

Staus of Insects in the Pembroke
District

Weir, H.J.

Information Report O-X-8
(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.

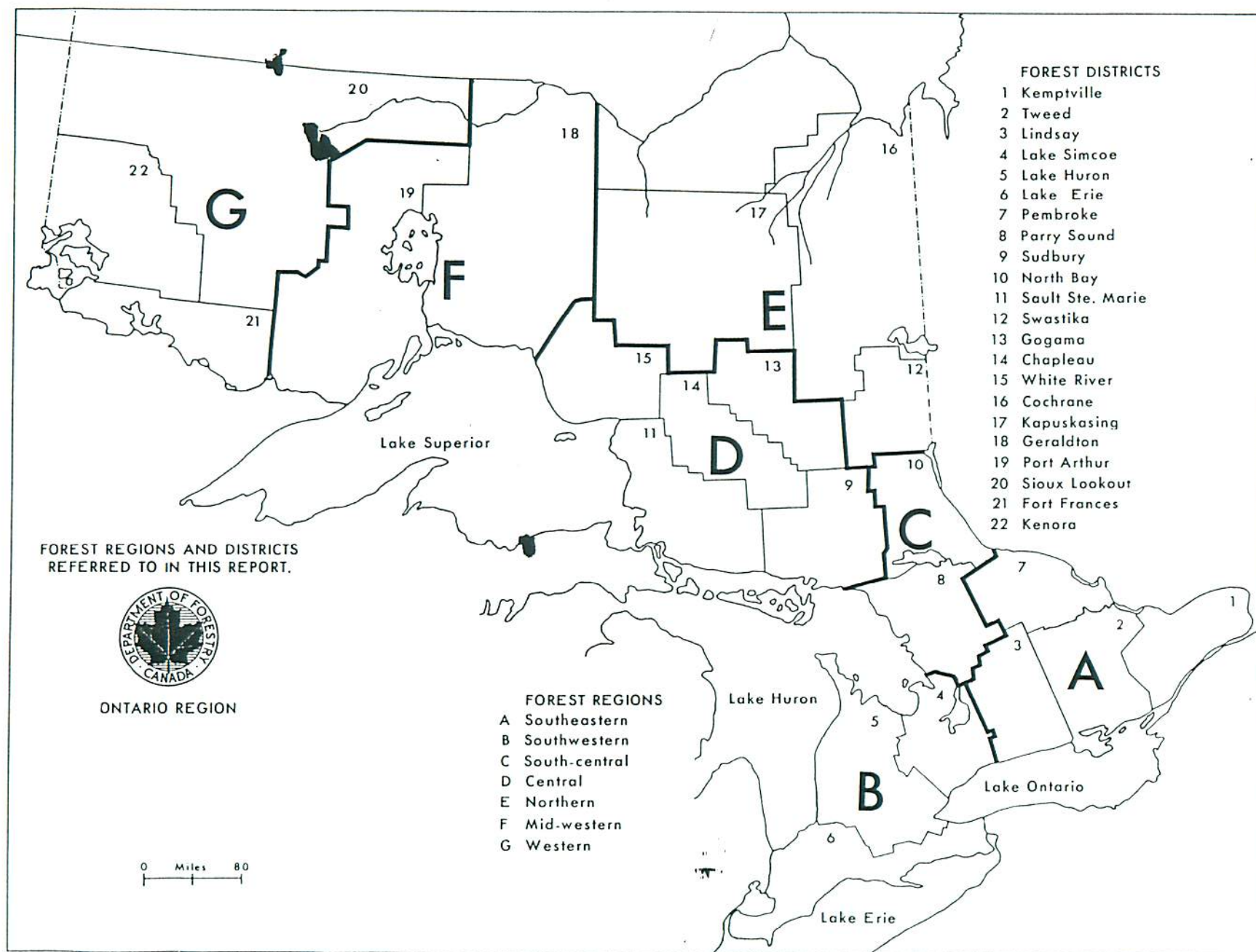


TABLE OF CONTENTS

REPORTS OF FOREST RESEARCH TECHNICIANS

Ontario		Page
Foreword, J. E. MacDonald		
A. <u>SOUTHEASTERN FOREST REGION</u>		<u>AL-50</u>
Lindsay District, W. J. Miller*	A 11	
Tweed District, F. Livesey	A 22	
Kemptville District, J. Hook	A 33	
Pembroke District, H. J. Weir	A 41	
B. <u>SOUTHWESTERN FOREST REGION</u>		<u>BL-49</u>
Lake Simcoe District, A. A. Harnden*	B 16	
Lake Huron District, R. L. Bowser	B 29	
Lake Erie District, J. R. Trinnell	B 39	
C. <u>SOUTH-CENTRAL FOREST REGION</u>		<u>CL-24</u>
North Bay District, L. S. MacLeod*	C 5	
Parry Sound District, C. A. Barnes	C 14	
D. <u>CENTRAL FOREST REGION</u>		<u>DL-56</u>
Sault Ste. Marie District, H. G. McPhee*	D 13	
Sudbury District, J. R. McPhee	D 20	
Chapleau District, D. Ropke	D 29	
Gogama District, R. A. Trieselmann	D 38	
White River District, D. C. Constable	D 50	
E. <u>NORTHERN FOREST REGION</u>		<u>EL-42</u>
Cochrane District, H. R. Foster*	E 8	
Kapuskasing District, G. T. Atkinson	E 20	
Swastika District, M. J. Applejohn	E 32	
F. <u>MIDWESTERN FOREST REGION</u>		<u>FL-27</u>
Port Arthur District, K. C. Hall*	F 8	
Geraldton District, V. Jansons	F 19	
G. <u>WESTERN FOREST REGION</u>		<u>GL-40</u>
Sioux Lookout District, P. E. Buchan*	G 13	
Kenora District, G. G. Jackson	G 23	
Fort Frances District, M. J. Thomson	G 33	

Photographs

* Regional Supervisors

1965

Information Report No.	Subject	Author
O-X-5	Forest Insect & Disease Surveys	
	--Lindsay District	W. J. Miller
O-X-6	--Tweed District	F. Livesey
O-X-7	--Kemptonville 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
O-X-13	--Parry Sound District	C. A. Barnes
O-X-14	--Sault Ste. Marie District	H. G. McPhee
O-X-15	--Sudbury District	J. R. McPhee
O-X-16	--Chapleau District	D. Ropke
O-X-17	--Gogama District	R. A. Trieselmann
O-X-18	--White River District	D. C. Constable
O-X-19	--Cochrane District	H. R. Foster
O-X-20	--Kapuskasing District	G. T. Atkinson
O-X-21	--Swastika District	M. J. Applejohn
O-X-22	--Port Arthur District	K. C. Hall
O-X-23	--Geraldton District	V. Jansons
O-X-24	--Sioux Lookout District	P. E. Buchan
O-X-25	--Kenora District	G. G. Jackson
O-X-26	--Fort Francis District	M. J. Thomson

STATUS OF INSECTS IN THE PEMBROKE DISTRICT

		Page
Ugly-nest Caterpillar.....	<u>Archips cerasivoranus</u> Fitch	A 41
Larch Casebearer.....	<u>Coleophora laricella</u> Hbn.	A 41
European Spruce Sawfly.....	<u>Diprion hercyniae</u> (Htg.)	A 42
White-pine Shoot Borer.....	<u>Eucosma gloriola</u> Heinr.	A 42
Alder Leaf Miner.....	<u>Fenusa dohrnii</u> (Tischb.)	A 42
Birch Leaf Miner.....	<u>Fenusa pusilla</u> (Lep.)	A 43
Eastern Tent Caterpillar.....	<u>Malacosoma americanum</u> (F.)	A 43
Cedar Sawfly.....	<u>Monoctenus fulvus</u> Nort.	A 44
Red-headed Pine Sawfly.....	<u>Neodiprion lecontei</u> (Fitch)	A 45
Pine Sawfly.....	<u>Neodiprion maurus</u> Roh.	A 45
Red Pine Sawfly.....	<u>Neodiprion nanulus nanulus</u> Schedl.	A 45
Jack-pine Sawfly.....	<u>Neodiprion pratti paradoxicus</u> Ross	A 46
A Leaf Folding Sawfly.....	<u>Phyllocolpa</u> spp. (formerly <u>Nematus</u> sp.)	A 46
Yellow-headed Spruce Sawfly.....	<u>Pikonema alaskensis</u> (Roh.)	A 47
White-pine Weevil.....	<u>Pissodes strobi</u> Peck.	A 47
Larch Sawfly.....	<u>Pristiphora erichsonii</u> (Htg.)	A 48
Mountain-ash Sawfly.....	<u>Pristiphora geniculata</u> (Htg.)	A 48
Poplar Leaf-roller.....	<u>Pseudexentera oregonana</u> Wlsh.	A 48
Pine Tortoise Scale.....	<u>Toumeyella numismaticum</u> (P. & M.)	A 48
Summary of Miscellaneous Insects.....		A 48

H. J. Weir

THE HISTORY OF THE UNITED STATES

1800	1800	1800
1801	1801	1801
1802	1802	1802
1803	1803	1803
1804	1804	1804
1805	1805	1805
1806	1806	1806
1807	1807	1807
1808	1808	1808
1809	1809	1809
1810	1810	1810
1811	1811	1811
1812	1812	1812
1813	1813	1813
1814	1814	1814
1815	1815	1815
1816	1816	1816
1817	1817	1817
1818	1818	1818
1819	1819	1819
1820	1820	1820
1821	1821	1821
1822	1822	1822
1823	1823	1823
1824	1824	1824
1825	1825	1825
1826	1826	1826
1827	1827	1827
1828	1828	1828
1829	1829	1829
1830	1830	1830
1831	1831	1831
1832	1832	1832
1833	1833	1833
1834	1834	1834
1835	1835	1835
1836	1836	1836
1837	1837	1837
1838	1838	1838
1839	1839	1839
1840	1840	1840
1841	1841	1841
1842	1842	1842
1843	1843	1843
1844	1844	1844
1845	1845	1845
1846	1846	1846
1847	1847	1847
1848	1848	1848
1849	1849	1849
1850	1850	1850
1851	1851	1851
1852	1852	1852
1853	1853	1853
1854	1854	1854
1855	1855	1855
1856	1856	1856
1857	1857	1857
1858	1858	1858
1859	1859	1859
1860	1860	1860
1861	1861	1861
1862	1862	1862
1863	1863	1863
1864	1864	1864
1865	1865	1865
1866	1866	1866
1867	1867	1867
1868	1868	1868
1869	1869	1869
1870	1870	1870
1871	1871	1871
1872	1872	1872
1873	1873	1873
1874	1874	1874
1875	1875	1875
1876	1876	1876
1877	1877	1877
1878	1878	1878
1879	1879	1879
1880	1880	1880
1881	1881	1881
1882	1882	1882
1883	1883	1883
1884	1884	1884
1885	1885	1885
1886	1886	1886
1887	1887	1887
1888	1888	1888
1889	1889	1889
1890	1890	1890
1891	1891	1891
1892	1892	1892
1893	1893	1893
1894	1894	1894
1895	1895	1895
1896	1896	1896
1897	1897	1897
1898	1898	1898
1899	1899	1899
1900	1900	1900

STATUS OF INSECTS

Ugly-nest Caterpillar, Archips cerasivoranus Fitch

Population levels of this insect increased in the southern part of the district in 1965. The heaviest infestations occurred near the village of Alice in Alice Township and along Highway 41 near the village of Shady Nook in Stafford Township. In the former location larval colonies more than tripled in number compared with 1964 (Table 8).

Moderate infestations were observed along the Madawaska-Cross Lake Road in Murchison Township and near Lake Dore in Wilberforce Township. Light infestations occurred along Highway 60 in Airy, Nightingale and Sherwood townships.

TABLE 8

Summary of Ugly-nest Caterpillar Colony Counts
in Pembroke District in 1964 and 1965

Location (township)	Tree species	No. of nests observed per mile of roadside	
		1964	1965
Alice	ecCh	210	673
Airy	"	-	3
Bromley	"	-	19
Murchison	"	27	27
Nightingale	"	-	2
Ross	"	-	8
Sherwood	"	2	3
Stafford	"	-	39
Wilberforce	"	29	28

Larch Casebearer, Coleophora laricella Hbn.

Population levels of this introduced casebearer have been low since 1954. Larval counts at eight locations are shown in Table 9.

TABLE 9

Summary of Larch Casebearer Counts in Pembroke District
in 1964 and 1965

Location (township)	Av. d.b.h. of trees in inches	Av. no. of larvae per 18-inch branch tip	
		1964	1965
Airy	3	.88	.88
Bromley	5	.50	0
Buchanan	6	1.62	1.62
Cameron	5	2.43	.88
N. Algona	3	1.56	.88
Rolph	4	0.31	2.0
Sproule	9	1.2	3.3
Westmeath	7	.62	.25

This insect is of European origin, and was first recorded at Northampton, Massachusetts in the United States in 1886. It has since spread throughout most of the range of larch in the eastern half of the United States and Canada. Surveys have continued to record changes in northern and western limits of distribution of this species in northern Ontario. The range extends through southern Ontario to Fort Frances District in the west and approximately 75 miles north of Lake Superior in the north.

The adults emerge in late May to early July and lay one or more eggs. On hatching, the larva bores into the needle, feeds as a miner until September, then constructs a greyish cigar-shaped case. In the fall the larva hibernates on the twigs or trunk of the tree. Feeding resumes when the foliage begins to develop in April and, by the latter half of May, larval development is completed. The greatest damage occurs in the spring when the infested parts of the foliage withers and dies.

European Spruce Sawfly, Diprion hercyniae (Htg.)

An increase in population levels of this insect occurred at four of five sample locations in 1965 (Table 10). Light defoliation of open-grown white spruce trees was observed near Pretty Lake in Edgar Township. Little or no defoliation was observed elsewhere in the district.

TABLE 10

Summary of European Spruce Sawfly Larval Counts
in Pembroke District in 1964 and 1965

Location (township)	Av. d.b.h. of trees in inches	Total no. of larvae per 15-tray sample	
		1964	1965
Alice	8	6	31
Cameron	8	27	39
Clara	6	32	23
Edgar	8	-	135
Maria	4	19	29

White-pine Shoot Borer, Eucosma gloriola Heinr.

A decline in population levels of this borer occurred in the Beachburg Tract in Westmeath Township. In 1964, 51 per cent of the trees examined in a red pine plantation at this location were infested, and 21 per cent had infested leaders. In 1965, only five shoots were infested in the same plot and no leaders were attacked.

Alder Leaf Miner, Fenusa dohrnii (Tischb.)

A marked decline in populations of this leaf miner occurred in most of the district. However, moderate infestations were observed along the Ottawa River in Head Township, on the southwest shore of Shirley Lake in Preston Township and at Opeongo Lake in Dickson Township (Table 11). Light infestations persisted near the village of Whitney in Airy Township and along Highway 17 in Clara Township.

TABLE 11

Summary of Damage by the Alder Leaf Miner in Pembroke District
from 1963 to 1965

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

Location (township)	Av. height of trees in feet	Per cent of leaves mined			Per cent of leaf surface mined		
		1963	1964	1965	1963	1964	1965
Airy	15	16	4	18	5	5	10
Clara	15	30	15	3	5	5	5
Dickson	15	-	-	25	-	-	10
Head	15	-	-	26	-	-	5
Preston	15	-	-	18	-	-	10

Birch Leaf Miner, Fenusa pusilla (Lep.)

Generally, infestations of this insect increased in intensity in 1965. Heavy infestations occurred at sample locations in Rolph, Sproule, and Westmeath townships (Table 12). One particularly heavy infestation recurred on five European birch shade trees at the Forestry Station in Buchanan Township. These trees were severely mined by both first and second generation larvae. Light infestations were observed on reproduction and the lower branches of host trees elsewhere in the district.

TABLE 12

Summary of Damage by the Birch Leaf Miner in Pembroke District
from 1963 to 1965

Note: Counts were based on the examination of 100 leaves from five birch trees at each location.

Location (township)	Av. d.b.h. of trees in inches	Per cent of leaves mined			Per cent of leaf surface mined		
		1963	1964	1965	1963	1964	1965
Buchanan	3	-	92	97	-	25	25
Rolph	3	18	27	21	60	25	25
Sproule	3	25	31	15	40	35	10
Westmeath	3	19	32	29	20	20	50

Eastern Tent Caterpillar, Malacosoma americanum (F.)

A sharp increase in population levels of this insect occurred in the southern part of the district. Counts of infested roadside trees at nine locations averaged 281 tents per measured mile in 1965 compared with 93 tents in 1964.

Complete defoliation of roadside cherry bushes occurred near the village of

Alice in Alice Township where 860 tents were counted in one measured mile of roadside trees (Table 13). Because of the overlapping of heavy infestations of Malacosoma disstria Hbn. and Malacosoma americanum (F.) at this location, all deciduous trees were completely defoliated until mid-July when refoilation occurred (see photograph).

Severe defoliation of roadside cherry bushes was observed in Fraser, Stafford, and Hagarty townships and pockets of light infestation occurred as far north as Dickson Township.

TABLE 13

Summary of Eastern Tent Caterpillar Colony Counts
in Pembroke District from 1963 to 1965

Location (township)	Tree species	No. of tents observed per mile of roadside		
		1963	1964	1965
Alice	ecCh	24	107	860
Buchanan	pCh	27	2	39
Fraser	ecCh	27	149	423
Hagarty	ecCh	50	176	305
Lyell	ecCh	26	76	35
Petawawa	ecCh	23	1	195
Stafford	ecCh	22	69	352
Westmeath	ecCh	24	89	115
Wilberforce	ecCh	43	167	206

Cedar Sawfly, Monoctenus fulvus Nort.

Population levels of this insect have declined since 1962. This trend is shown in larval counts summarized in Table 14.

TABLE 14

Summary of Cedar Sawfly Larval Counts Taken from White Cedar
in Pembroke District from 1963 to 1965

Location (township)	Av. d.b.h. of trees in inches	Total no. of larvae per 15-tray sample		
		1963	1964	1965
Bromley	7	146	47	1
N. Algona	7	180	13	2
Ross	6	293	142	33
S. Algona	6	263	33	7
Westmeath	8	90	22	36
Wilberforce	6	162	22	4

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch)

Infestations of this sawfly increased in intensity in 1965. High populations persisted in private plantations in Wilberforce and Cameron townships. Moderate infestations were observed along Highway 17 in Cameron, Clara, and Maria townships and light infestations occurred in Hagarty, Alice, and Wilberforce townships (Table 15).

As in previous years, control measures using 2.5 per cent D.D.T. spray applied with pack sprayers, and the removal of colonies by hand pruning were carried out in private and crown owned plantations.

TABLE 15

Summary of Red-headed Pine Sawfly Colony Counts on Red Pine Trees in the Pembroke District in 1965

Location (township)	No. of trees examined	No. of trees infested	No. of colonies observed	Av. no. colonies per infested trees
Alice	150	2	3	1.5
Cameron	175	17	22	1.3
Cameron	250	9	14	1.6
Clara	75	14	16	1.1
Hagarty	150	2	4	2.0
Maria	100	1	1	1.0
Wilberforce	225	60	66	1.1
"	20	15	23	1.5
"	150	1	1	1.0

Pine Sawfly, Neodiprion maurus Roh.

A medium infestation persisted in the central part of the district. Heavy infestations reported in Clara, Niven, and Fitzgerald townships in 1964 subsided in 1965. A light infestation occurred along the Hydro Electric transmission line in Bronson Township.

A decline in population levels also occurred near Lake Traverse in White Township where 42 colonies were counted on ten trees in 1964 compared with 31 colonies in 1965. Six 6-foot jack pine trees were examined and tagged on May 15 in 1965 in an effort to determine the oviposition period. Examination of all the foliage on these trees revealed that oviposition did not occur in the fall of 1964. However, larval colonies were observed on all six tagged trees on July 5, 1965. Therefore oviposition occurred between May 15 and July 5. Further observations will be made in 1966.

Red Pine Sawfly, Neodiprion nanulus nanulus Schedl.

An increase in population levels of this insect occurred in the northern and eastern parts of the district. Heavy infestations were observed on jack pine trees in the Beachburg Tract in Westmeath Township and near the main gate of Camp Petawawa in Petawawa Township (Table 16).

Severe defoliation of red pine windbreaks occurred along Highway 17 in Cameron and Ross townships (see photograph). Moderate to severe defoliation of fringe red pine trees was observed in a private plantation near the village of Beachburg in Westmeath Township. These infestations were the first observed on red pine in the district since 1954.

TABLE 16

Summary of Red Pine Sawfly Colony Counts
in Pembroke District in 1965

Location (township)	Tree species	Av. d.b.h. of trees in inches	Av. no. of colonies per tree from ten trees
Cameron	rP	6	.9
Fraser	jP	6	1.6
Petawawa	jP	10	2.5
Ross	rP	4	11.0
Westmeath	rP	6	6.5
Westmeath	jP	3	2.2

Jack-pine Sawfly, Neodiprion pratti paradoxicus Ross

Colonies of this sawfly were more numerous in the district than in 1964. Moderate defoliation occurred near the village of Petawawa in Petawawa Township and in the Beachburg Tract in Westmeath Township. A small pocket of medium infestation occurred in a woodlot near the village of Golden Lake in N. Algona Township (Table 17). Scattered colonies were observed in Buchanan and Richards townships.

TABLE 17

Summary of Jack-pine Sawfly Colony Counts
in Pembroke District in 1964 and 1965

Location (township)	Av. d.b.h. of trees in inches	Av. no. of colonies per tree from ten trees	
		1964	1965
Bronson	6	3	0
Buchanan	6	1	3
Maria	6	0	0
N. Algona	10	15	25
Petawawa	4	1	10
Richards	6	0	1
Westmeath	6	21	26

A Leaf Folding Sawfly, Phyllocolpa spp. (Nematus sp.)

This sawfly increased in numbers in 1965. An average of 56 folds per 100 leaves was recorded at sample locations in 1965 compared with 41 folds in 1964 (Table 18).

TABLE 18

Summary of Counts of the Leaf Folding Sawfly
in Pembroke District from 1963 to 1965

Location (township)	Av. d.b.h. of trees in inches	No. of folds per 100 leaves examined		
		1963	1964	1965
Cameron	3	10	1	22
Clara	3	16	3	30
Finlayson	3	30	37	52
Fraser	3	16	67	83
Maria	3	30	3	29
Richards	4	17	61	92
Rolph	3	29	40	48
Sabine	4	21	47	38
Westmeath	3	31	108	112

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

Severe defoliation of white and black spruce trees by this insect was observed along the Hydro Electric transmission line in Barron and Clancy townships. Light defoliation of lakeshore trees occurred at Lake Louisa in Nightingale Township and along an access road in Freswick Township.

White-pine Weevil, Pissodes strobi Peck.

Population levels of this weevil were generally lower in the district than in 1964 (Table 19). A new heavy infestation occurred in a small private Scots pine plantation along Highway 17 in Cameron Township. Control by clipping and burning infested leaders was carried out in Murchison and Airy townships by personnel of the Department of Lands and Forests.

TABLE 19

Summary of Shoot Damage by the White-pine Weevil
in Pembroke District in 1964 and 1965

Location (township)	Tree species	Av. height of trees in feet	No. of trees examined	Degree of shade	Per cent of trees weevilled	
					1964	1965
Buchanan	wP	15	100	0	38	28
Cameron	scP	15	100	0	37	31
Cameron	rP, scP	5	100	0	-	21
Maria	jP	12	100	0	14	5
Preston	wP	40	460	0	3	3
Stratton	wP, jP	15	100	10	32	0

Larch Sawfly, Pristiphora erichsonii (Htg.)

Population levels of this insect were at a low ebb in the district in 1965. Only single colonies of larvae were observed on small open-grown trees in mixed stands at eight widely-separated locations.

Mountain-ash Sawfly, Pristiphora geniculata (Htg.)

Populations of this insect remained at approximately the same level as in 1964. Moderate to severe defoliation occurred along access roads in Preston, Freswick, and Bower townships in Algonquin Park, and near the Pembroke-Tweed district boundary in Jones and Sherwood townships. Light defoliation recurred on shade trees in the Town of Pembroke.

Poplar Leaf-roller, Pseudexentera oregonana Wlshm.

Heavy infestations of this insect occurred in the district for the third consecutive year. Severe defoliation of trembling aspen stands was observed near the village of Madawaska in Murchison Township, along Highway 41 near Rankin in Wilberforce Township and in the Beachburg Tract in Westmeath Township (see map). Moderate infestations occurred in N. Algona, Head, and Burns townships. At some locations larvae of Gonioctena americana Schaeff., Malacosoma disstria Hbn. and Pseudexentera oregonana Wlshm. caused complete defoliation of trembling aspen trees.

Pine Tortoise Scale, Toumeyella numismaticum (P. & M.)

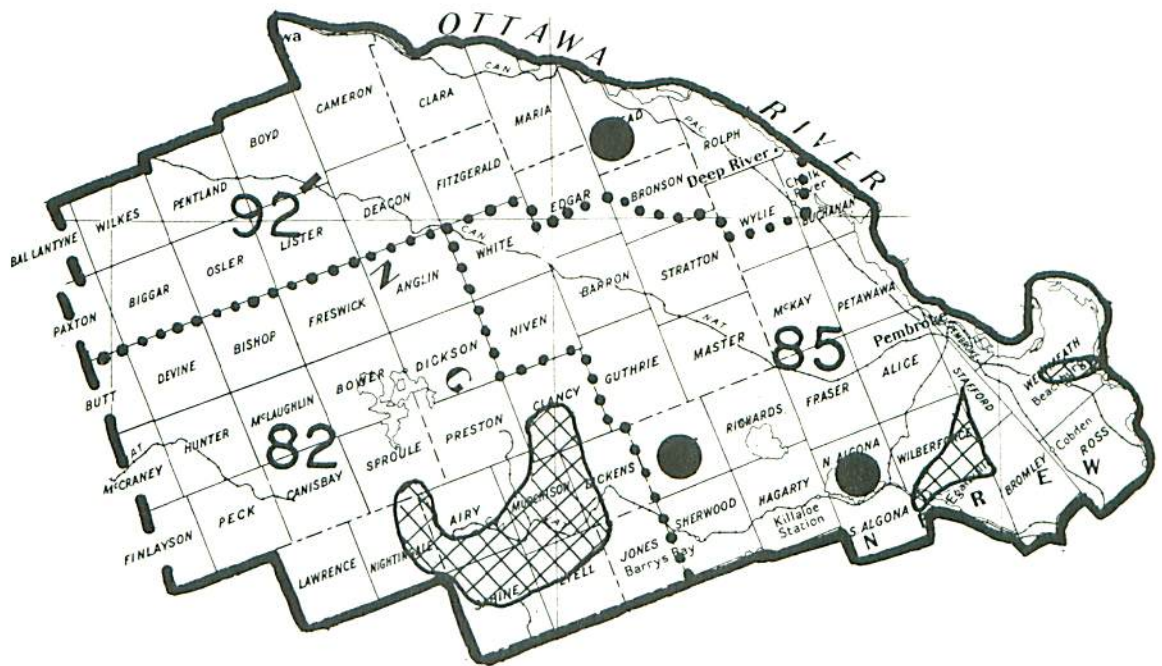
A medium infestation of this insect was observed in a Scots pine plantation near Germanicus in Wilberforce Township. Of 100 trees examined, 37 were infested, but no mortality was observed. A light infestation occurred on open-grown jack pine trees near the village of Golden Lake in North Algona Township.

This is the first record of the scale in the Pembroke District in recent years, although infestations have been recorded in North Bay and Parry Sound districts.

Summary of Miscellaneous Insects Collected
in Pembroke District

Insect	Host(s)	Remarks
<i>Acleris variana</i> (Fern.)	bS, wS	Few on beating tray samples in Cameron, Westmeath, and Bromley twps.
<i>Adelges abietis</i> Linn.	bS, wS	Few galls in Buchanan and Westmeath twps.
<i>Adelges lariciatus</i> (Patch)	wS, tL	Galls common throughout the district. Adults observed on tL the alternate host, in Cameron and Clara twps.
<i>Adelges strobilobius</i> Kalt.	bS	Galls common throughout the district.
Agromyzidae	hyPo	Leaf miners very plentiful on six trees in Buchanan Twp. 100 leaves examined, 100 leaves infested, 50 per cent of leaf surface mined.

PEMBROKE DISTRICT




MILES
0 20

POPLAR LEAF ROLLER
Pseudexentera oregonana Wlsh.

Areas in which defoliation
occurred in 1965

Legend

Moderate to severe defoliation..... ● or 

Miscellaneous Insects (continued)

Insect	Host(s)	Remarks
<i>Altica ambiens alni</i> Harr.	Al	Severe defoliation of lakeshore alder bushes in Niven, Preston, Freswick, and Bower twps.
<i>Altica populi</i> Brown	bPo	Heavy infestation on reproduction of six shade trees on old farm in Westmeath Twp.
<i>Anacampsis innocuella</i> Zell.	tA	Few leaf rollers in Airy, Cameron, Dickson, and Sabine twps.
<i>Aphrophora parallela</i> Say	scP	Heavy infestation in Christmas tree plantation in Westmeath Twp.
Bark Beetles	wP, bF wS, jP, rP	Species found in district include <u>Pityogenes hopkinsi</u> , <u>Ips pini</u> , <u>Pityogenes sparsus</u> , <u>Orthotomicus caelatus</u> , <u>Polygraphus rufipennis</u> , <u>Ips perroti</u> , <u>Ips borealis</u> .
<i>Choristoneura fumiferana</i> (Clem.)	bF	Six larvae on a 20 beating tray sample in Westmeath Twp.
<i>Cingilia</i> sp.	Shrub	Extremely heavy moth flight in September in Buchanan Twp.
<i>Dasyneura balsamicola</i> (Lint.)	bF	Moderate infestations in Bromley, Maria, Bronson, and Dickson twps.
<i>Dichelonyx</i> sp.	lA	Severe defoliation of five 1-inch trees in Clara Twp.
<i>Enchenopa binotata</i> Say	Leather-wood	Adults very numerous on shrubs at one location in Bromley Twp.
<i>Eriophyes</i> sp.	rM	Heavy infestations at numerous locations.
<i>Eriosoma americanum</i> (Riley)	wE	Heavy infestation on one shade tree in Haleys Sta., Ross Twp.
<i>Gonioctena americana</i> (Schaeff.)	tA	Moderate to severe defoliation in Richards, Wilberforce, N. Algona, and Airy twps.
<i>Hylobius radialis</i> Buch.	scP	Heavy mortality at two locations in Westmeath Twp.
<i>Hyphantria cunea</i> Dru.	wE	Three nests in Wilberforce Twp.
<i>Lithocolletis salicifoliella</i> Chamb.	cPo, tA	Light infestation in Wilberforce Twp. and moderate infestation in Richards Twp.
<i>Mordvilkoja vagabunda</i> Walsh	tA	Heavy infestation on two trees in Clara Twp.
<i>Nematus limbatus</i> Cress.	W	Severe defoliation of five roadside trees in Wylie Twp.
<i>Neodiprion abietis</i> (Harr.)	wS	Six colonies on two 3" trees in Bronson Twp. Single larva on beating tray samples in Cameron, Clara, and Bromley twps.
<i>Neodiprion virginianus</i> complex	jP	Thirteen colonies on ten trees in Edgar Twp.
<i>Neurotoma inconspicua</i> (Nort.)	pCh	Two colonies on roadside bushes in Wilberforce Twp.

Miscellaneous Insects (continued)

Insect	Host(s)	Remarks
<i>Palthis angulatis</i> Hbn.	wS	Few larvae on beating tray samples in Edgar Twp.
<i>Pemphigus</i> sp.	bPo	Heavy infestation on reproduction in Stratton Twp.
<i>Petrova albicapitana</i> Busck.	scP	Moderate infestation in pine plantation in Westmeath Twp.
<i>Phenacaspis pinifoliae</i> Fitch	Mugho, wP	Heavy infestation on ornamental trees in the village of Deep River. Light infestation on white pine stand in S. Algona Twp.
<i>Phytomyza populicola</i> (Hal.)	cPo	Heavy infestation on shade trees in Wilberforce Twp. 100 leaves examined, 96 leaves infested.
<i>Pikonema dimmockii</i> (Cress.)	wS	Few larvae on beating tray samples in Cameron Twp.
<i>Pleroneura borealis</i> Felt.	bF	Moderate to heavy for three years. Negative at all sample locations in 1965.
<i>Profenusa thomsoni</i> (Konow)	wB	Few mines in Bronson, Master, and Preston twps.
<i>Rheumaptera hastata</i> Linn.	wB	Numerous leaf folds on open-grown trees in Wilberforce Twp.
<i>Semiothisa dispuncta</i> Wlk.	wS	Common on beating tray samples.
<i>Trichiocampus viminalis</i> (Fall.)	hyPo	Severe defoliation of six shade trees in Pembroke Twp.
<i>Vasates quadripes</i> Shim.	rM	Leaf galls very plentiful on small trees in Westmeath Twp.