area provided almost 100 per cent control. Control measures in parts of the Kirkwood Management Unit in the Sault Ste. Marie District using both aerial and ground operated equipment were also satisfactory.

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



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 whetzellii (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
Gogama	rP	200	2	198	31	167
White River	jP	597	24	573	272	301
	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
<i>Apiosporina collinsii</i> (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
<i>Armillaria mellea</i> (Fr.) Kummer	jP, rP	Light mortality observed throughout White River and Gogama districts, and in 13H and Panet twps. in Chapleau District
<i>Chrysomyxa pirolata</i> Wint.	wS	Light infection on new cones in Gertrude Twp. and along Michipicoten High Falls Road in White River District
<i>Coleosporium asterum</i> (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.
<i>Coleosporium solidaginis</i> (Schw.) Thum.	jP	Light infection in 11D Twp. in Chapleau District
<i>Cronartium comptoniae</i> 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
<i>Cronartium ribicola</i> J.C. Fischer	wP, Ribes	The organism was found in wP stands throughout the Central Region but no significant status changes were recorded
<i>Cytospora chrysosperma</i> (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
<i>Cytospora kunzei</i> Sacc.	ns	Severe damage to plantation in Lorne Twp. in Sudbury District Approx. 25 per cent of trees attacked
<i>Dibotryon morbosum</i> (Schw.) Theiss. & Syd.	pCh, ecCh	Common throughout Central Region on <i>prunus</i> spp. Small pockets of heavy infection occurred on domestic plum on St. Joseph Island in Sault Ste. Marie District
<i>Dothichira populea</i> Sacc. & Braird	lPo	Group of trees severely damaged in Kehkummah Twp. on Manitoulin Island, Sudbury District
<i>Fomes pinicola</i> (Sw. ex Fr.) Cke.	bS	Host trees lightly infected in 29 and Borden twps. in Chapleau District
<i>Gymnosporangium</i> sp.	Mo	Pockets of heavy infection along the shoreline of Lake Superior in Sault Ste. Marie District
<i>Hypodermella ampla</i> (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
<i>Keithia thuja</i> Durand	ec	Heavy infection in Hallam Twp. in Sudbury District
<i>Lophium mytinellum</i> (Pers.) Fr.	jP	Collections made from Little White River Area in Sault Ste. Marie District
<i>Melampsora epitaëa</i> Thuem.	W	This rust is widespread in Chapleau District
<i>Melampsora medusae</i> Thum.	tL	Light infection of this foliar rust in Chapleau Twp., Chapleau District, and in Bryant and Hunt twps., White River District
<i>Melampsorella caryophylla</i> 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
<i>Pollaccia elegans</i> Serv.	bPo	Heavy infection along Hemlo Road in White River District. Light infection in McNaught Twp., Chapleau District and spotty in Sudbury District
<i>Poria obliqua</i> (Pers. ex Fr.) Karst.	wB	Occasional trees infected in LOE Twp., Chapleau District
<i>Puccinia bolleyana</i> Sacc.	El	Orange rust infecting petioles and leaves in lld Twp., Chapleau District
<i>Pucciniastrum geopolitianum</i>	wS	Heavy fruiting of foliar rust observed on wS hedge in Gogama
<i>Rhytisma acerinum</i> Pers. ex Fr.	W, rM, mM	Common throughout Gogama District
<i>Rhytisma punctatum</i> Pers. ex Fr.	mM	Heavy infection on mM foliage throughout Gogama District
<i>Rhytisma salicinum</i> Pers. ex Fr.	W	Heavy infection in Knowles Twp. in White River District. Light infection observed frequently in patches throughout Gogama District
<i>Sclerphoma pithyophila</i> (Corda) Hoehn.	jP	Prevalent in several areas in association with branch tip mortality in Sudbury District
<i>Septoria musiva</i> Peck.	bPo	Severe wilting of foliage in Cecil and Hunt twps. in White River District
<i>Steganosporium pyriforme</i> (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
<i>Taphrina robinsoniana</i> Geis.	Al	Common on alder throughout Gogama District
<i>Thyronectria balsamea</i> (Cke. & Pk.) Seavel	bF	Light infection observed along Ranger Lake Road in Sault Ste. Marie District and in Jack Twp. in Gogama District
<i>Tubercularia vulgaris</i> 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
<i>Nyssopsora clavellosa</i> (Berk.) Arth.	Aralia	Occasional infection on host species in lld Twp. in Chapleau District
<i>Puccinia asteris</i> Duby	Aster	Heavy infection in Peakes Twp. in White River District and light infection in Nimitz Twp. in Chapleau District
<i>Puccinia caricina</i> D. C.	Ribes	Found on two species of Ribes in Brutus Twp. in Chapleau District
<i>Puccinia dioicae</i> P. Magn.	Aster	Found throughout Chapleau District and in Stetham Twp. Gogama District
<i>Puccinia coronata</i> Cda.	Buckthorn	Light infection in Chapleau and McNaught twps., Chapleau District
<i>Puccinia linkii</i> Klotzsch	Bitter Current	Light infection in Twp. 30 Range 26 in White River District
<i>Puccinia porphyrogenita</i> Curt. ex Thum.	Bunchberry	Host heavily infected in Rumsey's plantation in White River District
<i>Puccinia pyrolae</i> Cooke	Fringed Milkwort	Rust attacking this host in 10E Twp., Chapleau District
<i>Puccinia mesomajalis</i> Berk. & Curt. ex Pk.	Clintonia	Light infection in Cochrane and lld twps. in Chapleau District

STATUS OF INSECTS IN THE SAULT STE. MARIE DISTRICT

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Larch Casebearer	<u>Coleophora laricella</u> Hbn. D 11
Tortricid on Oak	<u>Croesia semipurpurana</u> Kft. D 11
Jack-pine Budworm	<u>Choristoneura pinus</u> Free D 12
Wandering Sawfly	<u>Dimorphopteryx pinguis</u> (Nort.) D 13
European Spruce Sawfly	<u>Diprion hercyniae</u> (Htg.) D 13
White Pine Shoot Borer	<u>Eucosma gloriola</u> Heinr. D 13
Eastern Tent Caterpillar	<u>Malacosoma americanum</u> F. D 14
Western Tent Caterpillar	<u>Malacosoma pluviale</u> Dyar D 14
Red-headed Pine Sawfly	<u>Neodiprion lecontei</u> (Fitch) D 15
Red-pine Sawfly	<u>Neodiprion nanulus nanulus</u> D 16
Bruce Spanworm	<u>Operophtera bruceata</u> (Hulst.) D 16
Northern Pine Weevil	<u>Pissodes approximatus</u> Hopk. D 16
Summary of Miscellaneous Insects Collected	D 16

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, Groesia 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

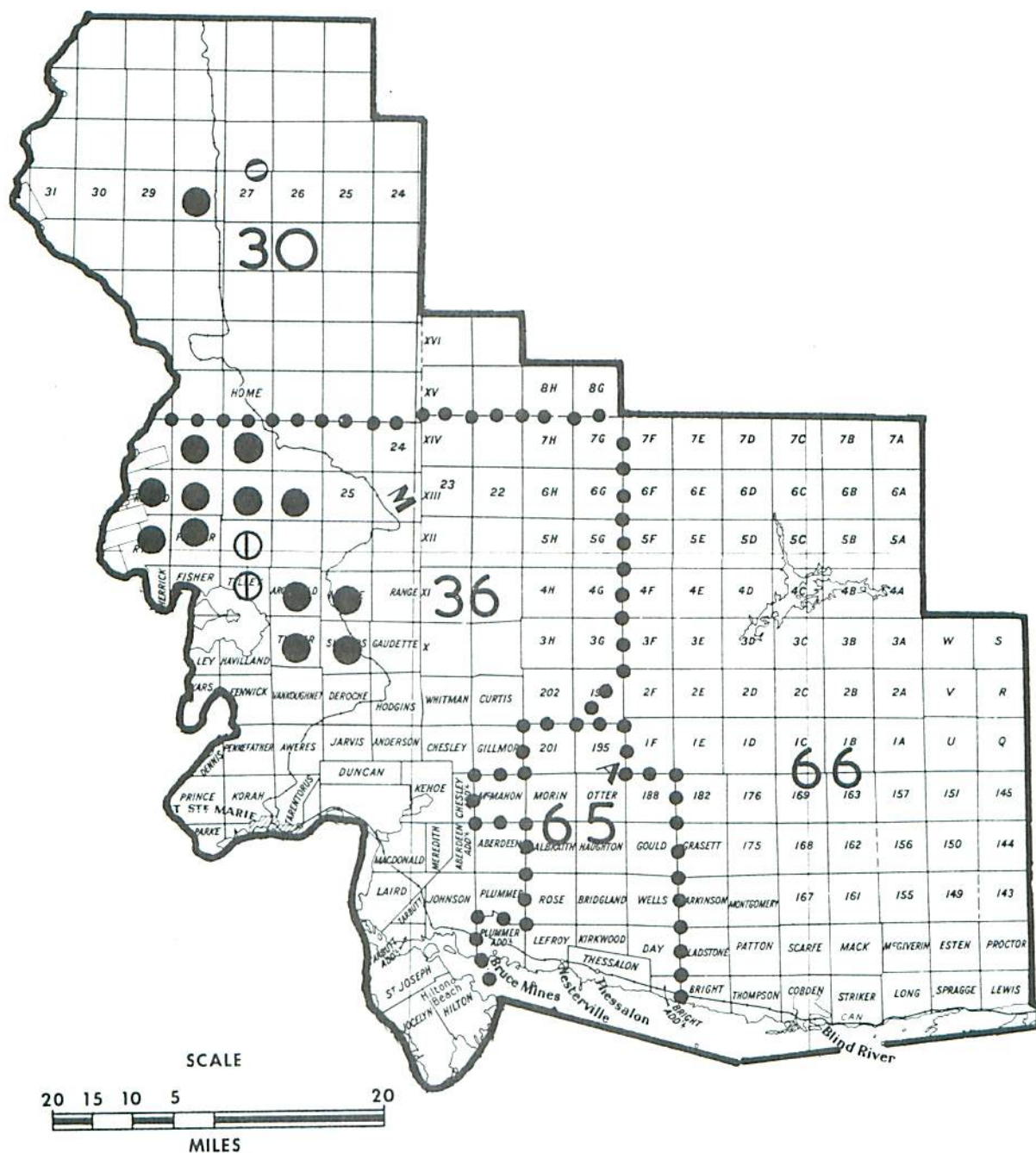
Summary of Eastern Tent Caterpillar Colony Counts at Eight Points
in the Sault Ste. Marie District in 1965 and 1966

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 ①

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

TABLE 12 (continued)

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

TABLE 12 (continued)

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