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Western Forest Region, 1968
Status of Insects in the Sioux Lookout
District

Buchan, P.E.

Information Report O-X-101
(Forest Research Laboratory, Ontario Region)



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FOREWORD

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

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

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

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

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

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

J. E. MacDonald

WESTERN FOREST REGION

1968

INTRODUCTION

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INTRODUCTION

Western Forest Region

The following report deals with insect and disease conditions in the Western Region in 1968. The jack-pine budworm and forest tent caterpillar were again the major insect pests in the region. Larch sawfly populations declined in some areas but were comparable to 1967 in the region as a whole. A marked decline was noted in jack-pine sawfly populations. Spring cankerworm infestations occurred in two of the districts.

For the 1968 field season emphasis was placed on several of the more important tree diseases in the region. A change in the method of evaluating incidence and levels of infection of these diseases was initiated in 1968. Acknowledged as the first herbarium records for Ontario were the organisms, Hydenellum aurantiacum (Batsch ex Fr.) Karst and Phellodon tomentosus (Fr.) Banker submitted both from the Sioux Lookout District.

The Supervisor for the Region was absent from the area from May 13 to June 24 to assist with the spruce budworm spray project at Shebandowan. In this respect a word of appreciation is due personnel of the Department of Lands and Forests and Woods operators for their co-operation and understanding.

P. E. Buchan

Eastern Dwarf Mistletoe, Arceuthobium pusillum Peck.

Evaluations carried out at five locations in the region revealed that damage caused by this parasitic seed plant generally occurred on trees growing on exceedingly moist sites.

Heavy infections occurred at Stewart Lake and in Temple, Jaffray and Devonshire townships in Kenora District. In Sioux Lookout District trace levels of infection were observed near Sandbar and Cloven lakes in Ignace Division. Damage caused by this disease has been included in reports for several years. Through additional surveys carried out in 1968 no new areas of serious infection was recorded.

Needle Rusts of Spruce, Chrysomyxa ledicola Lager. and Chrysomyxa ledi d By.

These needle rusts on black and white spruce vary in intensity from year to year. A further decrease in the level of infection caused by these organisms was evident along Highway 599 from Savant to Pickle Lake in 1968. Black spruce was the principal host in 1968, but small numbers of infected white spruce were observed as well. In Sioux Lookout District an area of moderate infection occurred at Cloven Lake. Generally in the region these needle rusts could be recorded at the trace level of infection wherever black spruce stands occur, in particular on regeneration stems in moderately moist sites.

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

Various levels of infection caused by this organism are present throughout the range of white pine in the Western Forest Region. Ribes species, the alternate host of White Pine Blister Rust, can be found throughout the region. Damage appraisals were carried out at four locations in 1968.

A heavy infection occurred on several islands north of the Noden Causeway across Rainy Lake in Fort Frances District. At Wasaw Lake and along Sandy Bay in Rainy Lake moderate infections were reported. In Kenora District, heavy infection was recorded on an island in Andrew Bay, Lake of the Woods. The disease was also noted near Blue Lake Park (Table 1).

TABLE 1

Summary of Incidence and Infection Levels of the White Pine Blister Rust
in the Western Region in 1968

Location	Per cent incidence	Level of infection
<u>Fort Frances District</u>		
Wasaw Lake	3	M
Sandy Bay, Rainy Lake	50	M
Rainy Lake north of Causeway	32	H
<u>Kenora District</u>		
Pipestone Park (Andrew Bay)	80	H

Hypoxylon Canker of Poplar, Hypoxylon mammatum Wahl.

Cankered poplar occurred commonly throughout the region. Little change in distribution and only gradual changes in intensity of this disease occurred from year to year. Evaluations to determine levels of infection were made at 11 locations in the region (Table 2).

An evaluation in Sanford Township in Kenora District revealed heavy infection, whereas in Wabigoon Township, and in an area near McIntosh moderate levels of infection were recorded. Trace infections were found near Roughrock Lake.

In Fort Frances District evaluations in Roddick and Kingsford townships revealed heavy infection levels, and one area in Mather Township was light.

Moderate infections were recorded along Balmertown Road, and in Pickerel Township as well as an area 30 miles north of Pickle Lake in the Sioux Lookout District. An area of light infection was found 35 miles north of Dryden.

TABLE 2

Summary of Incidence and Infection Levels of the Hypoxylon Canker of Poplar on Trembling Aspen, in the Western Region in 1968

Location	Basal area		Per cent incidence	Level of infection
	diseased	total		
<u>Sioux Lookout District</u>				
Pickle Lake	20	90	20	M
Balmer Twp.	20	90	25	M
Pickereel Twp.	15	45	15	M
<u>Fort Frances District</u>				
Roddick Twp.	33	132	40	H
Kingsford Twp.	132	231	55	H
<u>Kenora District</u>				
Wabigoon Twp.	14	54	40	M
Sanford Twp.	50	60	62	H
McIntosh	5	32	20	M

Eastern Gall Rust, Peridermium sp.

Peridermium sp. on jack pine was most severe on small trees throughout the region (Table 3). Branch mortality in infected areas was relatively high, but tree mortality was negligible.

In Kenora District infection levels were high in a plantation near Dryden, and moderate near Blue Lake Park. Surveys in the Fort Frances District revealed heavy infection levels near Finlayson and Despair lakes, and moderate damage occurred near Mine Centre. Light infection was noted in most of the Sioux Lookout District. However, in Vermilion Additional Township, and in Block 10 moderate infection occurred.

TABLE 3

Summary of Incidence and Infection Levels of Eastern Gall Rust on Jack Pine
in the Western Region in 1968

Location	Per cent incidence	Level of infection
<u>Sioux Lookout District</u>		
Vermilion Additional Twp.	40	M
Block 10	75	M
<u>Fort Frances District</u>		
Finlayson Lake	60	H
Lake Despair	20	H
Mine Centre	10	M
<u>Kenora District</u>		
Blue Lake Park	70	M
Dryden	56	H

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

Pollaccia radiosa, a foliage and twig tip disease, was observed throughout the region, usually at light or trace levels of infection. Areas of moderate infection occurred near Williams Bay in Sioux Lookout District, and in Wabigoon Township in Kenora District. Localized heavy infections not conducive to evaluation can be observed on sucker growth trees along roadsides and in open areas throughout the region.

Jack Pine Mortality

Large numbers of recently killed jack pine were observed in an area of approximately 200 square miles in the northwestern corner of Sioux Lookout District in 1968. Mortality which occurred in early July was confined to high, dry, rocky sites with an exceedingly thin depth of soil. Samples submitted from dead trees in the area were infected with Valsa pini (Alb. & Schw.) Fr., Scoleconectria cucurbitula (Tode ex Fr.) Booth, and Genangium abietis (Pers.) Rehm.

TABLE 4

Other Noteworthy Diseases in the Western Region in 1968

Organism	Host(s)	Remarks
<i>Alternaria tenuis</i> Nees	jP	One of three organisms found in a large area of needle drop and discoloration
<i>Atopospora betulina</i> (Fr.) Petr.	wB	Trace in Kenora and Sioux Lookout districts
<i>Aureobasidium pullulans</i> (d By.) Arn.	jP	Associated with needle drop and discoloration
<i>Ciborina whetzellii</i> (Seaver) Seaver	tA	Light infection near Madsen, Sioux Lookout District; this tar spot (see photograph) causes premature leaf drop
<i>Cladosporium variable</i> (Cke.) De Vries	bS	Collected in Dryden Nursery
<i>Coleosporium asterum</i> (Diet.) Syd.	rP, jP	Observed at trace level in Fort Frances District
<i>Coniophora</i> sp.	jP	Found near Centrefire Lake, Sioux Lookout District
<i>Coniothyrium</i> sp.	wS	Seedlings curl, twist and turn brown; Dryden Nursery
<i>Dibotryon morbosum</i> (Schw.) Th. & Syd.	ch	Collected in Sanford Twp., Kenora District
<i>Diplodia tumefaciens</i> (Shear) Zalasky	bPo, tA	Galls causing branch mortality
<i>Entomosporium maculatum</i> Lev.	Mo	Collected from two locations in region
<i>Epicoccum nigrum</i> Link	tA	Collected in Temple Twp.
<i>Exidia spiculosa</i> S. F. Gray	tA	Collected Dobie Twp., Fort Frances District
<i>Fomes igniarius</i> (L. ex Fr.) Kickx	tA	Observed throughout the region

TABLE 4 (continued)

Organism	Host(s)	Remarks
<i>Ganoderma applanatum</i> (Pers. ex Wallr.) Pat.	wS	One tree infected fruiting on an old scar
<i>Gymnosporangium clavipes</i> (Cke. & Fk.)	Haw	Trace observed at two locations in Kenora District
<i>Gymnosporangium cornutum</i> Arth. ex Kern	Mo	Trace levels throughout the region
<i>Hydnellum aurantiacum</i> (Batsch ex Fr.) Karst.	-	Collected from ground in Sioux Lookout District, first herbarium record
<i>Hydnellum</i> sp.	jP	Three locations Kenora District
<i>Hydnum</i> sp.	aL	Collected Carillon Lake, Sioux Lookout District
<i>Hypodermella</i> sp.	bF	Fruiting on needles, Southworth Twp.
<i>Laeticorticium roseum</i> (Pers. ex Fr.) Donk	tA	Fruiting occurred in a dark moist location on fallen tree
<i>Leptosphaeria lycopodina</i> (Mont.) Sacc.	Bristly clubmoss	Fruiting occurred on dead ends of moss at several locations, Sioux Lookout District
<i>Lirula mirabilis</i> (Darker) Darker	bF	Organism causing needle cast frequently found in Sioux Lookout District
<i>Lophodermium pinastri</i> (Schrad. ex Hook.) Chev.	rP	Moderate infection occurred on Wasaw Lake road, Fort Frances District
<i>Lophodermium</i> sp.	jP	This fungus which causes needle cast was the only organism found on numerous witches' brooms collected throughout the region
<i>Melampsora epitea</i> Thuem.	W	Prevalent along Williams Bay road, Sioux Lookout District
<i>Nyssopsora clavellosa</i> (Berk.) Arth. Aralia n.		Collected Hooker Lake, Sioux Lookout District

TABLE 4 (continued)

Organism	Host(s)	Remarks
<i>Peniophora polygonia</i> (Pers. ex Fr.) tA Bourd. & Galz.		Light fruiting observed north of Pickle Lake
<i>Pestalotia truncata</i> Lev.	WS	Observed in the Dryden Nursery
<i>Peyronellaea</i> sp.	WS	Collected in the Dryden Nursery
<i>Phacidium abietis</i> (Dearn.) Reid & Cain	bF	Found on regeneration tree under dominant aspen
<i>Phellodon tomentosus</i> (Fr.) Banker	ground	First herbarium record Sioux Lookout District
<i>Phialophora lignicola</i> (Nannf.) Goidanich	tA	Brown blotches on leaves, Temple Twp.
<i>Phlebia strigosozonata</i> (Schw.) Lloyd	tA	Fruiting on dead stem, Red Lake
<i>Polyporus adustus</i> Willd. ex Fr.	tA	Collected Wabigoon Twp., Kenora District
<i>Polyporus biformis</i> Fr.	aL	Observed in Sanford Twp.
<i>Polyporus pargamenus</i> Fr.	tA	Collected, Docker Twp.
<i>Poria ferruginosa</i> (Schrad ex Fr.) Karst.	W	One dead tree with numerous fruiting bodies
<i>Poria rixosa</i> Karst.	jP	Collected from dead and downed trees
<i>Poria subacida</i> (Pk.) Sacc.	jP	A large fungus collected from underside of downed tree
<i>Pucciniastrum epilobii</i> Otth.	bF	Light infection occurred throughout the region
<i>Rhizina inflata</i> (Schaeff.)	ground	Known distribution, Kenora and Sioux Lookout districts
<i>Rhytisma punctatum</i> (Pers.) Fr.	mM	Trace level McIntosh
<i>Rhytisma salicinum</i> (Pers.) Fr.	W	One bush heavily infected in Corman Twp.

TABLE 4 (concluded)

Organism	Host(s)	Remarks
<i>Schizophyllum commune</i> Fr.	aL	Collected in Sanford Twp.
<i>Sclerophoma pithyophila</i> (Cda.) Hoehn.	bS	Dead branch tips, Kenora District
<i>Scoleconectria cucurbitula</i> (Tode ex Fr.) Booth	wP, rP, P	Collected in Kenora and Fort Frances districts
<i>Tremella</i> sp.	bS	Found on upper part of stem and near ground level
<i>Tubercularia vulgaris</i> Tode ex Fr.	rose	One bush affected, Pickle Lake
<i>Uromyces fabae</i> (Grev.) d By. ex Cke.	wild peach	Two locations, Kenora District
<i>Valsa abietis</i> Fr.	bF	Observed one mile south of Richan

STATUS OF INSECTS IN THE SIOUX LOCKOUT DISTRICT

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Spruce Budworm, Choristoneura fumiferana Clem.

Low population levels of this insect occurred in the district for the eighth consecutive year. Five per cent of the current year's foliage was the highest damage recorded at sample locations.

Egg surveys were carried out at five locations in the eastern part of the district to forecast defoliation in 1969. They revealed that light defoliation will probably occur at two locations (Table 5).

TABLE 5

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

Location	Estimated per cent 1968 defoliation	No. of egg masses per 100 sq. feet of foliage	Forecast for 1969
Gulliver Lake	5	0	Nil
Pyramid Lake	0	0	Nil
Old Man Lake	5	9	Light
Norway Lake	5	16	Light
Red Paint Lake	2	0	Nil

Jack-pine Budworm, Choristoneura pinus pinus Free.

In 1967 two pockets of moderate to heavy infestation occurred in the Sioux Lookout District (see map). The larger area of infestation occurred west of Hudson from Goudie Lake north to Lac Seul and south to Gullwing Lake and the district boundary in Stokes Township. The other area was located in MacFie Township south of Sandybeach Lake. Very light defoliation occurred in the northwest corner of the district.

Defoliation and egg surveys carried out at four points in late summer are summarized in Table 6. The number of egg masses recorded indicate a recurrence of moderate infestation in 1969.

TABLE 6

Defoliation of Current Year's Growth of Jack-Pine Trees
in Sioux Lookout District and Infestation Forecasts
for 1969 Based on the Total Egg Masses Found

Location	Per cent defoliation	Total number egg masses found	Forecast for 1969
Dryden Pulp & Paper Fertilization Plot	46	12	M-S
1 mile West of Plot	49	9	M
1 mile East of Plot	50	8	M
MacFie Twp.	39	11	M-S

Note: M.....Moderate; S.....Severe; M-S.....Moderate to Severe

A Bark Beetle, Conophthorus sp.

Populations of this beetle continued to cause twig mortality at several locations in the district. Light infestations persisted in Revell and Vermilion Additional townships where 53 and 29 per cent respectively of the trees were infested. Light populations were also present in Echo Township and near Centrefire Lake. Elsewhere in the district population levels were low.

Eastern Pine Shoot Borer, Eucosma gloriola Heinr.

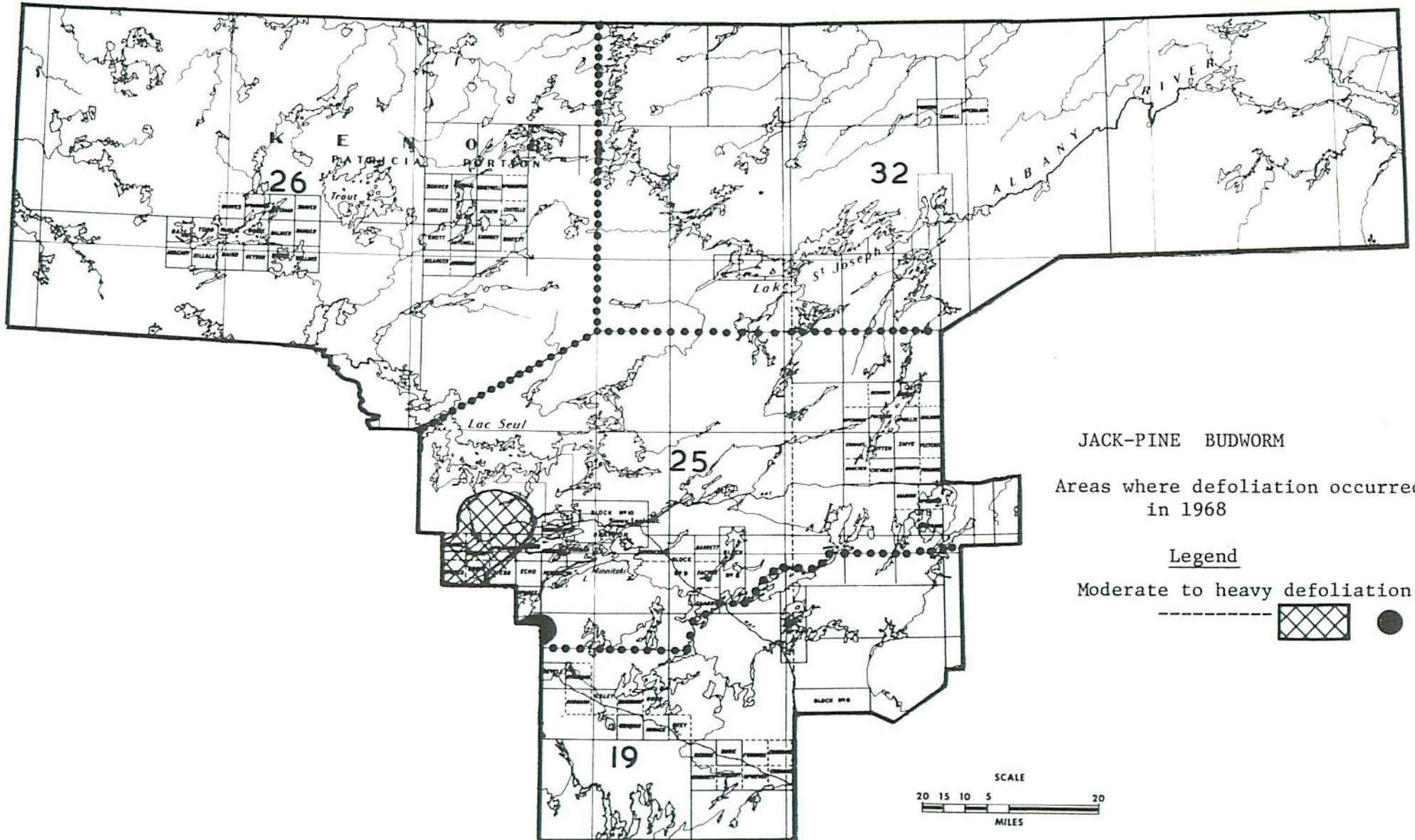
Population levels of this insect increased throughout the district. The heaviest damage occurred in Echo and Corman townships (Table 7) where 12 and 11 per cent respectively of the leaders were affected.

TABLE 7

Summary of Eastern Pine Shoot Borer Damage on 100 Jack-pine Trees
at Points in the Sioux Lookout District from 1966 to 1968

Location	Av. d.b.h. of sample trees in inches	No. of trees attacked			No. of shoots attacked		
		1966	1967	1968	1966	1967	1968
Echo Twp.	3	5	0	11	5	0	12
Corman Twp.	2	17	1	9	17	1	11
Cathcart Twp.	2	2	0	3	2	0	3
McIlraith Twp.	2	1	0	7	1	0	7
Sandbar Lake	2	23	5	9	19	5	9

SIoux LOOKOUT DISTRICT



Pine Sawflies, Neodiprion nanulus nanulus Schedl.,
Neodiprion pratti banksianae Roh, Neodiprion maurus Rohwer.

Populations of these three sawflies remained at approximately the same level as in 1967. Defoliation was confined to open-grown or small trees along the fringes of stands. Neodiprion nanulus nanulus was again the most prevalent of the three species (Table 8).

TABLE 8

Summary of Colony Counts of Three Pine Sawflies on 100 Jack-pine Trees at Each Location in Sioux Lookout in 1968

Location	Av. d.b.h. of sample trees in inches	Total no. of colonies		
		Neodiprion maurus	Neodiprion nanulus nanulus	Neodiprion pratti banksianae
Notman Lake	2		3	
Split Lake	4		14	1
Gulliver Lake	2		4	
Drayton Twp.	3	2	6	
Pickerel Twp.	3	1	3	
Echo Twp.	2		2	2
Vermilion Additional Twp.	3		1	
Ilsley Twp.	3		1	

Red-headed Jack-pine Sawfly, Neodiprion virginianus complex

Populations of this sawfly continued to decline throughout the district in 1968. The decrease was most evident in the area around Sioux Lookout, particularly in Drayton and Echo townships and along the Moonlight Falls road (Table 9).

TABLE 9

Summary of Red-headed Jack-pine Sawfly Larval Colony Counts on 100 Jack-pine Trees at Each Location in 1968

Location	Average d.b.h. of sample trees in inches	Total no. of colonies observed
Echo Twp.	2	3
Drayton Twp.	3	1
Moonlight Falls	3	1
Martin Road	2	2

White-pine Weevil, Pissodes strobi (Peck.)

This insect was widely distributed, but the severity of attack varied considerably throughout the district (Table 10). In McIlraith Township near Hudson 12 per cent of jack pine leaders in a plantation were infested, whereas in an area near Red Lake one per cent of the leaders were damaged.

TABLE 10

Summary of Damage by the White-pine Weevil on 100 Jack Pine at Each Point in Sioux Lookout District from 1966 to 1968

Location	Av. height in feet	Per cent of trees weevilled		
		1966	1967	1968
Martin Road (south)	5	6	1	3
Pickle Lake	5	-	-	3
McIlraith Twp.	7	10	3	12
Red Lake	8	-	-	1
Corman Twp.	6	3	5	4
Echo Twp.	7	1	3	2
Ignace Twp.	6	15	7	9

Larch Sawfly, Pristiphora erichsonii Htg.

Infestations of this sawfly declined slightly at many points in the Sioux Lookout District in 1968. Medium infestations were observed near Ignace and Gullwing Lake, in the vicinity of Savant, Sioux Lookout and the Marchington River and near Ear Falls on Highway 105 (see map). Pockets of light infestation were observed commonly in the southern half of the district.

Results obtained from the dissection of cocoons collected in the Sioux Lookout District for the past three years are shown in Table 11. The highest parasitism was caused by a dipterous species, Bessa harveyi (Tns.). This parasite and other biological control factors largely regulate population levels from year to year.

SHIUX LOOKOUT DISTRICT

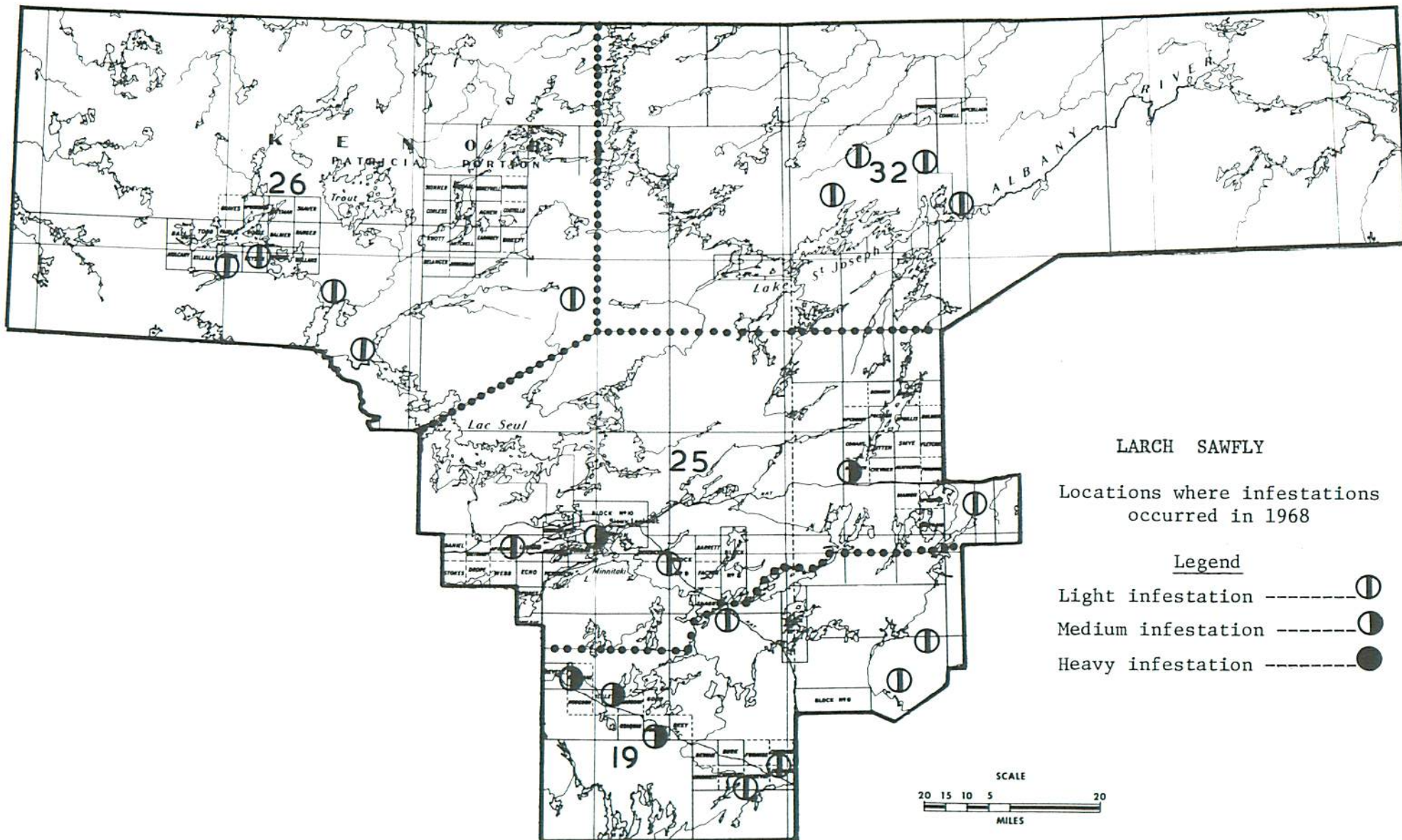


TABLE 11

Summary of Larch Sawfly Cocoon Dissections in the Sioux Lookout District
1965-1967 and the General Infestation Rating for the Following Year

Cocoon collection year	Per cent parasitism	Per cent diseased	Per cent dead unknown causes	Per cent sound cocoon	Infestation rating succeeding year
1965	50	3	15	32	Moderate-Heavy
1966	54	17	8	21	Moderate-Heavy
1967	35	31	27	7	Light-Moderate

TABLE 12

Summary of Miscellaneous Insects Collected in Sioux Lookout District in 1968

Insect	Host(s)	Remarks
<i>Acronicta clarescens</i> Gn.	Cch	Larva found in beating sample
<i>Adelges lariciatus</i> (Patch)	bS	Found while sampling for sawflies
<i>Altica ambiens alni</i> Lec.	Al	Small numbers near valora
<i>Archips cerasivoranus</i> (Fitch)	rCh	Light infestation 10 miles south of Martin
<i>Chrysomela mainensis mainensis</i> Bechyne	Al	Occurs yearly in small numbers
<i>Dimorphopteryx melanognathus</i> Roh.	wB	A few larvae on fringe trees
<i>Diprion hercyniae</i> (Htg.)	wS	Only a few larvae found near Ignace
<i>Hypagyrtis piniata</i> Pack.	bF	Found at permanent sample plot in small numbers
<i>Hyphantria cunea</i> Dru.	rCh	One tent west of Hudson
<i>Lambidina fiscellaria fiscellaria</i> (Gn.)	wS	Collected when beating for spruce sawflies very low populations
<i>Malacosoma disstria</i> Hbn.		Adults captured in light trap at Sioux Lookout

TABLE 12 (concluded)

Insect	Host(s)	Remarks
<i>Neodiprion abietis</i> (Harr.)	bF	Low populations occurred at several points in district
<i>Nycteola cinereana</i> N. & D.	bPo	This insect occurs in small numbers yearly
<i>Phratora americana canadensis</i> Brown	W	A few larvae collected at Pekagoning Lake Ignace Division
<i>Pikonema alaskensis</i> (Roh.)	wS	Low numbers throughout district on open-grown trees
<i>Pikonema dimmockii</i> (Cress.)	wS	Collected yearly in beating mat sample
<i>Pineus floccus</i> Patch	bS	This gall forming aphid is common to the district
<i>Pineus pinifoliae</i> Fitch	bS	Occurs frequently in small numbers it also forms galls
<i>Pristiphora lena</i> Kinc	wS	Highest numbers found near Big Sandy Lake Division 25
<i>Pyrausta futilalis</i> Led.	Ground plant	Three colonies White Otter Castle
<i>Sparganothis sulfureana</i> Clem.	rP	Small number collected Echo Tower road