Central Forest Region, 1965
Status of Insects in the Sault Ste. Marie District

McPhee, H.G.

Information Report O-X-14
(Forest Research laboratory, Ontario Region)

FOREWORD

J. E. MacDonald

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

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

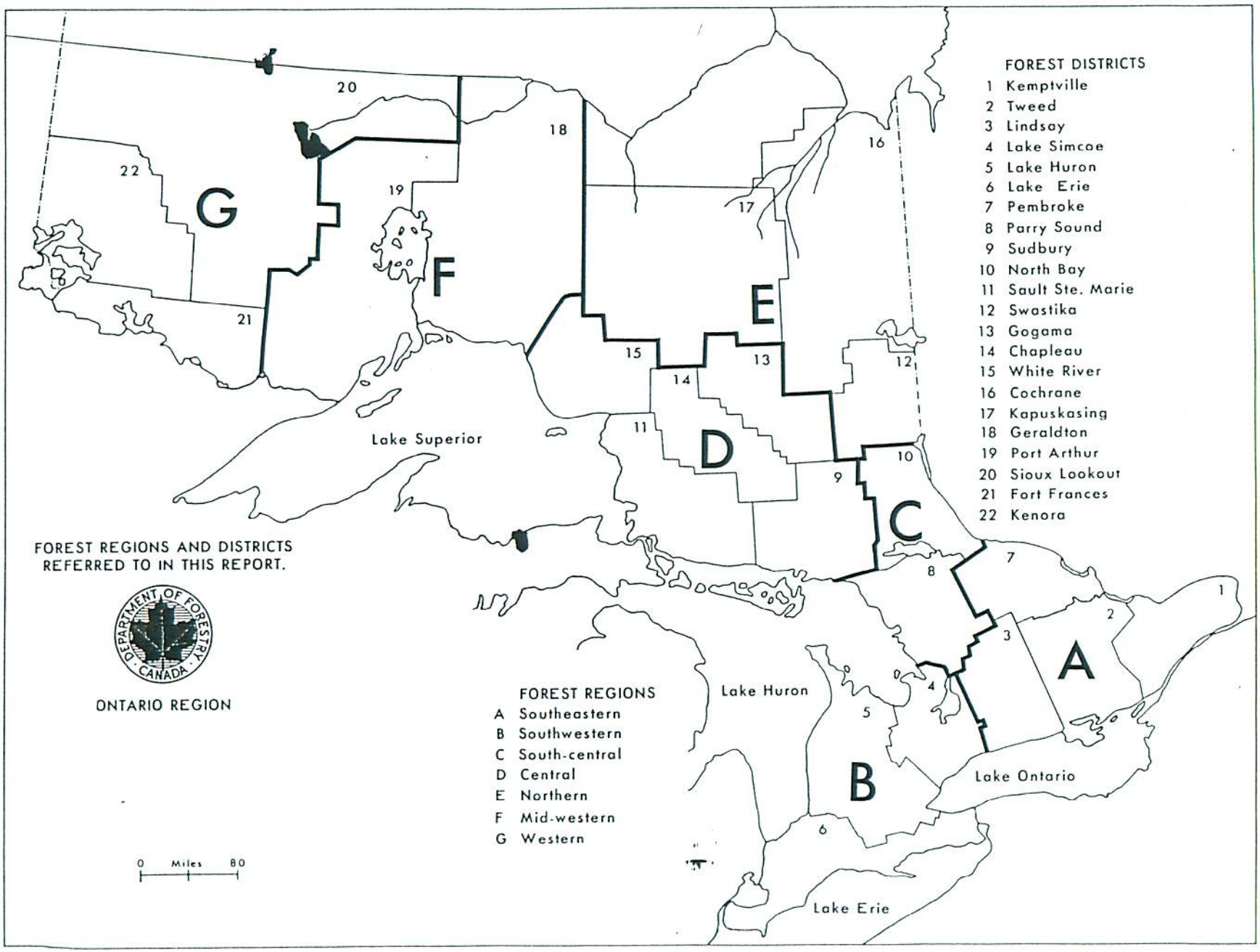
For the third consecutive year low temperatures in the spring caused considerable mortality of the current year's shoots of balsam fir and white spruce at many locations in Ontario. Continued cold weather throughout the summer delayed the development of many insects and in some instances larvae failed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

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

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

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

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


FOREST DISTRICTS
1 Kemptville
2 Tweed
3 Lindsay
4 Lake Simcoe
5 Lake Huron
6 Lake Erie
7 Pembroke
8 Parry Sound
9 Sudbury
10 North Bay
11 Sault Ste. Marie
12 Swastika
13 Gogama
14 Chapleau
15 White River
16 Cochrane
17 Kapuskasing
18 Geraldton
19 Port Arthur
20 Sioux Lookout
21 Fort Frances
22 Kenora
FOREST REGIONS AND DISTRICTS REFERRED TO IN THIS REPORT.
DEPARTMENT OF FORESTRY CANADA
ONTARIO REGION
FOREST REGIONS
A Southeastern
B Southwestern
C South-central
D Central
E Northern
F Mid-western
G Western
0 Miles 80
Lake Superior
Lake Huron
Lake Ontario
Lake Erie

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Ontario

* Regional Supervisors

1965

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O-X-7	--Kemptville District	J. Hook
O-X-8	--Pembroke District	H. J. Weir
O-X-9	--Lake Simcoe District	A. A. Harnden
O-X-10	--Lake Huron District	R. L. Bowser
O-X-11	--Lake Erie District	J. R. Trinnell
O-X-12	--North Bay District	L. S. MacLeod
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O-X-17	--Gogama District	R. A. Trieselmann
O-X-18	--White River District	D. C. Constable
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O-X-26	--Fort Francis District	M. J. Thomson

CENTRAL FOREST REGION

1965

STATUS OF INSECTS (REGIONAL)

STATUS OF TREE DISEASES (REGIONAL)

STATUS OF INSECTS (District)

INTRODUCTION

Central Region

The following report deals with the status of forest insects and tree diseases in the Central Forest Region in 1965. Major insect problems that are common to all five districts as well as all disease conditions are presented on a regional basis and other data on a district basis.

In 1965 D. Ropke and D. C. Constable assumed responsibility for the work of the Forest Insect and Disease Survey in the Chapleau and White River districts respectively.

Below normal temperatures and above average precipitation characterized the 1965 season. Late frosts which occurred in late May and early June for the second consecutive year damaged the new shoots of balsam fir and white spruce trees and the foliage of some deciduous species.

Major increases in the extent and intensity of forest tent caterpillar infestations were observed in the Sault Ste. Marie District while smaller increases occurred in the Sudbury District. Increases in numbers in the Chapleau and White River districts suggest the beginning of what could develop into extensive infestations in these districts. The discovery of the European pine sawfly on Manitoulin Island in the Sudbury District is a significant development in the spread of this introduced pest in Ontario. The mountain-ash sawfly extended its range in the Chapleau and Gogama districts. Infestations of birch skeletonizer subsided in the southern part of the region but persisted in northern areas. Unusually widespread damage by a weevil, Hylobius sp. was observed on jack pine in the Chapleau District, and a rare weevil, Pissodes similis Hopk. was found for the first time on balsam fir in Canada in the White River District.

Forest pathology surveys revealed the presence of Dutch elm disease on Manitoulin Island and at Spanish in the Sudbury District extending the previously known range from the western boundary of the North Bay District almost to the eastern boundary of the Sault Ste. Marie District.

Short courses of instruction on insects and diseases were given to junior forest rangers at 24 camps in the region. Other extension work involving plantation owners, woods companies, and conservation schools constituted an important part of the field work in 1965.

Appreciation is again expressed for co-operation given to technicians by woods companies, Department of Lands and Forests personnel and others.

H. G. McPhee

White Pine Weevil, Pissodes strobi (Peck)

This weevil is a constant deterent to the production of well-formed trees in plantations and in regeneration stands in open areas. White pine, jack pine and Scots pine are the preferred hosts, but occasionally heavy attacks occur on red pine, white spruce and black spruce. The intensity of attack varies considerably between stands, but unlike defoliators which tend toward cyclic abundance, damage by the weevil persists at much the same levels from year to year.

Damage appraisals carried out in representative stands in 1965 (Table 1) indicate a general increase in the degree of attack on jack pine and white pine, whereas a decline occurred on red pine in Sault Ste. Marie and Chapleau districts. The incidence of damaged leaders in Scots pine plantations increased at one location in the Sudbury District and were similar to 1964 in other locations in Sudbury, Sault Ste. Marie, and Gogama districts.

The results of the survey shown in Table 1 provide a general assessment of the status of the insect in the region; more detailed information for specific locations is available on request.

TABLE 1

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	General index in per cent	
					1964	1965
Sault Ste. Marie	wP	9	200	3-14	4	7
	jP	4	100	7-16	6	10
	scP	2	100	13-38	26	25
	rP	1	100	6	27	6
Sudbury	jP	5	100	0-8	2	3
	scP	1	100	22	10	22
Chapleau	wP	1	200	24	2	24
	rP	2	200	0-1	4	1
	jP	12	100	2-17	7	6
Gogama	wP	1	100	8	-	8
	jP	10	100	0-19	6	7
	scP	1	100	1	2	1
	bS	2	100	2-4	5	3
White River	jP	1	100	12	3	12
	bS	1	100	9	14	9
	wS	2	100	9-16	7	12

Larch Sawfly, Pristiphora erichsonii (Htg.)

Few changes occurred in the status of this insect in 1965. Clumps and small pockets of tamarack were lightly infested at many locations in the Central Region, mainly on open-grown and fringe trees.

Population levels in the southern parts of Divisions 65 and 66 in the Sault Ste. Marie District increased and caused severe defoliation in several small stands in Bright, Jocelyn, Plummer, and Thessalon townships. In the Sudbury District, a large pocket of medium infestation persisted in the Spanish River Reserve south of Massey, and a small pocket of severe defoliation occurred in Township A. Small larch trees were moderately and severely defoliated at scattered locations in the district.

Severely infested reproduction, mainly along roadsides, was observed in Smuts and 12H townships in the Chapleau District and at various points in the White River District. Population levels declined sharply in the Gogama District where light to moderate defoliation of small larch trees was observed at a few widely-scattered points.

Sequential sampling yielded negative results except in the White River District where 2 per cent of the shoots were curled by oviposition at a sample point in Township 73.

Mountain Ash Sawfly, Pristiphora geniculata (Htg.)

Population levels of this sawfly showed little change in the Central Region in 1965, except in the Gogama District where a noteworthy increase in population levels occurred, and in the Chapleau District where an extension in the distribution of the insect was reported. The insect has not become established to date in the White River District.

In the Chapleau District, defoliation ranged from 10 per cent in Borden Township to 80 per cent on lakeshore trees in McPhail Township. The insect's range was extended approximately 6 miles westward and forty miles northward from that previously recorded.

In the Gogama District the insect's range was extended west and north along Highway 101. Infestations were mainly light, however, some pockets of medium to heavy infestations were observed at widely-scattered locations.

There was little change in the status of this insect in the Sudbury District. Population levels were generally high through the western part of the district with defoliation varying from light to severe on scattered trees. The insect was abundant at a few locations in the northern part of the district but was rarely found in the eastern half of the district.

Severe defoliation of host trees occurred commonly in the Sault Ste. Marie District except in the north part of Division 30 where light to moderate feeding was observed.

Forest Tent Caterpillar, Malacosoma disstria Hbn.

Forest tent caterpillar population levels continued to increase in 1965, particularly in the southern part of the region where substantial increases in the extent and intensity of infestations occurred.

The greatest expansion occurred in the Sault Ste. Marie District where heavy infestation reported in the Blind River area in 1964, comprising about 75 square miles, enlarged to approximately 425 square miles in a band running east and west from Wakewekobi Lake to Proctor Township. Population levels reached infestation proportions in the remainder of the North Channel area east of Sault Ste. Marie resulting in a 100 square mile area of moderate to severe defoliation centred around McCarrol's Lake, bordered by an area of light infestation totalling 900 square miles (see map).

In Sudbury District, three small infestations near Sudbury coalesced to form a large area of moderate to severe defoliation surrounding the city. The heavy infestation in the French River area spread eastward through Scollard Township into Parry Sound District and northward along the district boundary to Appleby Township. A new heavy infestation occurred just south of Espanola in Merritt Township where host stands were severely defoliated over an area of about 10 square miles. The area of moderate to severe defoliation in the district totalled 570 square miles. Light defoliation of poplar stands recurred outside heavily infested areas throughout the southeastern part of the district and an isolated pocket of light infestation was found near the western boundary of the district in Shedden Township.

In Chapleau District, a pocket of light infestation was discovered near the town of Chapleau and the insect was present in small numbers in Panet and 9E townships.

Records show that parasitism usually increases with age of infestation. However, dissections of cocoons revealed marked declines in parasitism in the Sudbury District. In contrast, parasitism increased at sample points in the Sault Ste. Marie District (Table 2). With the successful moth emergence that occurred in the Sudbury District in 1965 compared with 1964 one would expect a comparable increase in numbers of egg bands. However, oviposition declined at sample points. Light trap records from surrounding districts indicate a higher ratio of male moths than females compared with previous years which may explain in part the decline in numbers of egg bands.

TABLE 2

Summary of Forest Tent Caterpillar Cocoon Mortality in the Central Region in 1964 and 1965 Based on the Dissection of One-hundred Cocoons at Each Location

Location (township by district)	Emerged		Parasitized		Disease		Predation		Unsuccessful emergence	
	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965
Sudbury										
Bigwood	25	50	75	45	0	0	0	5	0	0
Graham	25	34	74	65	0	0	0	0	1	1
Rayside	37	68	63	32	0	0	0	0	0	0
Dill	31	61	69	37	0	0	0	2	0	0
Merritt	-	49	-	50	-	0	-	1	-	0
Sault Ste. Marie										
Scarfe	45	49	40	48	10	2	0	1	0	0
Cobden	55	40	42	57	3	3	0	0	0	0
Meredith	-	49	-	45	-	5	-	1	-	0
Johnson	-	41	-	58	-	1	-	0	-	0
Patton	-	34	-	54	-	4	-	8	-	0
149	-	50	-	40	-	10	-	0	-	0
Proctor	-	70	-	29	-	1	-	0	-	0

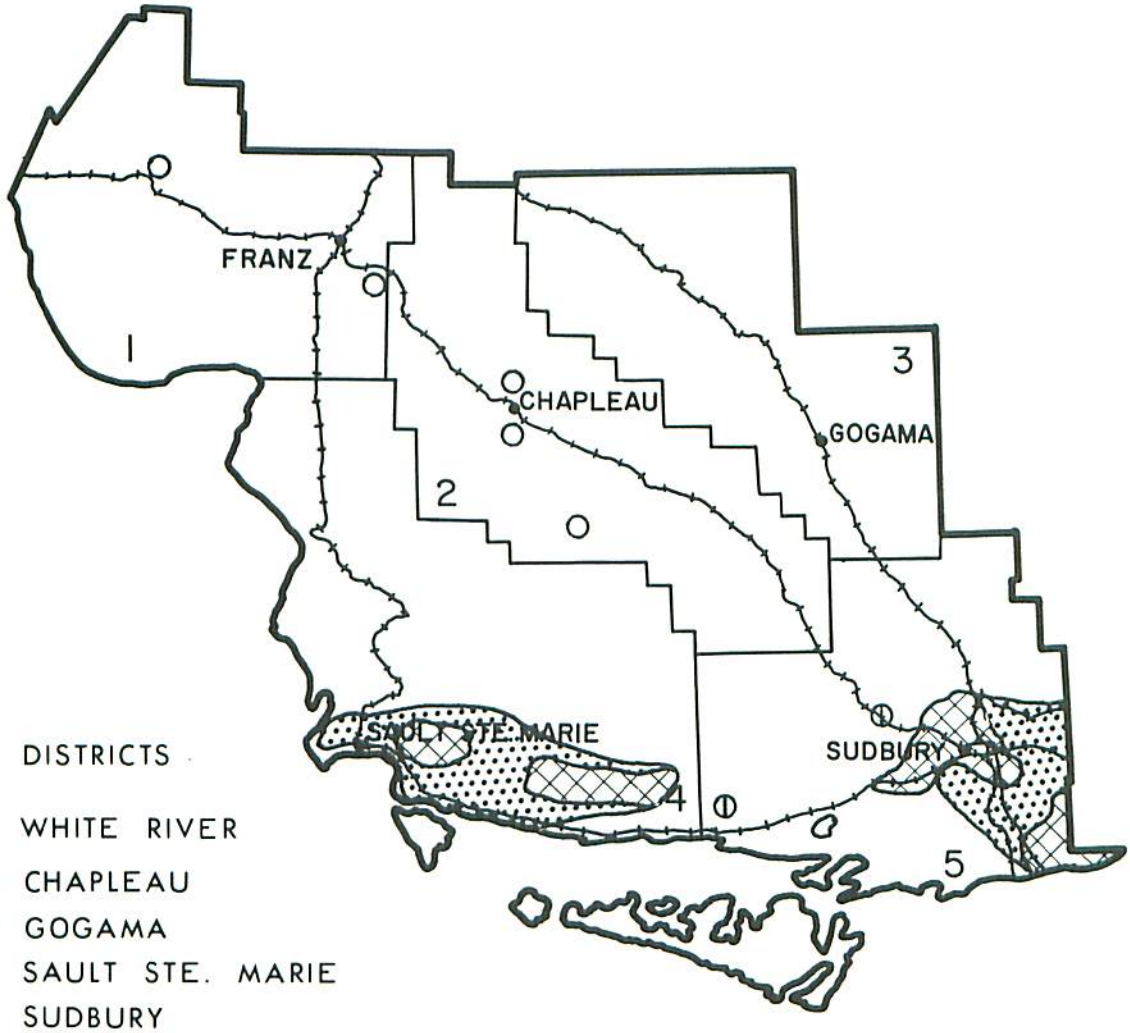
A summary of egg surveys shown in the following table fails to indicate any major extension in infestations in 1966 but increases in intensity of most infestations are expected. This will result in the mass migration of caterpillars from defoliated stands to neighbouring areas, notably in Cobden and Scarfe townships.

TABLE 3

Summary of Forest Tent Caterpillar Egg Band Counts in the Central Region in 1965

Location (township by district)	Tree species	Av. d.b.h. of trees in inches	Average no. of egg bands per tree 1964	1965	Forecast for 1966
Sudbury					
Graham	tA	5	39	15	Heavy
Bigwood	tA	4	66	62	"
Dill	tA	4	30	42	"
Merritt	tA	3	-	37	"
Cox	tA	5	2	15	"
Burwash	tA	5	1	1.7	Light
Shedden	tA	5	-	1	"
Foster	tA	5	-	0.3	"
Curtin	tA	6	-	1.3	"
129	tA	7	-	1.7	"
Louise	tA	6	-	0.6	"
Dryden	tA	5	-	0.6	"
Hanmer	tA	5	-	0.6	"
Sault Ste. Marie					
Cobden	tA	6	-	106	Heavy
Scarfe	tA	5	29	131	"
Proctor	tA	5	-	34	"
Johnson	rO	4	-	67	"
Day	rO	4	-	12	"
Meredith	sM	4	1	18	"
Tarbutt Addt'l	tA	5	2	1	"
Patton	tA	5	2	17	"
Plummer	tA	6	-	1	Light
Gladstone	tA	6	1	4	Medium
Kirkwood	tA	5	-	3	"
Chapleau					
Chapleau	tA	5	-	1.6	Light

CENTRAL FOREST REGION



DISTRICTS

1 WHITE RIVER
2 CHAPLEAU
3 GOGAMA
4 SAULT STE. MARIE
5 SUDBURY

MILES
0 20 40

FOREST TENT CATERPILLAR

Areas in which defoliation occurred in 1965

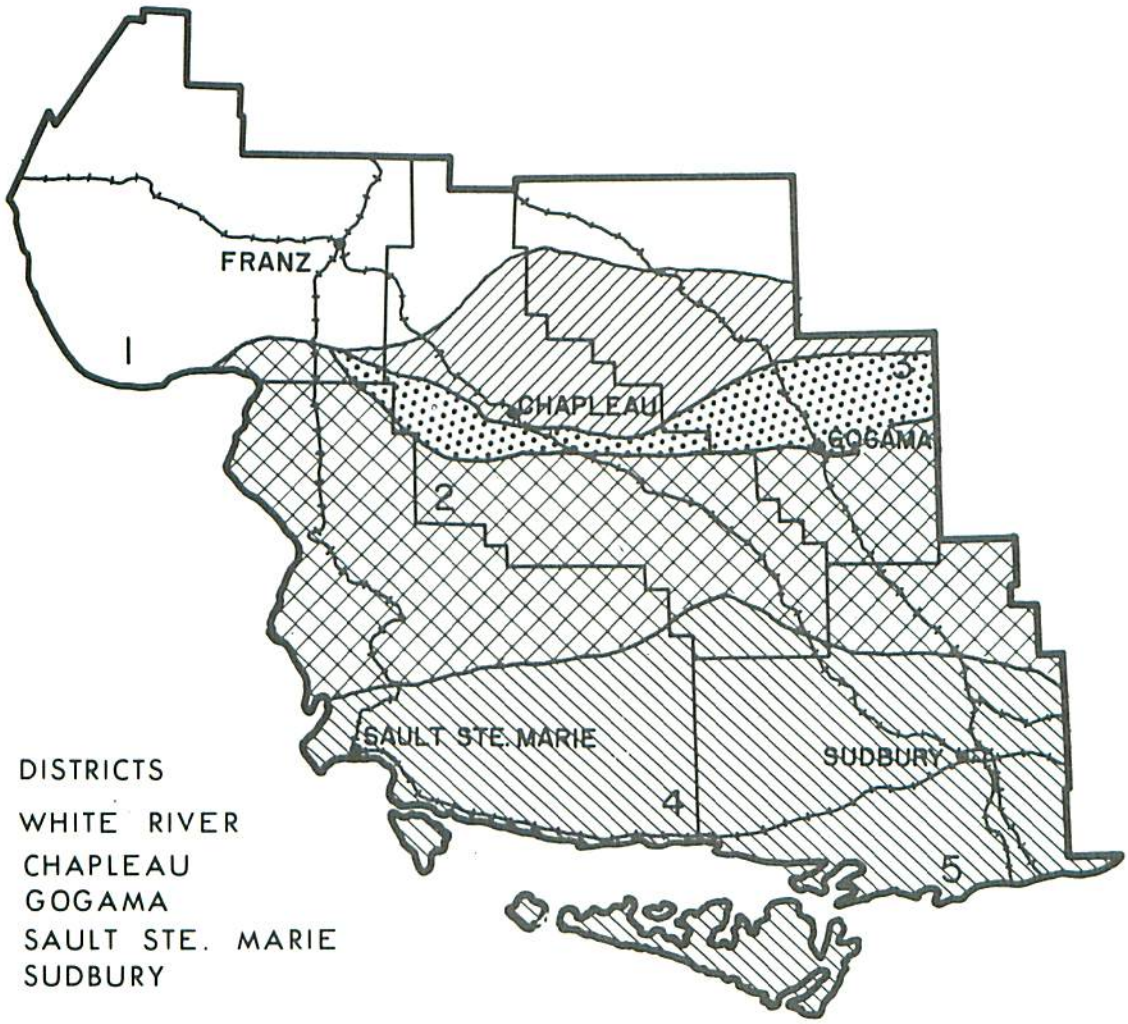
Legend

Light defoliation..... or

Moderate to severe defoliation.....

Points where insects were found in small numbers.....

CENTRAL FOREST REGION



DISTRICTS

1 WHITE RIVER
2 CHAPLEAU
3 GOGAMA
4 SAULT STE. MARIE
5 SUDBURY

MOUNTAIN ASH SAWFLY

Distribution shown in biennial intervals
1959 to 1965

MILES
0 20 40

Legend

Up to 1959.....
Up to 1961.....
Up to 1963.....
Up to 1965.....

STATUS OF TREE DISEASES

Central Region

Dutch Elm Disease, Ceratocystis ulmi (Buism.) C. Moreau

Detection of this destructive disease of elm at three locations in the Sudbury District in 1965 represents a significant extension in distribution. Culturing of samples from suspect elm trees revealed the presence of the disease at Manitowaning and Mindemoya on Manitoulin Island and at Spanish near the western boundary of the district. In each instance only one or two trees were infected.

The disease was introduced to North America from Europe about 1930. It was not discovered in Canada until 1944 when it was found in Quebec. Since that time infection has spread through eastern and southwestern Ontario causing high mortality of elms (see photograph). In 1964, the disease spread northward into North Bay District and was recorded almost to the eastern boundary of the Sudbury District.

The disease is spread by elm bark beetles which breed in dead or dying elms in conjunction with the saprophytic stage of the fungus; emerging contaminated beetles move to healthy trees to feed and in the process infect them.

Spruce Needle Rusts, Chrysomyxa ledi de Bary and C. ledicola Lagerh.

White and black spruce trees infected with these foliar diseases were observed at numerous locations in the Central Region. The incidence of the disease varied very little from the past year. However, the degree of severity was generally lighter.

Slight increases in incidence and severity were recorded in the Sudbury District. But centers of severe infection were limited to small clumps of trees at a few locations.

Incidence of the diseases at the plot in Ivanhoe Township, Gogama District, which was 100 per cent in 1964, remained unchanged. The severity at this location, however, declined from high in 1964 to low in 1965. The white spruce in this area has been attacked for three consecutive years, with annually varying degrees of severity, the heaviest attack occurring in 1964.

Small numbers of lightly infested white spruce and black spruce trees were observed at various points in Chapleau and White River districts. Infected trees were most prevalent in Jasper and Brutus townships in the Chapleau District and on the camp 70 road in the White River District.

Ink Spot Disease of Poplar, Ciborinia whetzelii (Seav.) Seav.

While this disease was observed in most trembling aspen stands throughout the Central Region, it declined in incidence and severity compared with 1964. Pole sized trees were more susceptible than other size classes.

Pockets of heavy infection persisted in Cobden, Esten, Patton, and Scarfe townships in Sault Ste. Marie District, and in Joffre and Stover townships in Chapleau District. In the Gogama District, two large areas of heavy infection persisted in Enid, Montcalm and Strachan townships in Division 68, and in Beulah, Blewett, and Browning townships in Division 72 (see photograph).

Many pockets of light to medium infection were observed in the remainder of the region.

A Needle Rust on Pine, Coleosporium asterum (Deit.) Syd.

The incidence of this foliar rust was comparable to 1964. One relatively large pocket of infection, approximately 300 acres in extent, occurred on young jack pine trees in Lloyd Township, Chapleau District where 44 per cent of the trees were infected. Small pockets of infection were observed in young plantations and on red and jack pine regeneration in the Gogama, Sudbury, and Sault Ste. Marie districts.

Sweetfern Blister Rust, Cronartium comptoniae Arth.

Little change in incidence and severity of this rust occurred in 1965. However, the disease was discovered at several new locations. Three new centres of light to medium infection were observed in mature jack pine stands in the Gogama District. In the Sudbury District, 34 per cent of the stems of young jack pine were infected in a scarified and seeded area in Moncrieff Township. About 10 per cent of the seedlings in a small nursery at Espanola were attacked. One new centre of infection occurred in Durban Township in the Chapleau District where the incidence was 7 per cent in jack pine regeneration.

White Pine Blister Rust, Cronartium ribicola J. C. Fischer

The status of this disease remained unchanged in the Region. As in 1964, infected trees occurred in most stands containing white pine. Medium infections persisted in the southern part of the Sault Ste. Marie District and at three points in the Gogama District where the incidence at sample points varied from 19 to 29 per cent and 33 to 41 per cent respectively. Infected trees were observed frequently in the southern part of the Sudbury District, particularly in the North Channel and French River areas (see photograph).

Hypoxylon Canker on Poplar, Hypoxylon pruinatum (Klotsche) Cke.

Stem cankers caused by this fungous disease occurred commonly in poplar stands throughout the region. Trees of all size classes were susceptible to infection regardless of site quality and the incidence of mortality varied widely between stands (see photograph).

No significant change was noted in the levels of disease incidence and severity in two sample plots which were established in each district in 1964.

Leaf and Twig Blight of Aspen, Pollaccia radiosa (Lib.) Bald. & Cif.

Trembling aspen regeneration, sucker growth, and occasionally small pole-size trees on roadsides and cut-over areas, were again commonly attacked by this fungus. However, the incidence and severity of infection were lower than in 1964. Regeneration on poor sites and near roads was more frequently and more severely affected.

Pockets of severe infection were observed in Township 43, Cochrane and Margaret townships in the Chapleau District and in Pearkes Township in the White River District. Several clumps of severely infected trembling aspen occurred in the Sudbury District. In the Gogama District many small centers of severe infection were observed in the central part of Division 68.

In the remainder of the region numerous pockets of light to moderate infection were observed.

Dieback of Red Pine, Scleroderris lagerbergii Gremmen

This organism which causes branch killing, stem cankering and eventual mortality of young red pine has caused serious damage in the Kirkwood Management Unit and parts of the Searchmont Unit. Infected trees were also found in jack and Scots pine stands in these areas. Mortality of young red pine, particularly new plantings has occurred for the past ten years. The severity and distribution of the disease has increased annually. Mortality of lower branches occurred throughout older plantations in the unit and severe losses have occurred in recent plantings.

In 1965 heavy losses of 3-0 red pine planting stock occurred in the Kirkwood Forest Nursery as a result of the disease. Examination in the autumn showed a high incidence of infection in 2-0 and 1-0 red pine stock.

The northern pine weevil, Pissodes approximatus Hopk. is closely associated with the disease. Trees which are weakened by the disease are used by the weevil as brood sites, thereby hastening the death of the trees.

A sanitation program to remove infected trees and lower branches was initiated by the Ontario Department of Lands and Forests in these units in 1965.

Frost Injury

Frost injury occurred in late May and early June at several points in the region. Balsam fir and white spruce were most commonly affected in the Sault Ste. Marie and Sudbury districts, while black spruce was also damaged in White River, Chapleau, and Gogama districts. Damage occurred in small pockets principally on young trees in low-lying areas, and on fringe or open-growing trees (see photographs).

Winter Drying

This type of injury was generally less prevalent in 1965 than in recent years. Small pockets of needle browning were observed in plantations and natural regeneration of white pine, red pine or Scots pine at widely-scattered locations throughout the region. A 20-acre white pine plantation near Flame Lake in Township 8D of the Chapleau District suffered severe browning of foliage.

"Bunched Top" Condition of Nursery Stock

The incidence of the "bunched top" condition in the Gogama Nursery declined sharply. In 1964, the percentage of damaged seedlings at 12 count locations in the 1-0 jack pine and red pine beds ranged from 9 to 28, whereas in 1965 only occasional seedlings were affected at the same points. Jack pine stock of the same age class appeared to be free from injury.

Other Noteworthy Diseases in the Central Region in 1965

Organism	Host(s)	Remarks
Apiosporina collinsii (Schw.) Hoehn.	Se	Pockets of heavy infection were observed in Chapleau and Sudbury districts, the fungus was also recorded in White River and Gogama districts.
Armillaria mellea (Fr.) Kummer	jP, scP, rP	Occasional mortality in plantations and natural reproduction throughout the central region, no significant change in the status of this disease occurred in 1965.
Chrysomyxa pirolata Wint.	wS	This rust infected cones at 2 locations in the White River District.
Peridermuim sp.	jP, scP	Hosts of all sizes and age classes attacked in small pockets of light infection in the Gogama District.
Cytospora sp.	aMo, W	Common on mountain ash in the Chapleau District; foliage withers and roadside shrubs die back, light infection of willow in Magore Twp., White River District.
Dermea balsamea (Pk.) Seav.	bF	Extensive flagging and twig mortality of roadside trees along Michipicoten Harbour Road, White River District. Occasional mortality in Benneweis Twp., Gogama District.
Dibotryon morbosum (Schw.) Theiss. & Syd.	eCh, pCh	Black Knot of Cherry commonly found throughout the central region causing twig and branch mortality of prunus spp.
Gloeosporium sp.	pCh, Mo, Se, tA	Pathogen associated with leaf and twig blight at scattered points in the White River District.
Gymnosporangium aurantiacum Chev.	aMo	Light fruiting on foliage, Ivanhoe Twp., Gogama District.

Noteworthy Diseases, (continued)

Organism	Host(s)	Remarks
Hypodermella ampla (J. J. Davis) Dearn.	jP	Pockets of light to medium infection in Chapleau, Gogama, Sault Ste. Marie, and Sudbury districts.
Lophodermium pinastri (Schrad. ex Fr.) Chev.	jP	Light infection in White River and Chapleau districts.
Marssonina populi (Lib.) Magn.	tA	Heavy infection in northern part of the Gogama District.
Melampsora sp.	W, tA	Willow in the White River, Chapleau, and Sudbury districts infected in all degrees of severity; fruiting was also observed on single tA leaves at 2 points in the western part of the Chapleau District.
Melampsora medusae Thum.	tL	Light fruiting on foliage in Hunt and Bryant twps., White River District.
Melampsorella caryophyllacearum Schroet.	bF	Witches' brooms throughout the White River and Sault Ste. Marie districts were associated with this rust.
Nothophacidium abietinellum (Dearn.) Reid & Cain	bF	Varying degrees of infection by this fungus at several points in the White River and Chapleau districts.
Peridermium sp.	scP, jP	Common along the North Channel, Sault Ste. Marie District, in association with stands of red oak. Roadside reproduction in DeGaulle Twp., Chapleau District displayed extensive flagging and twig mortality resulting from the galls of this pathogen.
Phomopsis plantanoidis (Cooke) Died.	sM	Canker on regeneration in decadent sM stands in the northern part of Division 30, Sault Ste. Marie District.
Pollaccia elegans Serv.	bPo	Light to medium infections of regeneration at numerous locations throughout the central region.

Noteworthy Diseases, (continued)

Organism	Host(s)	Remarks
Pucciniastrum epilobii Otth.	bF	Light infections at scattered points in White River, Sault Ste. Marie, Chapleau, and Gogama districts.
Rehmiellopsis balsamea Waterman	bF	Occasional balsam fir severely infected at several locations in Division 72, Gogama District.
Rhytisma punctatum Pers. ex Fr.	moM	Recorded at several locations in White River and Gogama districts with a heavy infection in Brackin Twp., Chapleau District.
Rhytisma salicinum Pers. ex Fr.	W	Heavy in Twp. G, Sudbury District, light at one location in the White River District.
Septoria musiva Pk.	bPo	Severe spotting and browning of foliage at two locations in the White River District.
Taphrina cerasi (Fckl.) Sadeb.	pCh	Witches' brooms very common in clumps of roadside pin cherry up to 4" d.b.h. in White River and Chapleau districts.
White Pine Needle Blight	wP	Small pockets or single trees infested along the North Channel, Sault Ste. Marie District.

Diseases and Organisms of Forest Flora

Organism	Host(s)	Remarks
Exobasidium vaccinii Wor.	Blueberry	Found at two locations in the Chapleau District in mature stands of trembling aspen or jack pine.
Nyssopsora clavellosa (Berk.) Arth.	Aralia	Sporulating on foliage at several locations in White River and Chapleau districts; mostly on fresh sites of trembling aspen.
Phragmidium sp.	Wild Rose	Foliage rust observed at widely scattered locations in White River and Chapleau districts, mostly shaded, suppressed specimens affected and on a variety of sites.
Phragmidium rubi-odorati Diet.	Rubus	Host infected in Hunt Twp., White River District.
Puccinia asteris Duby	Aster	Occasional in White River, Chapleau, and Gogama districts on trembling aspen sites.
Puccinia bolleyana Sacc.	Elderberry	Several pockets of heavy infection reported from Gogama District.
Puccinia caricina D. C.	Ribes	Common in moist habitats, Chapleau District.
Puccinia dioicae P. Magn.	Aster	Common wherever host is present, Chapleau District.
Puccinia coronata Cda.	Buckthorn	Bright orange fruiting pustules on foliage of lakeshore and fringe alder-leaf buckthorn; Gogama and Chapleau districts.
Puccinia porphyrogenita Curt. ex. Thum.	Bunchberry	Heavy infection at Rumsey's plantation, White River District.
Puccinia mesomajalis Berk. & Curt. ex Pk.	Clintonia	Occasional in White River and Chapleau districts, mainly in trembling aspen working groups.
Puccinia recondita Rob. ex Desm.	Anemone	In association with Septoria anemones in mature jack pine stands, Chapleau District.
Puccinia violae (Schum.) D. C.	Viola	Profuse fruiting on forest floor violet on good trembling aspen sites, Chapleau District.
Pucciniastrum potentillae	Cinquefoil	Wherever host occurs in mature jack pine stands in the Chapleau District.

Diseases and Organisms of Forest Flora

Organism	Host(s)	Remarks
Pucciniastrum pyrolae	Shinleaf	Fruiting on lower surface of leaves Fawn Twp., Chapleau District, on a variety of sites from fresh trembling aspen to dry jack pine.
Pucciniastrum vaccinii	Blueberry	Collected in trembling aspen group, Chapleau District.
Septoria anemones	Anemone	In association with Puccinia recondita in mature jack pine stand, Chapleau District.
Tranzschelia anemones	Anemone	Collected at Rumsey's plantation White River District, commonly found in early spring in jack pine stands, Chapleau District.
Typhula sp.	Bearberry	New record, good jack pine site, Chapleau District, profuse fruiting on lower surface of leaves.

STATUS OF INSECTS IN THE SAULT STE. MARIE DISTRICT

H. G. McPhee

Green-striped Mapleworm, Anisota rubicunda (Fabr.)

An aerial survey of Division 30 in June, disclosed what appeared to be decadent sugar maple in an area comprising approximately 10 acres in Township 31, Range XVIII near Buckshot Lake. Observations and sampling carried out in July and August revealed that the buds failed to burst in the spring but no insects or tree diseases that were considered responsible for the condition were found. Examination of cambial layers and crowns of the trees produced equally inconclusive results.

A further check of the area on September 10, however, revealed a heavy infestation of the green-striped mapleworm on foliage that had flushed during the summer. High populations of the insect apparently had occurred the previous year, since old pupal cases were found in the topsoil and litter.

This infestation is of particular interest because of its location, namely, at the northern limit of the range of sugar maple and in a stand with a northern exposure. Detection in earlier years was hampered by inaccessability of the area and late larval development. Larvae were still feeding on September 10, and would have required at least an additional week to complete their development. The foliage of sugar maple had changed color in this area about September 3. In previous infestations in the southern part of the district, the larvae were active in July and August.

The incidence of disease was very high in larval populations. A mass collection of 200 larvae was reared at the Laboratory to determine the extent of natural controls. Although no parasites were obtained, 94 per cent of the larvae died from disease during rearing.

Although the cambium of the trunk of most trees was living most twigs in the crown were dead. It is probable therefore that this defoliation will be partially responsible for the mortality of sugar maple trees growing near the climatic limit of its range (see photograph). Surveys to assess host deterioration will continue in 1966.

A Tortricid on Oak, Croesia semipurpurana Kft.

Infestations were reduced to small scattered pockets in red oak stands in parts of Prince, Tarbutt Additional, and the City of Sault Ste. Marie. The probability of this decline was evidenced by a high incidence of larval mortality in 1964. Small groups of red oak trees were moderately defoliated along the Lake Huron shoreline on Indian Reservation No. 12 near Thessalon.

Larch Casebearer, Coleophora laricella Hbn.

No significant change in population levels of this insect occurred in 1965. Numbers have been low for several years with slight fluctuations at sample points (Table 5)

TABLE 5

Summary of Larval Counts of the Larch Casebearer at Five Points in the Sault Ste. Marie District from 1963 to 1965

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

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of larvae per 18-inch branch tip 1963	1964	1965
Kirkwood	5	1.80	1.25	2.60
Wells	3	2.00	1.15	2.25
Parke	4	1.10	1.80	1.30
Ryan	5	0.45	0.04	0.50
Garden River I.R.	5	2.15	3.60	3.40

European Spruce Sawfly, Diprion hercyniae (Htg.)

Little change in the numbers or range of this insect has occurred in the past ten years. Larvae are found commonly in a narrow band approximately two townships in depth along the North Channel. Occasional larvae have been collected further inland, but generally the insect has not extended its range beyond this area. The sawfly favours the fringes of white spruce and black spruce stands or open-grown trees. Two generations occur annually, the first in late June or early July and a second in September. A wide range in development in the second generation results in many larvae failing to reach the prepupal stage before being killed by autumn frosts. Biotic control factors and the failure of a high percentage of second generation larvae to complete development have combined to keep populations at a low level (Table 6).

TABLE 6

Summary of European Spruce Sawfly Larval Counts on White Spruce Trees in the Sault Ste. Marie District in September 1964 and 1965

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. larvae per tray sample 1964	1965
Bright	22	0.5	0.40
Wells	9	2.0	0.10
Kirkwood	20	0.4	1.50
Garden River I. R.	5	1.8	1.10

White Pine Shoot Borer, Eucosma gloriola Heinr.

A general decline in numbers of this insect was evident in 1965 (Table 7). Infested shoots were observed commonly in red pine and jack pine plantations, while attacks on Scots and white pine were rarely found.

TABLE 7

Summary of Damage by the White Pine Shoot Borer in the Sault Ste. Marie District in 1964 and 1965

Location (township)	Host species	Av. height of sample trees in feet	No. infested trees per 100-tree sample		No. infested leaders per 100-tree sample	
			1964	1965	1964	1965
Haughton	jP	7	38	11	34	9
Parkinson (Bell's Falls)	jP	8	38	19	36	16
Parkinson (Constance Lake)	jP	9	26	31	26	28
Bridgland	jP	6	34	7	33	7

Aspen Blotch Miner, Lithocolletis salicifoliella Chamb.

Small pockets of heavy infestation persisted on the fringe of young stands and in regeneration in recently clear cut areas. An exceptionally heavy infestation occurred on young aspen understory in a high-pruned and thinned red pine plantation in Kirkwood Township. The percentage of mined leaves in ten samples from representative infestations ranged from 61 to 92 per cent and averaged 83 compared with 73 per cent in 1964.

Eastern Tent Caterpillar, Malacosoma americanum F.

Sharp increases in the numbers of this insect occurred in 1965. Medium to heavy infestations prevailed in a narrow band along the North Channel from Echo Bay east to the Serpent River (Table 8).

TABLE 8

Summary of Eastern Tent Caterpillar Colony Counts at Eight Points in the Sault Ste. Marie District in 1964 and 1965

Location (township)	Sample Unit	No. of tents per mile of roadside	
		1964	1965
Cobden	1 mile of roadside	-	38
Scarfe	"	-	32
Thompson	"	4	17
Spragge	"	13	21
Gould	square chain plot	9	13
Plummer	1 mile of roadside	11	16
Rose	"	18	23
Wells	"	11	19

Western Tent Caterpillar, Malacosoma pluviale Dyar.

A general upward trend in population levels continued in 1965 (Table 10). Small pockets of medium to heavy infestation occurred in 4E, 5E, 6E, and Gaudette townships.

TABLE 10

Summary of Western Tent Caterpillar Colony Counts at Seven Points in the Sault Ste. Marie District in 1964 and 1965

Location (township)	No. of tents per mile of roadside	
	1964	1965
3D	9	7
5E	11	13
4E	13	16
6E	8	11
4D	-	20
Gaudette	22	15
Rose	16	14

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

A further increase in area and intensity of infestations of this sawfly occurred in 1965 (Table 11). Small pockets of heavy infestation occurred on red pine plantings in the three-to six-foot height class in the townships of Gladstone, Bright, Day, Thessalon, Bridgland, and Plummer. Red pine shelterbelts up to 15 feet in height at several points along Highway 17 between Desbarats and Cutler were severely defoliated. A new heavy infestation occurred on a young red pine plantation in the Garden River Indian Reserve. Chemical control measures were applied in this area by the Department of Indian Affairs with satisfactory results. Moderate to severe defoliation of individual trees occurred where feeding had advanced before application of insecticide, however, in general, serious defoliation in the stand was averted in 1965.

TABLE 11

Summary of Red-headed Pine Sawfly Larval Colony Counts and Defoliation Estimate at Six Points in the Sault Ste. Marie District in 1965

Location (township)	Host species	Av. ht. of sample trees in feet	Percentage of trees infested	Av. no. colonies per infested tree	Per cent defoliation of infested trees
Gladstone	rP	7	72	12	75
Thompson	rP	13	68	21	80
Cobden	rP	15	47	27	90
Bridgland	jP	10	5	1.3	5
Bright	rP	5	67	4.6	50
Garden River I.R.	rP	5	83	5	*

* Defoliation incomplete due to spraying

Red-pine Sawfly, Neodiprion nanulus nanulus Schedl.

Increases in the numbers of this sawfly were recorded in the Kirkwood Management Unit in 1963 and 1964. A medium infestation occurred in lots 10 to 12 in Concessions V and VI in Kirkwood Township in 1965. The infested stand was a 30-year-old red pine plantation, which had been thinned and high pruned, leaving an average crown length of twenty feet. An average of 25 larval colonies per tree in the stand caused moderate defoliation. Larval colonies were found very commonly on red pine and jack pine trees throughout the remainder of the Unit.

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Pockets of infestation which occurred in townships 4F and 5F in 1964 declined sharply and only scattered colonies were found in these areas in 1965. A general increase in numbers was evident through the south part of the district, and was particularly marked in Gaudette, Bridgland, and Curtis townships.

Bruce Spanworm, Operophtera bruceata (Hulst.)

Severe defoliation of sugar maple occurred on hilltops and ridges in the townships of Kincaid, Ryan, Palmer, 26, 27, and 28 Range XII and XIII. The defoliation was first observed during aerial surveys on June 18. Ground checks were carried out on June 21 but by this time larvae had completed feeding. Adults which emerged from pupae collected from the soil and duff in the infested area confirmed that O. bruceata had caused the defoliation.

Pine Bark Aphid, Pineus strobi (Htg.)

This aphid occurred in very small numbers in white pine stands in the Kirkwood Management Unit where heavy infestations had persisted between 1962 and 1964. Chemical control measures undertaken in 1964 (Information Report, Forest Insect and Disease Survey, Sault Ste. Marie District 1964) in the more heavily infested stands, were no doubt largely responsible for the sharp decline.

Leaf Rollers on Aspen, Pseudexentera sp.

Small pockets of medium to heavy defoliation occurred in aspen stands in the south half of Divisions 36, 65, and 66. Larvae were observed commonly on fringe and open-grown trees throughout the remainder of the district. A complex of species was involved, Pseudexentera oregonana Wlshm. being the predominant species.

Northern Pine Weevil, Pissodes approximatus Hopk.

High populations of this weevil on red pine in the Kirkwood and Searchmont Management Units are associated with the fungus Scleroderris lagerbergii Gremmen. Young trees which have been weakened by the disease provide attractive brood sites and the weevil damage hastens the death of infected trees.

TABLE 12

Summary of Miscellaneous Insects Collected in the Sault Ste. Marie District

Insect	Host(s)	Remarks
Adelges abietis Linn.	wS	Small pockets heavy on understory in twps. 2F and 4F.
Adelges lariciatus (Patch)	wS	Small pockets heavy on understory in twps. 2F and 4F.
Adelges strobilobius Kalt.	bS	Small pockets heavy infestation in Parkinson Twp.
Arge pectoralis (Leach)	wB	Light infestation on open-grown clumps of trees in Garden River I. R.
Archips cerasivoranus Fitch	ecCh	Clumps medium to heavy infestation on old field type along North Channel.
Antheraea polyphemus Cram.	Se, rM	Unusually high population on 5-acre area, Jocelyn Twp.
Bucculatrix canadensisella Chamb.	wB	One pocket heavy infestation along Lake Superior in Ley and Kars twps.
Calosoma frigidum Kby.	Ground	Very numerous in forest tent caterpillar and Bruce spanworm infestation. Predaceous insect.
Choristoneura pinus Free.	scP, jP	Larvae collected occasionally St. Joseph's Island. Unusually heavy adult moth flight in city of Sault Ste. Marie.
Dasyneura balsamicola Lintn.	bF	Small pockets of infestation understory trees, North Channel area.
Dioryctria zimmermani Grt.	jP	Larvae collected from lower stems of partially windthrown trees in Searchmont Unit.
Eacles imperialis pini Mitchener	rP, wP	Larvae unusually numerous on highway shelterbelts in Thompson Twp.
Eucosma tocullionana Heinr. and other cone insects	wP cones	Cone crop heavily infested in area along North Channel.
Eupithecia transcanadata McK.	bF, wS	Larvae found very frequently in beating samples.
Fenusa pusilla (Lep.)	wB	Heavy infestations on ornamental or open-grown young trees.
Fenusa dohrnii (Tischb.)	Al	Light infestations on trees along streams in south part of the district.
Gonioctena americana (Schaeff.)	tA	Moderate defoliation in small pockets on fringe regeneration in Kirkwood Management Unit.

TABLE 12 (continued)

Insect	Host(s)	Remarks
Hyphantria cunea Dru.	wE, Al, ecCh, wB	Colonies found more frequently than in past two years. One small pocket light infestation in Curtis Twp.
Lambdina fiscellaria fiscellaria Gn.	eC, wS, bF	Larvae collected frequently in beating samples.
Melissopus latiferreanus Wlshm.	Beech	Beech nut crop heavily infested in south part Jocelyn Twp. First survey record.
Monoctenus fulvus (Nort.)	eC	Slight increase in population levels on St. Joseph's Island.
Neodiprion abietis complex	bF, wS	Sharp decline in 1965. Insects very scarce.
Neodiprion pratti banksianae Roh.	jP	Decline in Haughton Twp. Larvae generally scarce in district.
Neodiprion pinetum (Nort.)	wP	Small pockets light infestation in Gaudette and Haughton tps.
Nymphalis antiopa Linn.	wE, W	Occurred more frequently than in past years.
Phyllocolpa sp.	tA	Small pockets of light to medium infestation on young fringe trees.
Profenusa thomsoni (Konow)	wB	Lowest level in recent years. Occasional leaf mines observed.
Pineus floccus Patch	bS	Pockets of heavy infestation on understory in Gaudette Twp.
Pineus similis Gill.	wS	Pockets of heavy infestation on understory in 2F and 4F twps.
Rhabdophaga strobiloides (Walsh)	W	Heavy infestation at Tenby Bay, Jocelyn Twp.
Rhabdophaga swainei Felt	wS, bS	Population level low; occasional infested buds observed.
Rhyacionia adana Heinr.	rP	Two small pockets of infestation Meredith Twp. - 35 per cent trees infested Jocelyn Twp. 46 per cent infested.
Rhyacionia frustrana Comst.	jP	Light infestations Haughton and Bridgland tps.
Schizura concinna A. & S.	W, wAp, wB	Larval colonies found very frequently in Johnson, Thessalon, and Twp. 175.
Zellaria haimbachi Busck.	jP	Population decline to very low level; larvae collected infrequently.