

FOREST INSECT AND DISEASE SURVEYS
IN THE EASTERN SURVEY REGION, 1971

(FOREST DISTRICTS: PEMBROKE, PARRY SOUND,
NORTH BAY AND SWASTIKA)

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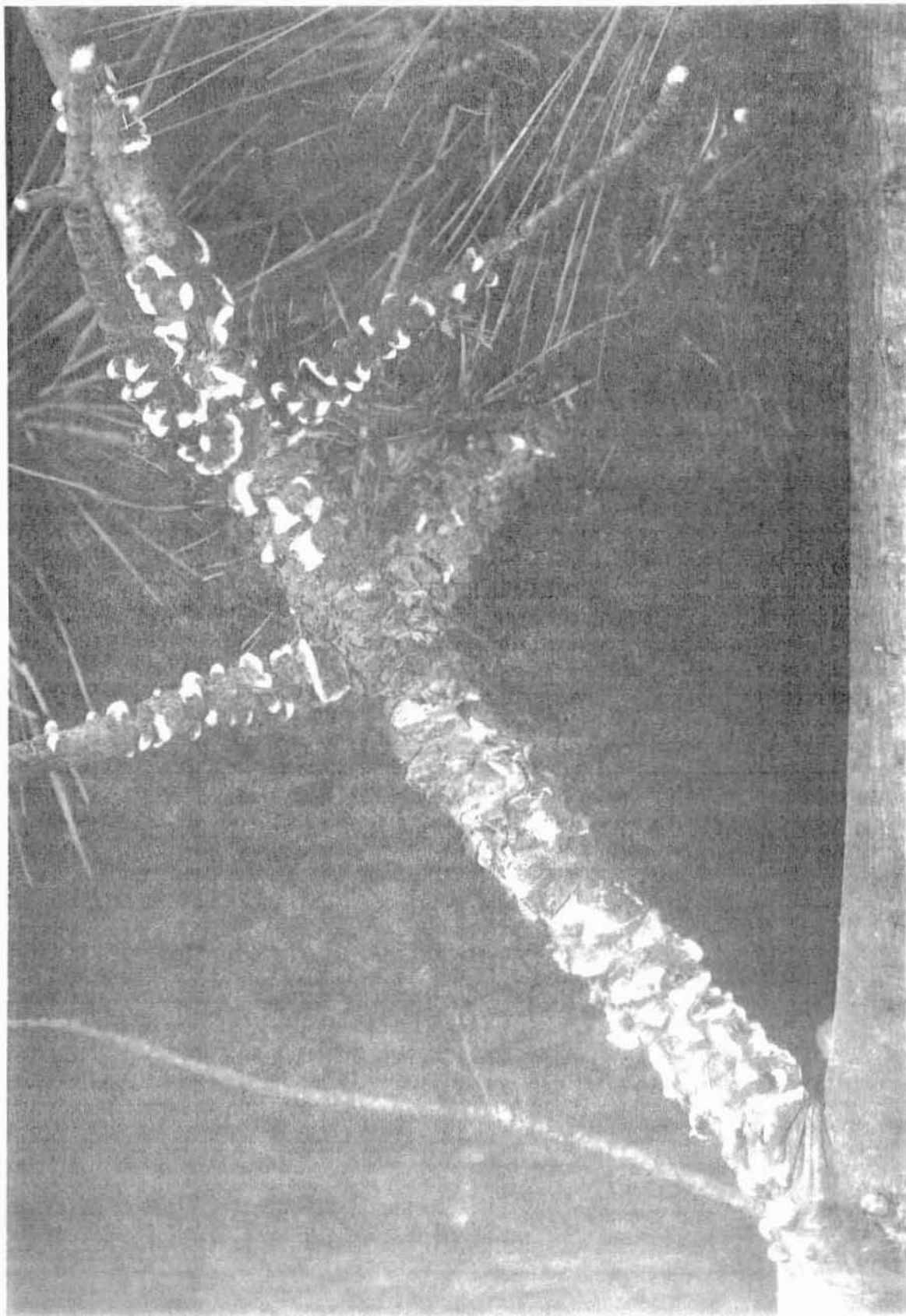


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INSECTS

Green-striped Mapleworm, *Anisota rubicunda* Fabr.

From 1958 to 1969, the green-striped mapleworm was observed only rarely in the Eastern Survey Region. In 1970, population levels increased sharply, and light to moderate defoliation of red maple [*Acer rubrum* L.] and sugar maple [*A. saccharum* Marsh.] understory was common in the northeastern and southeastern parts of the Pembroke and North Bay districts, respectively. In 1971, further increases in extent and intensity of infestation occurred in these areas (see Appendix, Fig. A1). In the Pembroke District, severe defoliation of dominant and understory red maple occurred in the townships of Cameron, Clara, Maria, Fitzgerald, Deacon and part of Head. Some defoliation of sugar maple was also observed in this area.

In the North Bay District, light to moderate defoliation was common in the central and northern parts of the North Bay Division, and pockets of severe defoliation occurred at many points within these infestations. In the Temagami Division, severe defoliation was confined to a 10-acre stand in Joan Township on Lake Temagami.

The insect was not found in the Parry Sound and Swastika districts in 1971.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Heavy infestations of this insect continued to expand throughout white birch [*Betula papyrifera* Marsh.] stands in the southern part of the Region. Moderate to severe skeletonizing (Fig. 1 and 2) occurred over most of the Pembroke District, through the northeastern part of the Parry Sound District, and the southern part of the North Bay District (see Appendix, Fig. A2). Although the skeletonizer was not found in the Swastika District in 1971, the proximity of infestations in the Cochrane District suggest the possibility of invasion from this direction in 1972.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

This insect caused extensive defoliation of poplar stands in three districts of the Region (see Appendix, Fig. A3). In the North Bay District, a huge area in the northeastern part of the Temagami Division was severely defoliated, part of it for the third consecutive year. In the Swastika District, poplar stands within a large area extending from Swastika to the Quebec Border were severely defoliated, and heavy infestations were observed at such widely separated points as Harris, James, Cleaver and Stoughton townships.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

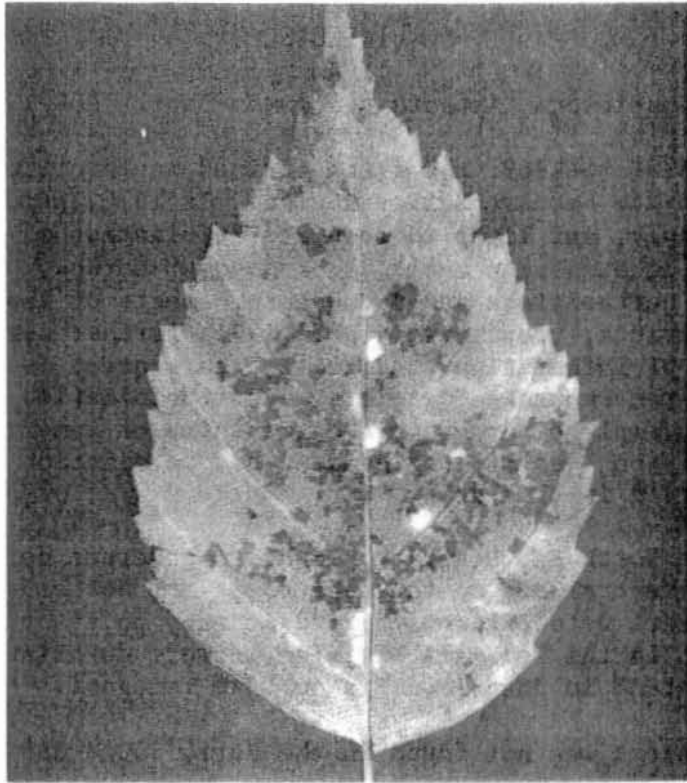


Fig. 1. Skeletonized leaf showing white "moulting pads".



Moderate to severe defoliation recurred in Sproule, Nightingale, Airy and Preston townships in the Pembroke District. The insect was not found in the Parry Sound District.

In late July, large flights of the adult moths were observed in the Latchford-Temagami areas, suggesting the continuation of infestation in 1972.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

A considerable proportion of the field season was devoted to different types of surveys and sampling related to the determination of the spruce budworm situation in Ontario as a whole. In view of the magnitude and importance of the current outbreak in this province and to avoid a piecemeal presentation, our results will be reported, as in 1970, along with those of other survey regions in a single report; see appended Information Report O-X-163 by G. M. Howse *et al.*

Jack-pine Budworm, *Choristoneura pinus pinus* Free.

Since 1968, persistent infestations of this insect have caused extensive tree mortality and top-killing of jack pine [*Pinus banksiana* Lamb.] in the Pembroke, Parry Sound and North Bay districts. Although egg counts made in the autumn of 1970 indicated a reduction in population levels in areas sampled, this condition was not general and many areas of severe defoliation occurred in 1971 (see Appendix, Fig. A4).

In the Pembroke District, jack pine stands north of Round Lake in Richards Township and south of Achray in Guthrie Township showed moderate to severe defoliation. In the vicinity of Lake Traverse, moderate to severe defoliation recurred but it was confined mainly to understory jack and white pine [*P. strobus* L.]. Pockets of moderate defoliation were found northwest of the Petawawa River and in Wylie, Stratton, Head, Rolph and Fitzgerald townships.

In the Parry Sound District, jack pine stands between Georgian Bay and Highway 69 from Pickerel River in the north to Pointe-au-Baril in the south either have been killed by previous attack or were infested in 1971. The infestation crossed Highway 69 near the Magnetawan and Still rivers and in one area extended eastward from the highway for a distance of 10 miles. Another segment of this outbreak extended north into the Sudbury District. To the east, near Illfed Lake in Wilson Township where top-kill and limited tree mortality has resulted from previous attack, the infestation largely subsided in 1971. Two small areas of moderate to severe defoliation were detected and mapped farther to the south in Wilson and McKenzie townships.

In the North Bay District, major fluctuations in population levels occurred within the Lake Nipissing-French River infestation. Although pockets of severe defoliation recurred in the southern parts of Latchford and Bertram townships, defoliation through the infestation was generally much lighter than in 1970. Outside the main infestation, there was little evidence of defoliation by the budworm in 1971.

Population forecasts, based on the examination of jack pine foliage at 32 locations in the Region, suggest that infestations will persist in Wylie, Stratton and Richards townships, Pembroke District, and in the southern part of the Georgian Bay infestation in the Parry Sound District. No egg masses were found in foliage samples taken from the North Bay District.

Cone Beetles, *Conophthorus coniperda* (Schz.) and *C. resinosae* Hopk.

In 1964, high numbers of these beetles were observed in mature and overmature white and red pine [*P. resinosa* Ait.] stands on Lake Temagami in the North Bay District. In subsequent years, population levels increased appreciably in this area and other infestations were located in the vicinity of Rabbit, Obabika, Jumping Caribou, Marten and Nipissing lakes.

In 1971, conspicuous damage recurred in these areas, and new infestations of *C. resinosae* were observed in immature and mature red pine stands in Stratton, Bronson, Wylie, Buchanan and McKay townships in the Pembroke District. Substantial damage occurred at many locations, particularly in Wylie and Buchanan townships where approximately 70% of the new shoots were destroyed.

Dichelonyx sp.

An unusually heavy infestation of this leaf chafer beetle caused moderate to severe defoliation of trembling aspen [*Populus tremuloides* Michx.] and black ash [*Fraxinus nigra* Marsh.] trees in the southeastern part of the Pembroke District. The infestation was bordered by Wilno on the west, Golden Lake on the south, Eganville on the east and Rankin on the north. Two smaller infestations were observed southeast of this area near Beachburg and Haley Station.

Aspen Leaf Tier, *Enargia decolor* Wlk.

For the second consecutive year, medium to heavy infestations of this insect were common throughout the North Bay and Swastika districts. In most instances, severe defoliation was confined to the upper third of the crowns of host trees so that stands rarely were completely stripped.

The insect was abundant in the Pembroke District where severe damage was confined mainly to understory and to open-grown trees. A heavy infestation also occurred in Chisholm Township in the northeastern part of the Parry Sound District.

Birch Leaf Miner, *Femusa pusilla* (Lep.)

Widespread mining of white birch foliage was observed throughout the Region. Population levels increased appreciably at monitoring stations in Strong, Machar, and Chapman townships in the Parry Sound District, and severe damage recurred in the North Bay, Balsam Creek and Redbridge areas, North Bay District.

Balsam-fir Sawfly, *Neodiprion abietis* complex

Infestations of this sawfly were confined to the Pembroke and Parry Sound districts. In the southeastern part of the Pembroke District, severe defoliation for four consecutive years has resulted in considerable top mortality. Moderate defoliation also occurred at several points in Hagarty, Sherwood and South Algona townships. Light infestations were observed in North Himsworth and South Himsworth townships in the Parry Sound District.

Red-headed Pine Sawfly, *Neodiprion lecontei* (Fitch.)

Populations of this sawfly were at generally low levels. Red pine plantations were lightly infested at several locations in the northeastern part of the Parry Sound District, and in the vicinity of North Bay. The insect was not found in the Pembroke or Swastika districts.

Swaine Jack-pine Sawfly, *Neodiprion swainei* (Midd.)

Heavy infestations of this sawfly persisted in the Swastika and North Bay districts, although defoliation was less severe in some areas than in 1970. Substantial mortality of jack pine has occurred in Wallis and Banks townships in the Swastika District and in Whitson and Klock townships in the North Bay District. South of this area on Lady Evelyn, Willow Island, Temagami and Rabbit lakes, jack pine on islands and shoreline stands was severely defoliated at many points.

White Pine Weevil, *Pissodes strobi* (Peck)

Quantitative sampling showed a high rate of weeviling in plantations, particularly in the Pembroke and Parry Sound districts

(Table 1). High populations in Norway spruce [*Picea abies* (L.) Karst.] plantations on the Petawawa Forest Experiment Station have spread to adjacent white spruce [*P. glauca* (Moench) Voss] and jack pine plantations on the Station. Heavy weeviling was observed in abandoned Christmas tree plantations at several locations in the Parry Sound District.

Table 1. Summary of leader damage by the white pine weevil at nine points in the Eastern Survey Region, 1971. (Counts were based on the examination of 100 trees at each point)

Location (twp)	Host	Avg ht (ft)	% trees weeviled		
			1969	1970	1971
North Bay District					
Widdifield	wP	12	34	37	41
Gillies Limit	jP	16	3	6	8
Papineau	wP	14	19	22	31
Pembroke District					
Buchanan (PFES)	wP	25	8	59	64
Wylie (PFES)	nS	15	--	48	70
Buchanan (PFES)	jP	10	--	12	9
Parry Sound District					
Armour	scP	20	18	30	18
Proudfoot	scP	15	56	71	55
Joly	jP	6	--	--	16

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Severely defoliated tamarack [*Larix laricina* (Du Roi) K. Koch] stands were observed at many locations throughout the northern and central parts of the Swastika District. In most instances, the upper third of the crown was completely stripped. Several small stands in the vicinity of North Bay were heavily infested, and lightly defoliated fringe trees were common through both districts.

In the Parry Sound District, little damage was observed except in small stands in Mowat and Joly townships where moderate and severe defoliation occurred. One area of severe defoliation recurred in Petawawa Township in the Pembroke District.

Table 2. Other noteworthy insects

Insect	Host(s)	Remarks
<i>Altica ulmi</i> Woods	E	Pockets of light infestation in Parry Sound, Pembroke and North Bay districts.
<i>Anchylopera discigerana</i> Wlk.	yB, wB	High numbers in Pembroke and North Bay districts.
<i>Anisota virginiensis</i> Dru.	rO, wB	Severe defoliation of 80 acres of red oak on Bien Venue Island, Parry Sound District.
<i>Archips cerasivoranus</i> Fitch	rP	Heavy infestation in plantation in French Twp, North Bay District.
<i>Cecidomyia reeksi</i> Vock.	jP	Twig mortality common through Region.
<i>C. pinifoliae</i> Felt	wP	Conspicuous needle damage on young and semimature trees in Bronson, Head and Rolph twp, Pembroke District.
<i>Coleophora laricella</i> (Hbn.)	tL	Common throughout the Region.
<i>Diprion frutetorum</i> F.	tL	Joly and Strong twp, Parry Sound District. New distribution record.
<i>Epinotia solandriana</i> Linn.	wB	Light infestations at many points.
<i>Eucosma gloriola</i> Heinr.	rP, scP	Numerous mined shoots in plantations in Franklin, Mowat, Joly and Strong twp, Parry Sound District.
<i>Exoteleia pinifoliella</i> (Cham.)	jP	Common through North Bay and Swastika districts.
<i>Gonioctena americana</i> (Schaeef.)	tA	Severely defoliated trees at many locations in North Bay and Swastika districts.
<i>Heterarthrus nemoratus</i> (Fall.)	wB	Common through North Bay and Swastika districts.

(continued)

Table 2. Other noteworthy insects

Insect	Host(s)	Remarks
<i>Hyphantria cunea</i> Dru.	bAs, wE, wB, Po	Populations increased markedly over those of 1970 in all districts.
<i>Malacosoma californicum pluviale</i> F.	Ch, wB	Common through most of Swastika District.
<i>M. disstria</i> F.	tA	Colonies found in Badgerow and Strathcona twp, North Bay District and in Westmeath and Ross twp, Pembroke District.
<i>Mindarus abietinus</i> Koch.	bF	Severe needle curling and dwarfing at many points in the Region, particularly noticeable in the eastern part of the Parry Sound District.
<i>Neodiprion pinetum</i> Nort.	wP	Heavy infestation on an island in Georgian Bay, Carling Twp, Parry Sound District.
<i>Nymphalis antiopa</i> L.	W, E, tA	Unusually high numbers in all districts in 1971.
<i>Oenerostoma strobivorum</i> Free.	rP, wP	Heavily infested trees at Lady Evelyn Lake, North Bay District. Common in the southern part of the Swastika District.
<i>Phenacaspis pinifoliae</i> Fitch	jP, rP	Common through the Region.
<i>Phratora purpurea purpurea</i> Brown	tA	Found in varying numbers in all districts.
<i>Pikonema alaskensis</i> (Roh.)	wS	Severe defoliation of plantations and windbreaks in Cane, Dymond and Harley twp, Swastika District.
<i>Pineus pinifoliae</i> Fitch	wP	Considerable twig mortality in Maria and Stratton twp, Pembroke District.

(continued)

Table 2. Other noteworthy insects (concluded)

Insect	Host(s)	Remarks
<i>Plagioder a versicolor</i> Laich.	W	Severe skeletonizing in the southeastern part of the Pembroke District.
<i>Pristiphora geniculata</i> Htg.	Mo	Common in all districts.
<i>Profenusa thomsoni</i> (Konow)	wB	Light to moderate leaf mining in Swastika and North Bay districts, found occasionally in Pembroke District.
<i>Rhabdophaga swainei</i> Felt	wS, bS	Numerous on young trees through Swastika and North Bay districts.
<i>Sparganothis sulphureana</i> Clem.	rP, scP	Common in young plantations in North Bay and Swastika districts.
<i>Toumeyella numismaticum</i> (P.&M.)	jP	A few trees heavily infested at many locations in Swastika, North Bay and Pembroke districts.
<i>Xylococculus betulae</i> Perg.	Be	Collected in Brunel, Ridout and Lount twp, Parry Sound District and in Fitzgerald and Deacon twp, Pembroke District.
<i>Zellaria haimbachi</i> Busck.	jP	Found in varying degrees of infestation in most jack pine stands in Swastika and North Bay districts.

TREE DISEASES

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

Dutch elm disease continued to cause severe mortality of white elm [*Ulmus americana* L.] in the Pembroke, Parry Sound and North Bay districts. Positive samples were collected for the first time in Sisk Township near Marten River, and in Lorrain Township near Cobalt in the central and northern parts of the North Bay District. These records represent an appreciable extension in the northern range of the pathogen.

Ink Spot of Aspen, *Ciborinia whetzeli* (Seaver) Seaver

Although this foliage disease was observed in all districts of the Region, infection levels were generally low compared with 1970. Evaluations carried out in Nipissing and Boulter townships in the northeastern part of the Parry Sound District showed incidence of 90 and 100% but infection levels were low and moderate at these locations.

Sweet Fern Blister Rust, *Cronartium comptoniae* Arth.

This stem canker of jack pine was again widely distributed through the Region in 1971. Infection levels varied from trace to heavy and some tree mortality was observed in the North Bay and Swastika districts.

Table 3. Summary of incidence and levels of infection of sweet fern blister rust in the Eastern Survey Region

Location (twp)	Tree ht (ft)	Level of incidence (%)	Level of infection
North Bay District			
Haddo	60	12	Moderate
Coleman	70	45	High
Swastika District			
Hudson	70	10	Moderate
Cairo	70	40	High

Level of incidence = proportion of trees infected

Level of infection = degree to which diseased trees are affected

Hypoxyylon Canker of Poplar, *Hypoxyylon mammatum* (Wahl.) Miller

This stem canker continued to cause mortality in aspen stands in all districts of the Region. Although high priority projects limited Hypoxyylon surveys in 1971, the increasing utilization of poplar in some areas indicates the desirability of evaluating the impact of the pathogen in these districts. In Lorrain and Bastedo townships, North Bay District, the incidence of cankered trees was 5 and 10%, respectively, in 1971.

Mortality of Hardwood

Aerial surveys disclosed extensive mortality of hardwood species over approximately 36 square miles in Machar and Lount townships, Parry Sound District. The principal species affected by varying degrees of decadence and mortality were sugar maple, beech [*Fagus grandifolia* Ehrh.] and yellow birch [*Betula alleghaniensis* Britton]. Quantitative sampling in a sugar maple stand north of Deer Lake, Lount Township, showed a total tree mortality of 29%; severe dieback (more than 25% of the crown) 10%; light dieback (less than 25% of the crown) 33%; and 28% of the trees were healthy. The stands were severely defoliated by the saddled prominent, *Heterocampa guttivita* Wlk., in 1968 and 1969. Root rots were also present in some stands but no single insect or disease organism has been defined as the major cause of the mortality.

Mortality of Red Oak, *Quercus rubra* L.

The widespread oak mortality noted in the Pembroke District in 1970 remained relatively unchanged in extent and intensity in 1971. One additional area of severe mortality was observed in McKay Township where 45% of the trees were dead.

Root and Butt Rots

In 1971 a survey was initiated to determine the impact of root and butt rots on spruce and balsam fir stands. Sampling sites were located by the occurrence of stand openings in mature or semimature stands where some evidence of vigor decline was apparent. Quantitative samples were made from roots at 27 locations and evaluations were made in eight white and black spruce [*Picea mariana* (Mill.) B.S.P.] stands. Although some material is still in culture at the time of writing, the pathogens *Armillaria mellea* (Vahl. ex Fr.) Kummer, *Polyporus schweinitzii* Fr., *P. tomentosus* Fr., and *Coniophora puteana* (Schum. ex Fr.) Karst. were cultured from samples collected at widely separated points in the Region.

Scleroderris Canker of Pine, *Scleroderris lagerbergii* Gremmen

Although this pathogen was collected from plantations in all four districts in the Region, no infected natural stands were found in 1971. Incidence of the disease was highest in the Parry Sound District, where moderate and high infection levels were measured in McMurrich and Strong townships. Positive records were obtained from red pine plantations in Boulter Township, Parry Sound District, and from Guthrie Township, Pembroke District. A mixed plantation in French Township, North Bay District, where the disease has been present for many years, was again heavily infected in 1971. Trace infection levels persisted in jack pine plantations at the Englehart River Tree Nursery.

Snow Damage

Appreciable branch damage, apparently caused by snow and ice conditions during the winter of 1970-71, was noted consistently through all districts. Injury was more common in the Parry Sound and Pembroke districts, particularly in coniferous plantations where trees about 5 feet high sustained the greatest damage.

Winter Drying

This condition was much lighter than in 1970 through the Region. Discoloration of coniferous foliage was limited to exposed stands along lake shores, and in large plantations, and no extensive damage was observed.

Table 4. Other noteworthy diseases

Organism	Host(s)	Remarks
<i>Apiosporina collinsii</i> (Schw.) Hoehn.	Se	Numerous witches' brooms in McKay Twp, Pembroke District.
<i>Cenangium abietis</i> (Pers.) Rehm.	jP, rP	Found on numerous dead twigs in Maria and Guthrie twp, Pembroke District.
<i>Chrysomyxa ledi</i> (Alb. & Schw.) d By.	bS	Severe on several trees in Joli Twp, Parry Sound, and in Cameron Twp, Pembroke.
<i>C. ledicola</i> Lagh.		
<i>C. pirolata</i> Wint.	wS	Cone rust on several trees, Lount Twp, Parry Sound.

(continued)

Table 4. Other noteworthy diseases (concluded)

Organism	Host(s)	Remarks
<i>Coleosporium asterum</i> (Diet.) Syd.	jP, rP	Common in plantations in Parry Sound and Swastika districts.
<i>Coryne sarcoides</i> (Jacq. ex Fr.) Tul.	bS	Associated with root rot from Maisonville Twp, Swastika District.
<i>Cronartium ribicola</i> J. C. Fischer	wP	Major cause of branch and stem mortality of white pine in the Region (see Frontispiece).
<i>Davisomycella ampla</i> (Davis) Darker	jP	Common through North Bay, Swastika and Pembroke districts.
<i>Endocromartium harknessii</i> (J.P. Moore) Y. Hiratsuka	jP	Found at varying infection levels in all districts.
<i>Melampsora abietis-canadensis</i> C.A. Ludwig ex Arth.	eH	Found at one point in Dickson Twp, Pembroke District.
<i>M. medusae</i> Thuem.	tL	Lightly infected trees in Bronson Twp, Pembroke District, and in Perry Twp, Parry Sound District.
<i>Melampsorella caryophyllacearum</i> Schroet.	bF	Found at one point in Cameron Twp, Pembroke District.
<i>Sclerophoma pithya</i> (Thuem.) Hoehn.	rP	Infected plantation in Firstbrook Twp, North Bay District.
<i>Scoleconectria cucurbitula</i> (Tode ex Fr.) Booth	rP	Associated with dead trees in plantations in Pembroke and North Bay districts.
<i>Uncinula salicis</i> (DC.) Wint.	Po	Heavy mildew on understory poplar in Bromley Twp, Pembroke District.

EASTERN SURVEY REGION

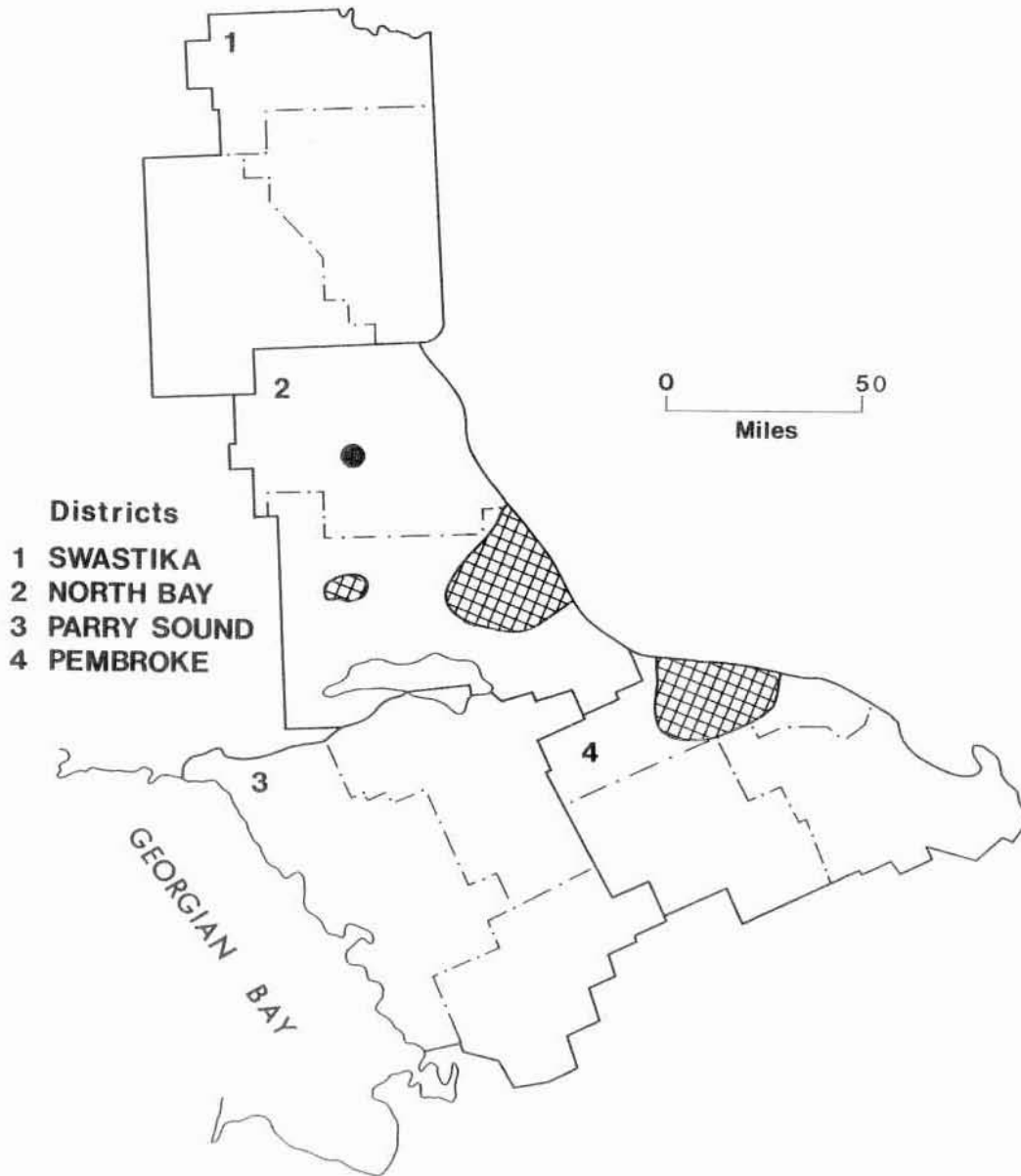



Fig. A1 GREEN-STRIPED MAPLEWORM

Areas within which moderate to severe defoliation occurred in 1971
Moderate to severe defoliation.....  or ●

EASTERN SURVEY REGION

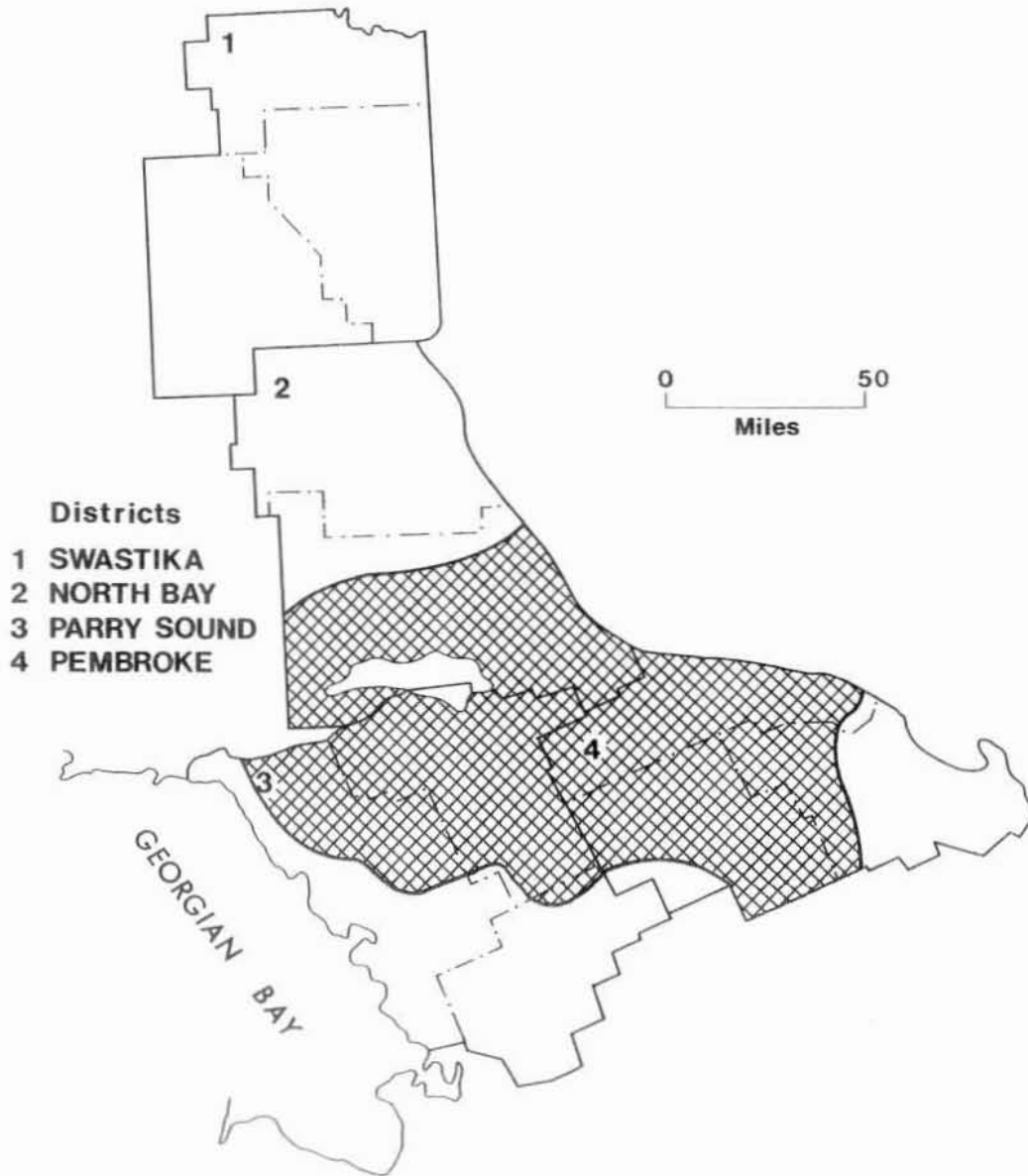


Fig. A2

BIRCH SKELETONIZER

Areas within which moderate to severe skeletonizing occurred in 1971

Moderate to severe damage



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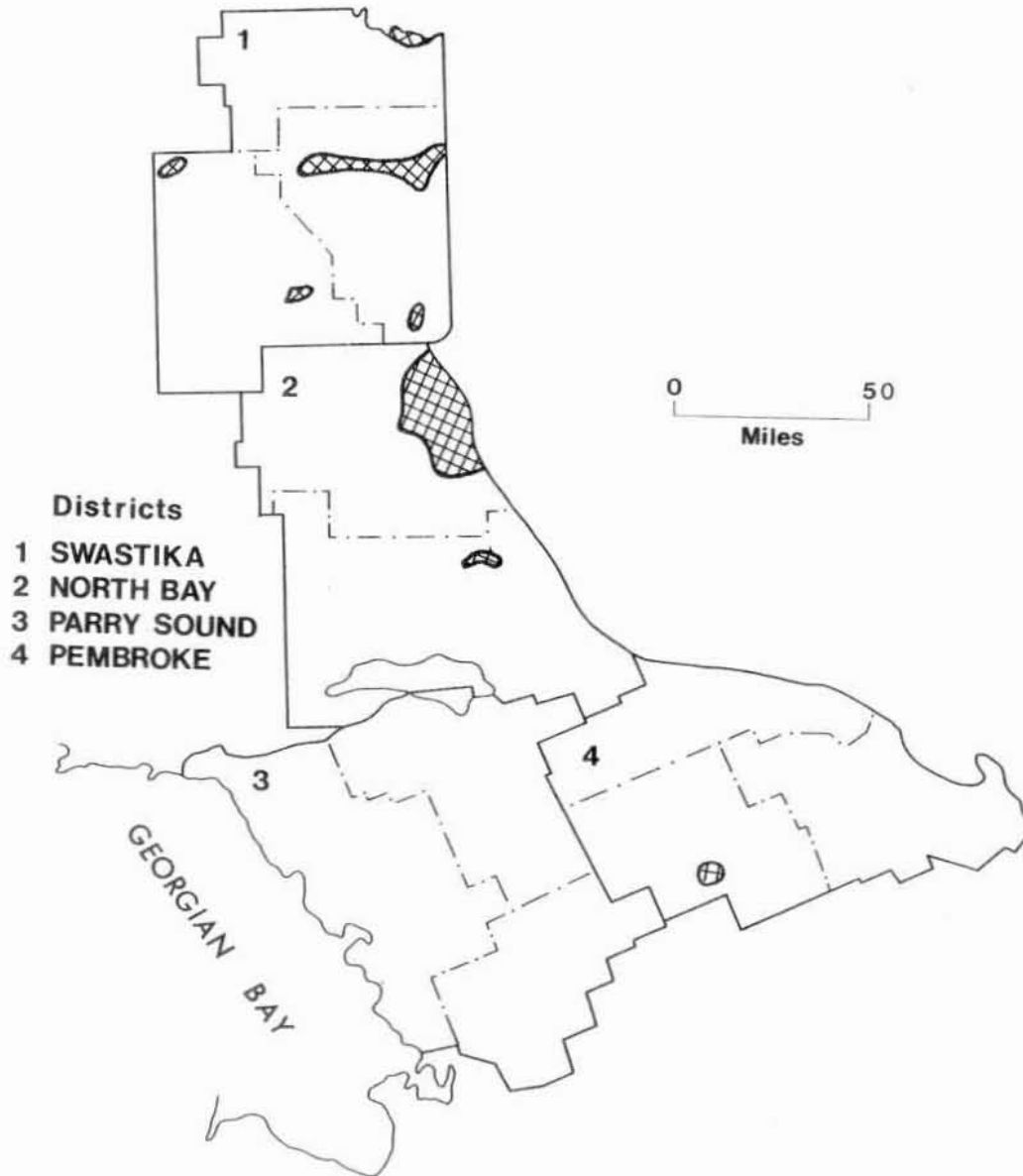



Fig. A3 LARGE ASPEN TORTRIX

Areas within which moderate to severe defoliation occurred in 1971
Moderate to severe defoliation.....

FRENCH RIVER AREA

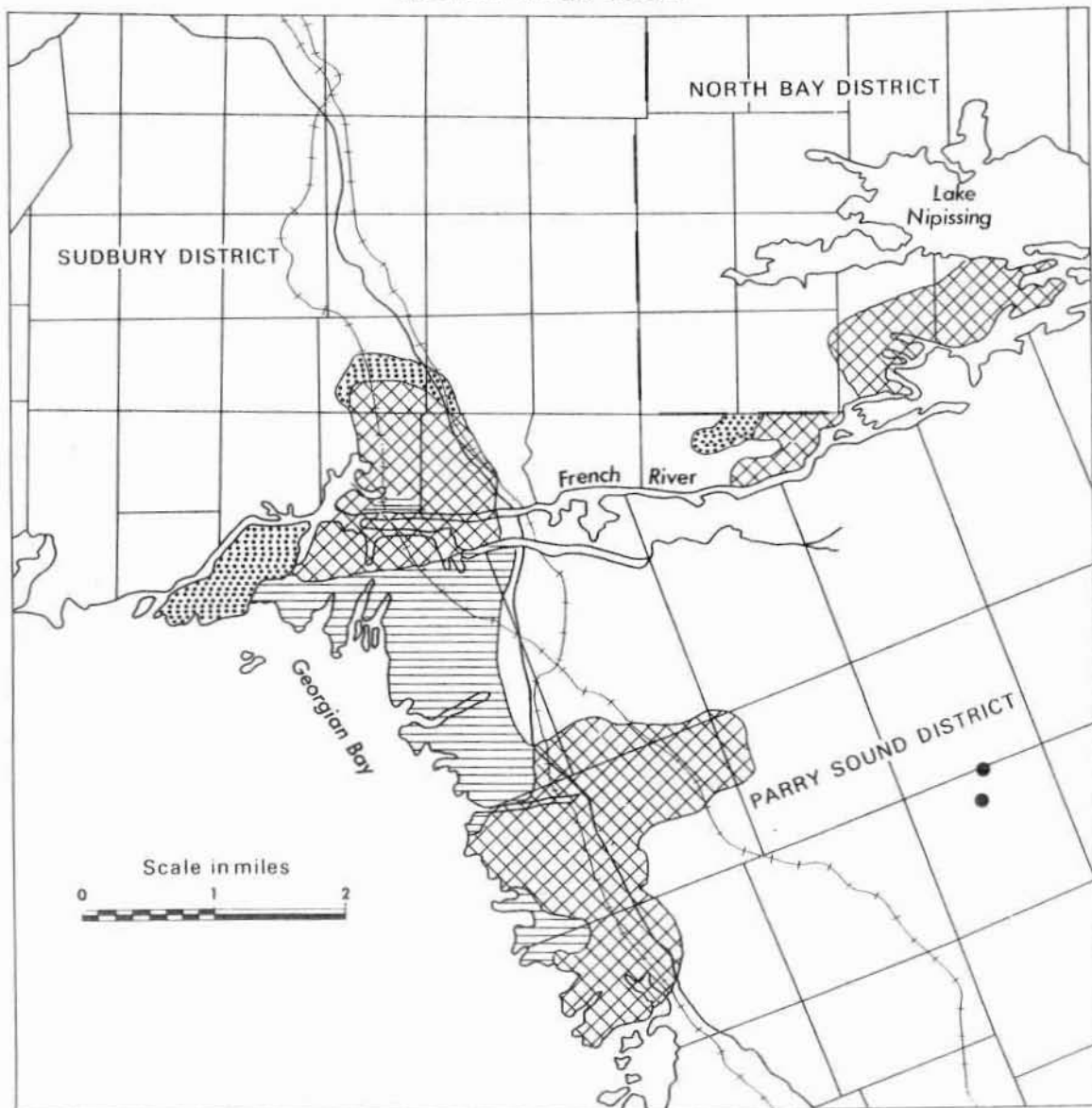


Fig. A4 JACK PINE BUDWORM
 Areas within which defoliation and mortality occurred in 1971

- Light defoliation 
- Moderate to severe defoliation  or ●
- High mortality of Jack Pine 